A LEARNING PARADIGM

Informed by Knowledge of the Learning Self

A COMPENDIUM OF APPLIED RESEARCH ON THE LET ME LEARN PROCESS

EDITED BY
Colin Calleja • Christine Johnston

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First published in 2015

HORIZONS

FORUM ON LEARNING

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Book production: Horizons
Design: Outlook Coop

ISBN 978-99957-38-90-7

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Preface

Christine A. Johnston

It was a chilly September evening 20 years ago when educational researchers from the US and Malta met purely by chance at the British Educational Research Association conference event being held at St. Anne's College, Oxford University, in Oxford, England. What began that evening as a simple exchange of social pleasantries has over a period of 20 years become a strong and productive relationship focused on the development and application of *the Let Me Learn Process, an Advanced Learning System®*. This is a most remarkable fete!

It is a remarkable fete because, as those readers engaged in the academic arena know, the life of an academic is frequently fraught with competition for research dollars and opportunities to publish. Into this environment entered the joint US-Malta team of researchers and practitioners. This non-competitive team focused its efforts on finding answers to questions such as, "How do we learn? How can we understand ourselves as learners and use that knowledge with intention? How can we communicate externally the internal talk of our learning selves?" This team of educators (practitioners and researchers) thoughtfully worked to support each other's efforts aligning their projects, tactics, and resources. For example with the support of a Fortune 500 corporation, Let Me Learn-US was able to seed the further development of Let Me Learn-Malta.

These pioneers in international collaboration jointly sponsored international symposiums, workshops, forums and publications. As a result they have managed to achieve further collaboration among governmental bodies and educational entities including colleges and universities. In each instance, members of LML-US and LML-Malta have supported and equipped researchers and practitioners, authors, teacher developers, and educational and corporate leaders.

The papers included in this volume can only provide a glimpse of the over 1500 published documents, dissertations, articles, and juried presentations produced by LML-US/LML-Malta research practitioners over the past 20 years.

Read these entries and grow in your understanding of the human learning process. Observe the various topics addressed, issues explored, and lives changed. Take special note of Joseph Coleman's story for within it is encapsulated the power and potential of the Let Me Learn Process. Read of his struggles to understand and convey the totality of the Let Me Learn Process to teachers and students alike. Then note how his collaboration with a LML mentor, over a thousand miles from where Joseph lives and works, made the difference in his personal growth and development. This is collaboration at its finest!

Finally, as you read this compendium, recognise and celebrate the important role collaboration has played in the growth and development of the Let Me Learn Process in the US, Malta, Europe, Australia, and beyond. Acknowledge that a chance meeting 20 years ago ***did not develop by chance*** but became a focused and purposeful force in education and human resources because of the collaborative spirit that drove it!

May 2015

• FOREWORD •

My Journey with Let Me Learn®

Joseph Coleman with Robert Kottkamp

"Personal engagement with LML has been
a life changing journey for me."

Early Fixation with What I Mistook as Let Me Learn

Though I am not a certified teacher or administrator, I have worked every year since 2000 as a lone facilitator to implement the Let Me Learn (LML) Process in an Ohio K-12 urban school context. With only five half days of training in LML - an exciting experience - I began my journey to find funding that allowed me to facilitate LML training among the teachers of the district.

I first gained access to Head-Start and Career Education teachers. The unspoken understanding was that I could work with teachers who wanted to work with me. There was limited support for my work. Later on, I came to see my early work as parallel to a biblical parable. I was the sower of LML seeds. Some fell on teachers who saw the potential and worked with me; many fell on teachers who couldn't be bothered. I kept sowing.

I launched my work with great enthusiasm. The Learning Connections Inventory (LCI) was gold! Every place I presented it—no matter where—everyone nodded heads in recognition that their scores described them. But later came the realisation that I had only enough LML knowledge to get me into trouble. I wanted to be more than an "LCI salesman." I asked myself, "Where can I go from here?" I knew that teachers were not going to change their teaching until I got beyond simply administering the LCI and to a point where they could see classroom applications that made sense to them.

Looking back I realise that I had passed through the first three of six Personal Phases of Growth and Development in the LML Process:

1. Curiosity and Intrigue – "This pattern stuff is interesting. I knew these things about myself, but I didn't have the words to explain what I was feeling." This was LCI fixation in part.
2. Stay and Play – "I know the patterns; I use the words, but I never get to the level of metacognition or strategy cards….too much work." This was my lack of insight about how to help teachers develop workable LML applications and failure to introduce LML tools in ways teachers would use them themselves.
3. Niggling Concern – "What is happening here? Why do I have a problem with…?" These were questions about my inability to support teachers in changing themselves in order to change their teaching practices.

Questions to Action: Changing Myself through Let Me Learn

As niggling questions gained intensity, it was increasingly evident that time had come to quit the Lone Ranger role and grasp the opportunity to improve my LML facilitation. In 2004, I made the commitment to complete the LML certification process. This intense experience changed how I understood myself as a learner and changed my ability to sow seeds that took hold in others. This six month experience required me to do new things and reflect deeply on my actions. Altogether, these experiences propelled me into and through the 4th phase of personal LML development, Pain and Growth, and on into the 5th phase, Insights and Understandings.

Following certification as a LML facilitator, I put my experiences and personal growth to work in a K-5 school. Only two teachers engaged deeply in LML with me. One really got it and implemented it effectively with her kids. The other, a kindergarten teacher, also changed the way she taught based on LML. She moved to more hands-on learning and less talking to the kids because of her understanding and use of LML. Though it was my goal to involve all the teachers in more depth, the principal allowed teachers to decide about implementation for themselves. He was, however, interested in LML because he perceived it was a means towards differentiated instruction.

I next worked in a middle school for "incorrigible" kids. The most important piece of my LML journey there was meeting Mr. J, soon to become a principal. He reminded me of the extraordinarily student learning oriented Maltese educators with whom I had gone through certification. He proved to be “a Maltese teacher” in the sense of the perspective he held, deeply student oriented and primarily concerning himself with their learning. He was intrigued by LML and became a student of it. He began to use a LML lens to understand how various teachers taught. When he was appointed the first principal of the newly-developed STEM (science, technology, engineering, math) High School, he invited me to bring LML into that school from its origin. He wanted systemic application and gave me carte blanche to work with all teachers!

On the way to this opportunity, something happened to enhance my work in the new school. I gained an LML colleague! Now no longer alone, I had a mentor, Bob Kottkamp, who had been with LML since its origin. One of the first things Bob did was introduce me to a book he had co-authored with his last doctoral student, Bonnie Dawkins. The publication, ***Intentional Teaching: The Let Me Learn® Classroom in Action,*** describes Bonnie’s first full year of implementing Let Me Learn in her 6th grade classroom from two perspectives: How the kids changed and more importantly how Bonnie changed as she taught using LML. Through her LML journey she became the teacher she had always aspired to be. One intention of the book was to be a “companion” for teachers implementing LML to assure them they were “not crazy” as they moved through the critical Pain and Gain growth phase of personal development. Between Bob and Bonnie, I had two resources to go with me as I continued my own LML journey.

Facilitating Let Me Learn at STEM High School: Year One

The STEM High School opportunity opened a new world of LML facilitation to me. First, the principal is an energetic leader primarily focused on kids’ successful learning. He deeply understands LML’s potential and wants systemic implementation. He leads his learning with First Use Confluence, is innovative, and takes the risks to get important things done. He expects me to work with all teachers. Second, he is adamant that instruction in STEM be grounded in Problem Based Learning (PBL). Traditional instruction is almost exclusively driven by the Patterns of Sequence and Precision. PBL is largely inductive; it requires much emphasis on using the Technical Reasoning and Confluence Patterns. Third, I had Bob as a LML human resource. He said he would travel this journey with me and, when I needed, to call him. We would work through problems together. Nothing would be too difficult for us to handle. In fact, I have a very active phone life with him; we have journeyed together.

Addressing Time Scarcity: Differentiated Facilitation

Though the principal wants systemic application of LML, time for dedicated LML faculty meetings beyond several initial hours is scarce because of district mandated issues that take up most scheduled faculty meetings. So I developed ***differentiated LML facilitation***. I made appointments to meet each teacher for a prep period every two weeks. Soon I requested class observations and was welcomed by most. Later, many simply granted me access any time I wanted to come. Over three years, I have spent an average of more than 20 hours a week interacting with teachers and students. I interact with everyone during passing time, and students know me from classroom visits. I am a fixture in the school. Though I interact with the principal frequently, from the beginning I had an understanding with him that I would not report what I observe of teachers in classes. If I made such reports, I would no longer be effective or welcome. As it is, I have deep trust from teachers and the principal. On the other hand, if I see a kid doing something negative that might result in him or her being kicked out of the school, I intervene immediately.

Information Please

At the end of March, Mr. J sent me a request for information about LML and its implementation. He asked a number of questions among which were the following: What is the bottom line? What are some concrete outcomes? How is LML linked to becoming a better teacher? What can teachers do at this point? How are they incorporating LML into lesson plans? What next? What is relevant? Are there Technical Reasoning oriented assignments? Sequence oriented assignments? I responded in writing and conferenced with him about his questions.

Attending to Students

Because students learn to use LML through their teachers, I mostly attended to teachers. However, direct focus on students is important. Though I am not a teacher, I am an ever-present adult, and kids interact with me in hallways and classrooms in the normal course of their schedules. Their knowledge and facility in using LML is the product of the particular teachers in their schedules. For some it was an intense emersion into LML because their teachers use it actively. For others, it is sketchier because some teachers did and some did not evidence it in classes. Over their careers through the entire teacher matrix, I expect most of them will come to use LML actively with good outcomes.

Facilitation and Interpersonal Relations

I experienced a very memorable event during a facilitation session my first year. The Chinese language teacher is a Chinese national on a special visa specifically to teach in the U.S. He works very hard and comes from a culture that approaches teaching and schooling very differently from us. During an appointment, we had an hour long LML conversation about his four Pattern combination (S 29, P 26, TR 24, C 22) and my four Pattern combination (S 20, P 32, TR17, C 32), how he processes, how I process, how we are likely to deliver to students, and what students are likely to give us difficulty. He engaged deeply. I was recording this conversation by drawing a diagram on his white board. It surprised me that for six weeks he would not let anyone erase the diagram. That discussion had a profound effect on him. He came in every day and saw that illustration of our LML discussion.

Self-Assessment: Garnering Teacher Assistance

Mid-summer following the first year, Mr. J sent me another request for LML information in preparation for the second year. His question: "The Why? What? and How? of LML" Not fully trusting myself to answer the question alone, I contacted the STEM Biology teacher, who was the most advanced of all in understanding and using LML herself and with students. I asked if she would be willing to respond to the questions separately and then meet with me to discuss our two responses. She graciously accepted my request and produced a magnificent response. Only several of her sentences are needed to reveal her keen insight: Why? "To help build relationships...to connect learning goals, targets, lessons, tasks, assignments, and assessments to LML Patterns of learners." How? "Have class discussion about how the lesson, learning task, goal, assignment, or assessment addresses the LML Patterns—in essence, what is the **learning task's** LML profile." While the credit belongs completely to her, her ability to respond so incisively gave me confidence that I was facilitating LML more effectively than ever before. With her knowledge, I used her responses with a few additions as the report to Mr. J.

Year Two: 2013-2014

New Students and Teachers

The STEM High School is a new school designed to add one grade level a year over four years. In its first year, all students were Freshmen. In year two, new Freshmen arrived and old Freshmen became Sophomores. Thus, in its fourth year STEM will be a 9-12 school, and the original students will graduate. New teachers are added each developmental year. In the second year, the "old" teachers were already experienced with LML and prepared to initiate the new students into it. But the new teachers needed to be introduced to LML and at the same time they were teaching students who already had a year of LML experience. In the second year I continued to use differentiated facilitation. I provided each new teacher with an initial two hours of private introduction to LML basics. After that, I started differential facilitation with the new teachers while maintaining it with the experienced teachers. All teachers then met with me at least every two weeks during planning periods. In fact, I spent more than the minimum two visits a month with most teachers.

Visible Teacher Change

By the fall of the second year I saw indicators of teacher change in the way they interacted with students. The most notable case was the Chinese teacher for whom I had documented our conversation on his board, which he would not allow to be erased. His cultural background, combined with his Use First Sequence and Precision, lead him to be a "traditional" and strict teacher; he dominated with high-level information giving and demanded full student attention and respect. What I witnessed in the second year was his greater acceptance and encouragement of student initiation. Students asked more questions and at times would engage in on task public interactions among themselves. He did not squelch this activity; rather he accepted it and at times encouraged it. I took this notable change as a degree of his internalisation of LML's position of the learner taking self-responsibility for learning.

Seeing Connections

In January, 2014, the biology teacher came to me after studying an Ohio Teacher Evaluation System (OTES) document. She announced finding what she saw as an almost perfect fit between LML and the fourth OTES category, Instruction:

a. Use of student information to plan and deliver instruction.
b. Application of knowledge of how students learn to instructional design and delivery.
c. Differentiation of instruction to support learning needs of all students.
d. Use of activities to promote independence and problem solving.
e. Use of varied resources to support learner needs.

She had discovered that knowledge about students as learners generated by LML was exactly what was necessary to actualise this state mandated evaluation system for its intended purpose as opposed to confronting it with cynicism and attempting to "game" it. Their discovery demonstrated deep understanding of LML as an advanced learning system. They saw clearly that LML was not a "flavor of the year" hot topic thrust upon them. Rather, it is a learning system to improve the core goal of education. I took their announcement of the coherence of the two systems as evidence that I was improving my sowing of LML seeds.

Year Three: 2014-2015

Whole Faculty LML Facilitation: Where Are We at This Point?

During fall 2014, Bob asked whether I was planning any whole faculty LML workshops. He suggested that I pursue group work in addition to individual coaching. One element missing when everything is individualised is sharing problems and successes. Workshops also broach the isolation of individual classroom fiefdoms so central in teacher culture. They provide space for those feeling more success to inspire those struggling more. I secured time from the principal, and we formulated questions for teachers to answer beforehand and share at the meeting.

At the meeting, I asked for volunteer presenters. By the end, all had spoken. Below are the seven questions in bold followed by a distillation of responses in telegraphic format. My responses are italicised.

How has LML been most useful and productive in your teaching?

Knowing students learn differently so adjusting planning and teaching to address different learner needs (differentiating instruction) -- Connecting with students -- Insight into my strengths and weaknesses -- Supporting open, connected conversations with learners about learning —Reaching students who learn differently from me — Understanding myself — *Understanding behaviour otherwise foreign to me.*

What in LML has been most important in understanding yourself?

Understanding my information processing; I am different not deficient — Formalising my strengths and weaknesses — Knowing I am a 4 Pattern learner though I use some more, some less -- Conscious awareness of need to forge, intensify or tether by task — Having a language for how I communicate — *Seeing self from inside vs. outside, limiting effect of external labels.*

What have students done to help you better understand LML?

Demonstrate different learning strategies — Telling me they need my help to apply LML knowledge to their own learning — Their self-descriptions help me understand the 4 Patterns and modify instruction—I see their Patterns in their work—They frequently ask for projects to build things — O*ne student taught me understanding of power of feeling over thinking.*

What in LML applies in any classroom across any academic discipline?

Ability to connect better with students—Learning Patterns go beyond discipline—Supporting learners taking control of their own learning—Their needs for structure differs; balancing structure with figuring out themselves—Tying academic learning targets to LML cue words and language to help them identify and engage in appropriate learning strategies—Teaching to students strengths—Teaching strategies for each pattern—Increasing classroom differentiation—Each learner has a unique Pattern set—Forging, Intensifying and Tethering—*The array of patterns in a classroom has no regard for a particular discipline or how a teacher teaches.*

Have you found use for LML out of school with spouse, family, and relationships?

Understanding a spouse's, or fiancé's communication and viewpoint—LML gives another picture of personalities of those I interact with—*extreme value in understanding wife, children and grandchildren.*

What makes you a unique learner?

I am a Strong Willed Learner (SWL), always different, now know it's okay — My Technical Reasoning and Confluence exhibit themselves in extreme visual orientation; have to see how things work to understand them — I am open to all ways of learning (SWL) — I am very adaptable (Bridge) — My Technical Reasoning and Confluence lead combination — *I am an original, not a copy.*

What do you want from LML now to support you and your teaching?

More tools — Help using LML to differentiate daily instruction and assessment — More examples of using each Pattern in classes — Supporting learners to apply LML to all learning situations — Examples of supporting learners leading with TR — Showing importance of LML beyond classrooms -- How does LML work when only a minority in a building use it? — *Finding classroom solutions for teachers and students as learners beyond specific content.*

Meeting together was a good and needed strategy, though difficult to provide given the preciousness of time amid the extreme pressure of increasing external mandates. All engaged openly and enthusiastically. They experienced mutual sharing of experience and concerns. There was palpable synergy. It was evident who were the most advanced and confident implementers -- the go-to people — and at the same time that they were all in the same boat. They had the opportunity to see me in a different light as I shared with them.

The individualised or differentiated facilitation model I pursue at STEM allows me to provide "just in time" responsive support for teachers in the privacy of their own classrooms. I have learned the deep value of this opportunity to live as a trusted companion in the individual worlds of teachers. Elsewhere LML facilitation is provided to teachers in group situations without the intimate opportunity for coaching I enjoy. What I learned from STEM experience is that a mix and balance of individualised and group facilitation is the most efficacious means of empowering teachers through LML. Both approaches have merits; they are best used together.

Change at an Increasing Rate

I don't know if it is a causal relationship, but following the full faculty meeting of sharing responses to seven focused questions, the pace and variety of teacher change picked up notably. Change occurred with individual teachers working in their isolated classrooms. Change also came from groups sharing their ideas, planning and developing applications to move student use of LML tools and processes forward. Examples follow.

LML Implementation Work of the 9th Grade Professional Learning Community

One STEM organisational unit is the Professional Learning Community (PLC). PLCs consist of core subject teachers at one grade level. The 9th grade subjects are English, Maths., Social Studies and Biology. The 9th PLC teachers are the leading LML implementers at STEM. I often introduce new material to them first. For example, ***Intentional Teaching*** contains the chapter "Learning to Navigate the Challenges of Group Work". I thought it might interest the PLC in integrating LML into student and teacher group work. The chapter describes real group work incidents in Bonnie Dawkins' classroom. However, the chapter seemed too long for busy teachers, so I condensed it. The PLC teachers were enthused by the information. They saw the LML group approach as supportive of processes already used in Problem Based Learning projects.

The first product of the 9th PLC was the "Collaboration Signature Sheet," elsewhere called a "Group Covenant". The PLC version is an agreement each student signs pledging her or him to: contribute ideas to the team; remain with the group; discuss problems with other members and the teacher; develop solutions as a group; and clarify the task with teacher input if questions arise. Students list their LCI scores and based on their LCI Pattern combination state specific content and process contributions they intend to make to the groups' work. Then they sign the document that binds them together for the duration of the problem pursuit. This document is used in all four 9th PLC teachers' classes. In addition, several teachers outside the 9th PLC saw the Collaboration Sheets and now use them in their classes. Willingness of these teachers to share their creations is gratifying and a chief means of deepening LML implementation beyond their own group. These four teachers are also committed to using the LML infused group process orientation in their own work together. I have observed PLC meetings and provided written feedback to them; this practice increases their reflectivity about their work group.

Student Groups and Problem Based Learning with GoJo Industries Executives

For the real time roll-out of applying LML to Problem Based Learning groups, the 9th PLC chose the occasion of a visit from executives of GoJo Industries, a large manufacturer of hand cleaning products. STEM has relationships with corporations and works with them by having students do real research on their products. The problem GoJo given STEM was the relationship of hand hygiene to world disease outbreaks. Teachers introduced their students to the LML tools and group approach described above. GoJo had provided the students with data they had collected, and scheduled a visit to hear student reports of findings and conclusions.

The social studies teacher reported:

> *"Overall, the learners completed the task pretty well. The most successful teams understood what each member brought to the table. I really like the idea of having learners work in teams that are diverse in terms of their LML Patterns.*

The maths. teacher reported:

> *"My first year class had trouble working collaboratively on the GoJo project and didn't buy much into the value of the LML scores and what they mean for learning. My second year students had a much fuller understanding of who they are as learners and did a much better job collaborating on the PBL. Their presentation was excellent and went beyond expectations.*

This was the first full attempt to integrate LML personal knowledge and tools into group processes. It appears to have promise. Continued practice is expected to improve performance.

Incorporating LML into Assessment

The 9th grade social studies developed a PBL group project of comparing Armenian Genocide during WW I with the Nazi Holocaust of WW II. She used LML Patterns to suggest useful tasks associated with each Pattern. More notable, she allocated a small percentage of the group grade to their completion of Collaboration Signature Sheets and their effective use of same in their work as a group. This teacher is consistently integrating her growing knowledge of LML into class projects and her classroom routines.

How I Have Changed

External Perspective: What Teachers See

Wanting to know whether STEM teachers had seen changes in me, I recently asked four of them: What change do you see in me from year one to year three? This is what they said.

Before:

- You brought the same information to all teachers.
- You provided a host of information.
- Lots of stuff to process, sometimes more than we could deal with.

Today:

- You are differentiating your delivery.
- You are meeting us where we are and helping us to get to where we want to go using Let Me Learn.
- You are more dynamic, flexible, involved and showing your Confluence more.
- You are giving us relevant chunks and more strategies.
- You are offering suggestions for students.
- You are making LML a constant resource.

Internal Perspective: What I Experience

My article begins with a bold claim: “Personal engagement with LML has been a life changing journey for me.” Throughout this relating of my journey, ***I have sought to lay open the kind of road a facilitator has to travel to reach success in transforming a school, individuals, and ultimately oneself.*** Here I return to the last three phases of personal development in the Let Me Learn Process: 4. Pain and Growth, 5. Insights and Understandings, 6. Deeply Embedded.

My Certification experience of 2004 was total emersion in Pain and Growth, but it was not a once and never again phase. I returned to that phase two years ago as I finally got honest with my Avoid in Technical Reasoning (TR) and took courage to know it face to face.

I have grown to have a number of Insights and Understandings. I have become increasingly aware of my ability to overwhelm others with my Precision (P), especially inundating them with handouts. The new awareness concerning both my P and TR is leading to increasing intentional monitoring of all my Pattern use.

I am gaining awareness of increasingly viewing, understanding, and acting towards others in the world of school through the lens of LML, which is to say that I am moving into the final phase of Deeply Embedded. I decide to give or not give a teacher more information or to recommend this or that strategy on the basis of her learning Pattern combination. In sum, I am growing and changing as I use LML. I am developing better tilling techniques, and the soil is becoming more fertile. The crop improves each year.

• INTRODUCTION •

Let Me Learn and Speaking the Language of Learning

Colin Calleja

One of the editors of this volume was sharing the vision of Compass Academy Charter School (our LML lab school) with a colleague one morning and ruminating about how the vision for the school gets to the heart of what sets Let Me Learn apart from other learning theories. Here is the school's vision: "At Compass Academy Charter School we speak the language of learning."

Think about that "we speak the language of learning" — not the language of judgment or disdain or hyperbole. No "slow learner," no "dim bulb," no "dull", or "really bright" or "so smart" or "gifted." We speak the language of learning — delving far beyond issues of schooling and the business of testing.

We speak the language of learning — a language that allows individuals to explain their thoughts, actions and feelings as they work to make sense of the world around them and respond appropriately; a language that conveys in real time what is going on in the mind of the learner; a language that allows others the opportunity to see, hear and capture the growth and change the LML approach makes in learning outcomes; and the change the use of the Process makes within a learner overtime.

And in doing so, we grow in our respect for others whose differences we recognise and value. We grow in our understanding of subject matter, and we grow in our ability to demonstrate appropriate responses to the world around us. We grow as learners within our family, our school, our preparation for entering the world of work, and we grow in our ability to be contributing citizens within our community, nation and the world.

This book presents a compendium of research papers that report the effect of the Let Me Learn Process when applied within different learning contexts. The different contributors to this compendium address the same basic questions: *How do I learn? How do others learn? How can such knowledge of how learners learn inform my practice?* Over the past 20 years, the data generated by gathering responses to these basic questions has helped us refine our understanding of the learning process and has helped learners make learning work for them.

Every successful learning initiative requires key people to allocate hours of dedicated time to make it a success. Let Me Learn® has for the past twenty years been blessed with individuals who have dedicated their time to research and apply the LML Process within different areas of practice. Through such experiences, the Process has developed into a powerful transformative process for educators and learners alike. This compendium is evidence of some of the many contributions from individuals who have made Let Me Learn what it is today.

The compendium starts with the powerful experience of Joseph Coleman, a person who has dedicated his life to work with kids in his home city of Akron, Ohio, formerly considered the manufacturing capital of rubber car and truck tires. Joseph has been doggedly and faithfully pursuing LML work in this context for 15 years. In his essay, he explains how he has used the LML Process to bring teachers and students to an understanding of themselves as learners. Most importantly, he tells forthrightly how he has struggled to cope with his own learning issues. Joseph's struggle is most probably the struggle of each one of us, a struggle of passage from *knowing about LML* to *doing and living LML.*

This volume is divided into four parts. The first chapters present the theoretical framework on which the Process is built. Chapter one starts by presenting the Process as a model for intentional learning. Prof Christine Johnston, the originator and lead researcher of the Process, presents the Brain-Mind Connection/Interactive Learning Model as the foundation of the Advanced Learning System which underpins all the research presented in this volume. The succeeding two contributions within this part of the book present the research that has made this Advanced Learning System a cut above other proposals that try to define learning and the learner. The second chapter by one of the editors of this volume traces critical reviews of published learning styles models and juxtapose them with research conducted on the LML process to test the robustness of the theory that supports it. Dr Patricia Maher invites practitioners in higher education to cultivate a culture of autonomous learning and intentionality. She presents the Process as a tool that offers tutors and learners a framework to use their metacognition more effectively to address each task with intention.

Part II to IV delve into the application of the Process in the different fields of practice. Part II features eight chapters dealing with Professional Development, reflective practice and leadership. Christine Johnston and John Johnston present a seminal paper in which they report the measurable outcomes of an implementation of 16-week intensive staff development training for teachers. Through a recursive laboratory experience, teachers applied their newly gained insights concerning the Let Me Learn Process to developing and implementing a plan of action involving effective teaching and learning strategies appropriate to the students they had chosen to focus on. The study illuminates the potentially powerful system-wide impact of professionals engaged in understanding themselves as learners while developing insights into their students as learners.

The next Chapter by Colin Calleja reinforces the previous chapter findings showing how participants experienced personal and professional transformation through their participation in the LML professional learning process. Through a case-study approach, the researcher examines how different educators relate to the context of their practice while undergoing the LML professional learning experience. Through this approach the author examines how educators from a confessional school in Malta have undergone a transformative learning experience, both as individuals and as a school community.

Michelle Attard Tonna and Colin Calleja present the Let Me Learn Professional Learning Process in light of the generation of social capital, as viewed in terms of social capacity building. This paper shows how the Let Me Learn Process has marked a proactive stance in teacher professional development and transformation through its emphasis on teacher networks, partnerships and externalisation of teachers' knowledge base. It also demonstrates how through this process social capital was fostered through teacher collaboration and learning-together experience.

In chapter 7 Michelle Attard Tonna continues to explore the scene of teachers' continuing professional development and studies whether, considering the variety of training opportunities and the changes taking place in this important area of INSET courses in Malta, is sufficiently supporting and addressing the change agenda they are experiencing within their schools and classrooms. In this chapter, the author investigates how the professional development offered by LML is helping in the development of professional communities, a key ingredient in addressing these needs.

Robert Kottkamp presents the LML process as a tool for reflective practice both for the teacher and the students. LML provides a language for communicating internalised and externalised learning actions among learners. This chapter presents the idea of children becoming reflective practitioners of their own learning – a vision of the child as an intrinsically motivated, truly empowered, joyful, and effective learner. The LML process also offers teachers the opportunity to derive deep satisfaction from teaching as it helps them realise the goal that initially drew them to the profession, the desire to support children to discover for themselves the keys to unlock their capacity and will to learn.

Ruth Silverberg describes the application and outcomes of using a shared framework and vocabulary for understanding learning. Through the participation of a group of students in an urban leadership preparation programme, they could create a relational space for making constructivist learning possible. The study presents the experience of this group of students who, through their shared experience of learning about themselves as learners, they could understand how to make new, constructivist meaning of learning, schooling, and leadership.

Patricia Marcellino authors the final two chapters in this portion of the compendium. In chapter 10, *Revisiting and Redesigning a Faculty – Developed Team Instructional Model,* she writes about the importance of injecting the field of educational leadership with research that explores the complexities of human agency. This chapter focuses on team-building and how educational leadership students interact in diverse learning teams. Marcellino constructed her teams utilising the scores from the Learning Connections Inventory and Johnston's theoretical learning model. Teams were, thus, composed of students with different degrees of use of patterns, representing each of the four Learning Patterns. This helped both the instructor/researcher and the students engage in reflective practice and develop a learning contract where students could take roles respecting their combination of Patterns.

In her second contribution (chapter 11), Marcellino once again uses the Patterns' combination to construct teams that sought to answer two key research questions, namely, "How do educational leadership students apply metaphors to describe the evolving team experience?" and "Can the use of metaphors become a diagnostic tool to access team viability in regard to team strengths and weaknesses?" This paper continues to strengthen the researcher's resolve that, when teams are constructed well, they can give learners the possibility to learn from each other. This study also gave the instructor/researcher a better understanding of metaphors and their use as a diagnostic tool. This allowed the instructor to perform different interventions to facilitate the process within the team. This helped broaden team understanding and could as well contribute to the development of the area of team study. Marcellino suggests that the use of metaphors may be applied as an instructional technique and a diagnostic tool for team tension or problems which could allow leadership instructors gain access to teams and apply supportive coaching to improved professional relationship-building and learning.

The third part of the volume deals with the application of the Let Me Learn Process within the area of Higher Education and academic advising. In this section we find six presentations. In the first chapter of this section (chapter 12), Christine Johnston and Betsy McCalla-Wriggins present some practical suggestions of how advisors can incorporate the LML Process with first-year college students. This chapter presents a step-by-step process of how an academic advisor can understand

and respond to each first-year student while negotiating their personalised learning pathway. Such advising helps the students understand the demands and act with intention to formulate reasonable and appropriate responses. Through understanding their Learning Processes, students can be helped to find a career path that complement their Learning Processes.

Patricia Marcellino revisits the team-building model proposed in an earlier contribution in this compendium. Through this model which advises the setting up of teams according to Learning Pattern constructs, first year University students felt that such team organisation helped them expedite a team focus; take time to interact as a team to develop team skills and learning about the team's strengths and weaknesses; helped them learn about team-building to produce a collective product; helped the instructor and the team members resolve problematic situations and form team contracts that helped students formulate team rules, goals and focus on performance outcomes.

James Newell et al. explore the role of Let Me Learn as a metacognitive process with teams of students from engineering. The focus of this research was on how first year engineering students are supported in their transition through helping them engage more effectively in understanding the learning process. By so doing, learners understand and become more capable in managing their studies. This study shows how engineering students with a predominant technical reasoning pattern leading their learning tend to proscribe their use of writing. Through awareness of this, the study shows that they are more likely to consciously decide to use writing more than they naturally would.

Kathleen Pearle reports on a pilot programme at a large community college which effectively used the Let Me Learn Process as a tool for metacognition, reflective practice, and intentional learning. This experience yielded dramatic increase in the rate of student retention and transformational learning for both tutors and students alike. Jacqueline Vanhear presents a combination of learning tools which together yielded increased student achievement and more productive transformative learning. This study integrated the use of Vee Heuristics, Concept Mapping together with Let Me Learn to help students go through a metacognitive learning process which eventually lead to meaningful learning. Using the productions of the students, this study traced the effect of a learner's mental operations on the learner's use of Vee Heuristics and Concept Mapping as the learner embeds and retrieves new and scaffolded knowledge.

Antoinette Camilleri Grima takes the Process to the area of learner's autonomy in modern language learning. The chapter narrates the experiences of a group of B.Ed. (Hon.) students who were guided on how to use their identified Learning Processes as they completed a particular Unit of Study. Through helping students identify their own needs and finding their own learning paths, students felt that their self-esteem was boosted; they came to a better understanding of themselves and others within their group; and as a result felt better able to offer help, and better prepared to face a classroom of different individuals and finally felt better able to take necessary decisions relating to their career.

Part IV of this volume deals with studies on pedagogy of difference and student achievement. This final section starts with a quantitative research study by Jaime Thone comparing Learning Patterns across two groups of students, namely, students in general education and students in special education. It also specifically focuses on two categories of students in special education – students classified under the disability category of Other Health Impairment (OHI) and students classified for special education under disability category of Specific Learning Disability (SLD). This study showed that, while there was no significant difference between the general education and special education population for all Patterns measured, some common Patterns among Special education students were identified which could assist in creating a purposeful learning environment for those students as well as their general education counterparts.

In the next chapter, Ruth Falzon and Colin Calleja reports on another study which analyses the activities used in a structured multisensory reading programme in light of the mix of Patterns utilised. The programme was found to be inclusive and embracing the whole class. Lois Addy from York University in England reports on a small scale study that sought to look at the impetus to learn from the child with Developmental Coordination Disorder perspective. The use of the Learning Connections Inventory has provoked an interesting debate amongst educationalists and health care professionals regarding the dilemmas faced by children with Developmental Co-ordination Disorder when compared with those of their peers.

Robert Kottkamp and Ruth Silverberg study teachers' assumptions and reconceptualisation of students considered problematic. After arguing that the student a teacher labels as problematic is at risk, the authors explore what might be done to shift teacher assumptions and reduce placing students at risk.

Colin Calleja presents the pedagogy used to inform intercultural communication competencies and skills programme. In this chapter, the author presents an Intercultural Communication training methodology informed by the Let Me Learn Process.

Robert Grandin and Cathy Burke present a study of primary students which demonstrated how the metacognitive understanding of their learning grew, leading to more positive approach to schooling and a wider range of achievements. The authors suggest that the change in pedagogy influenced by the Let Me Learn Process was the treatment that made the difference. Jacqueline Vanhear replicates the study, presented in an earlier chapter in this volume, this time with Primary children. Once again, this researcher captures the powerful effect which this combination of learning tools and Learning Processes yielded on student achievement. This study shows teachers can capture the mind operations of primary school children, mentor and coach the growth and development of the learner, rather than shape the learner through one-size fits all learning environments.

The final chapter reviews the Let Me Learn Process and shows how, when teachers and students work together to identify Learning Patterns and access them appropriately, students learn to assume responsibility for increased learning and performance. Furthermore, because students know how to access Patterns and create strategies for different kinds of assessment situations, they perform better on various measures of achievement.

This volume is just a peek into a plethora of publications, dissertations, articles, and referred presentations produced over the past 20 years. While we are hopeful that through this compendium we captured some of the most relevant applied research in the field, we are sure that we have left out some very valuable contributions which we hope to have the opportunity to celebrate in future publications.

June 2015

Contents

PART I
A Theoretical Perspective

• CHAPTER 1 •

Let Me Learn, an Advanced Learning Theory for the 21st Century

Christine Johnston

Learning is crucial to our existence. This perspective is not original or limited to the present-day. Centuries ago ancient literature characterised learning as the wellspring of our existence. However, as the ancient literature explains, in order for learning to be maximised it needs to be used with intention. The learner needs to know and understand that learning encompasses the ability to think and reason, the motivation to engage and act, and the courage to acknowledge feelings and empathise. Any explanation of learning that seeks acceptance as authentic, needs to acknowledge and reverence these points. Few explanations of learning meet this standard. One explanation which does is the Let Me Learn Process.

The inception of the Let Me Learn Process began over15 years ago when a group of academic researchers and educational practitioners sought to understand the source and potential of intentional learning. Their exploration and experimentation resulted in a science-based, learner-friendly explanation of learning including the brain-mind connection, the mental processes it requires, and the potential it holds for individuals to use it with intention.

During the development of the Let Me Learn Process, important insights into intentional learning yielded the development of a unique set of learning tools, and an array of practical skills, and a set of terms to equip learners of all ages to communicate to others about their individual learning processes. With the addition of these tools, skills, and a lexicon of learning terms, the designation of the Let Me Learn Process expanded to include the phrase, "an advanced learning system." This chapter explains what makes LML an advanced system and what makes it a powerful process by which to develop intentional learners.

The Theoretical Basis for the Let Me Learn Process

How Our Brain and Mind Take in the World around Us

The Let Me Learn Process defines learning as "taking in the world around you and making sense of it" (Johnston, 2010). While this is not a school-based definition of learning, it is comprehensive and at the same time parsimonious. This definition fits well the rationale for why learning is vital to living. In order to survive and thrive, individuals need to be able to comprehend the world around them, interpret its effects upon them and determine how best to respond.

LML's explanation of the brain-mind connection, the first step in understanding how learning occurs is equally learner-friendly while appearing to be deceptively uncomplicated. Simply stated, the process of learning begins as the brain takes in stimuli through the five senses. Stimuli enter the brain in the form of sight, sound, taste, touch and smell. Our sensory portals regulate the stimuli entering the brain. Once inside the brain, the stimuli are processed by neuro- receptors and electrochemicals using all sectors of the brain. However, the stimuli require translation, something to break the electrochemical and neuro-receptor codes. The interpreter-translator is found in the working memory of the mind. In order to reach the mind, the stimuli must pass through a brain-mind interface and enter the working memory where they are translated into symbolic representations (language, numbers, musical notes, scientific notation, and thousands of other symbols) to be stored and retrieved when needed (Bruer, 1994).

The Brain and Mind Connection

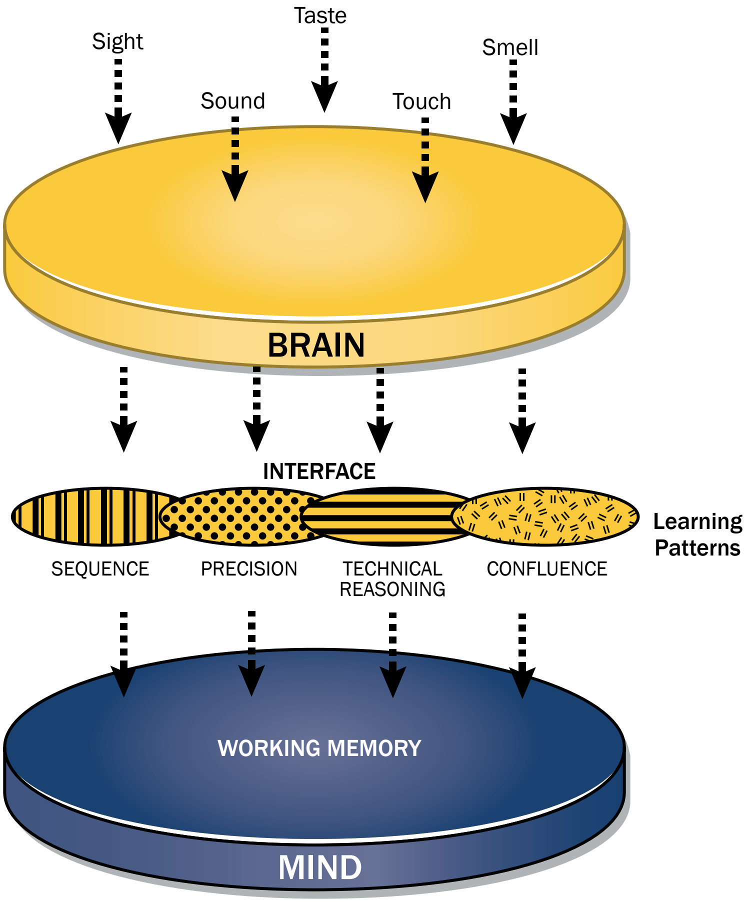
The depiction and the explanation in Figure 1.1 help explain the fascinating process of the brain-mind connection.

The Let Me Learn Process posits that the interface through which the stimuli pass consists of filters which sift the stimuli as they pass from the brain to the mind. The result of this sifting action yields functions hereafter referred to as Patterns of operation or Patterns. These Patterns are labelled Sequence, Precision, Technical Reasoning, and Confluence based upon a factor analysis of their discrete operations.

While these Patterns are universal across race, gender, and ethnicity, their make-up and use is very person-specific (Johnston & Dainton, 2006). Let Me Learn refers to this oxymoron

as our "universal, person-specific patterns". The point that this emphasises is that all learners use all four Pattern filters but to varying degrees. The degree to which we use each of these filters is measured by how each Pattern facilitates or limits the stimuli's entry into the mind. For example, a wide-open Pattern filter allows large

Figure 1.1 Representation of the Brain-Mind Connection



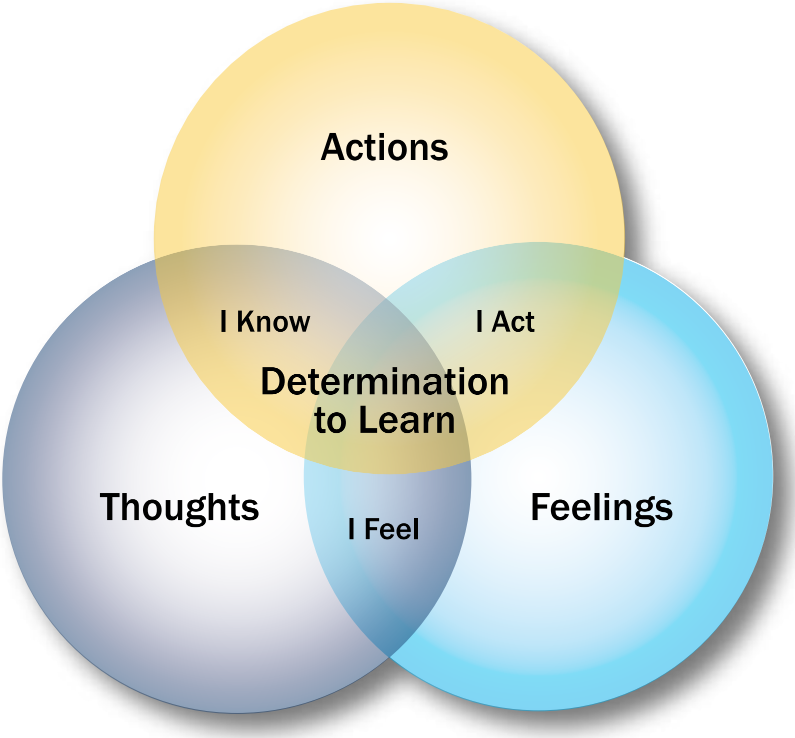
amounts of specific stimuli to pass into the mind's translation and storage mechanism. However, a tightly closed Pattern filter may reject stimuli, seeking to avoid having to cope with it.

Research indicates that most of us do not use all Patterns with equal comfort and naturalness (Johnston, 1994). We may use one or more of them to the maximum amount, one or more of them as needed - and we may do our best to avoid one or more of them. The LML Process refers to these levels of use as: Use First, Use As Needed, and Avoid. Whatever the degree to which these Patterns operate within each of us, the bottom line is the Patterns work as an internal team of processes when we engage in learning.

Yet another defining aspect of these Patterns is the internal working of each. Within each Pattern is found a set of mental processes: cognition, conation, and affectation. (This should sound familiar since this is the very essence of how learning is described in the opening paragraph of this chapter.) It is the interplay among your thoughts (cognition), actions (conation) and feelings (affectation) that create a sense of comfort and wellbeing or discomfort and frustration within each Pattern. Figure 1.2 illustrates the nature of the interaction occurring among your thoughts, actions, and feelings within each Pattern.

The purpose of the Let Me Learn Process is to help individuals learn how to use their combination of Patterns and the internal workings of each effectively in order to take in the world around them and respond in a timely, effective, and efficient manner.

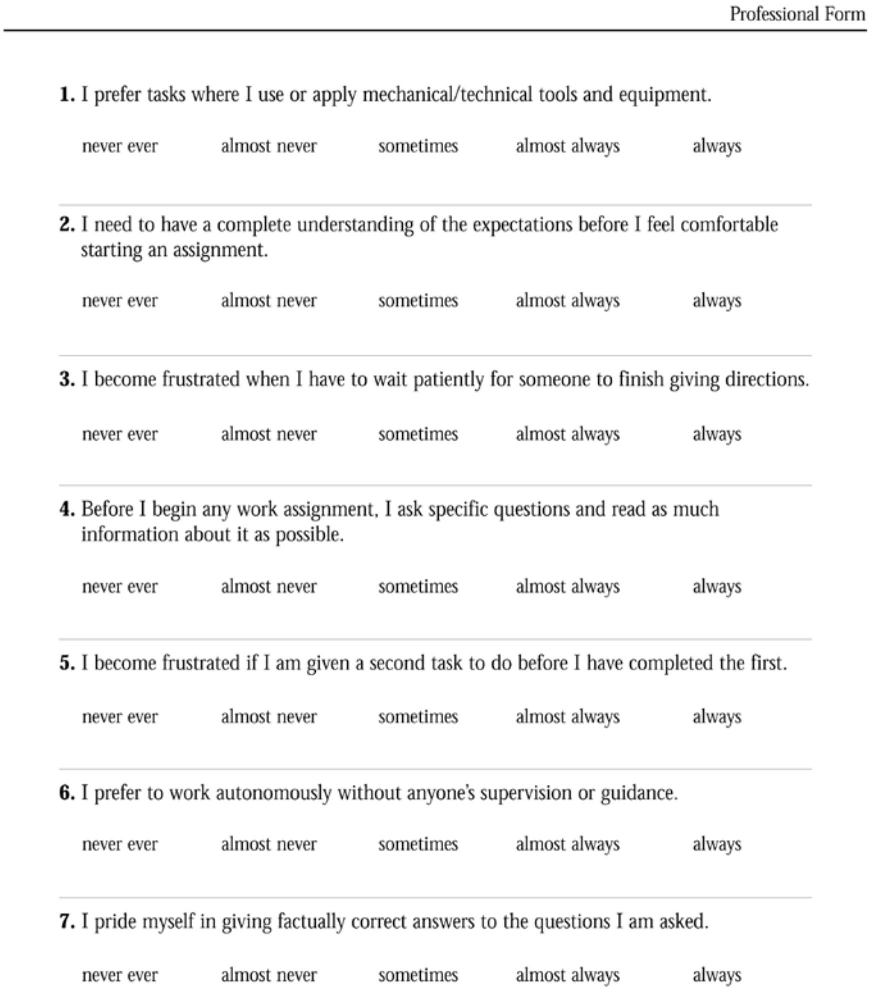
Figure 1.2 Mental Processes that Operate within each Learning Pattern



The First Tool: The Learning Connection Inventory

The instrument that launches the LML advanced learning system is the Learning Connections Inventory (LCI) (Johnston & Dainton, 1997). The LCI is a self-administered "interview" which captures the degree to which an individual uses each of the four Patterns. Learners respond on a five-point scale to each of the LCI's 28 self-report items as shown in Figure 1.3. Learners also complete three short-answer

Figure 1.3 Sample items from the LCI Professional Form



Professional Form

1. I prefer tasks where I use or apply mechanical/technical tools and equipment.

never ever almost never sometimes almost always always

2. I need to have a complete understanding of the expectations before I feel comfortable starting an assignment.

never ever almost never sometimes almost always always

3. I become frustrated when I have to wait patiently for someone to finish giving directions.

never ever almost never sometimes almost always always

4. Before I begin any work assignment, I ask specific questions and read as much information about it as possible.

never ever almost never sometimes almost always always

5. I become frustrated if I am given a second task to do before I have completed the first.

never ever almost never sometimes almost always always

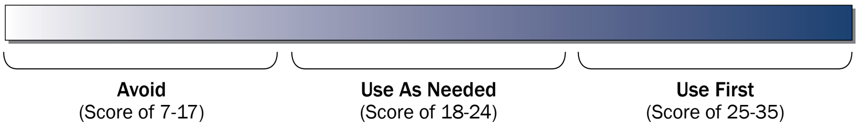
6. I prefer to work autonomously without anyone's supervision or guidance.

never ever almost never sometimes almost always always

7. I pride myself in giving factually correct answers to the questions I am asked.

never ever almost never sometimes almost always always

Figure 1.4 Pattern Score Ranges or Levels for Learning Connections Inventory Patterns



free responses to questions, such as, "What frustrates me most about completing an assignment is..." There are no "correct" answers on the LCI, only what a person records as valid for him/her.

Tallying an individual's responses to the LCI produces a score for each of the four Learning Patterns (Figure 1.4). The individual's score for each Pattern falls into one of three ranges or levels: a score of 7 to 17 indicates Avoid; a score of 18 to 24 indicates Use As Needed; and a score of 25 to 35 indicates Use First (Johnston & Dainton, 1997).

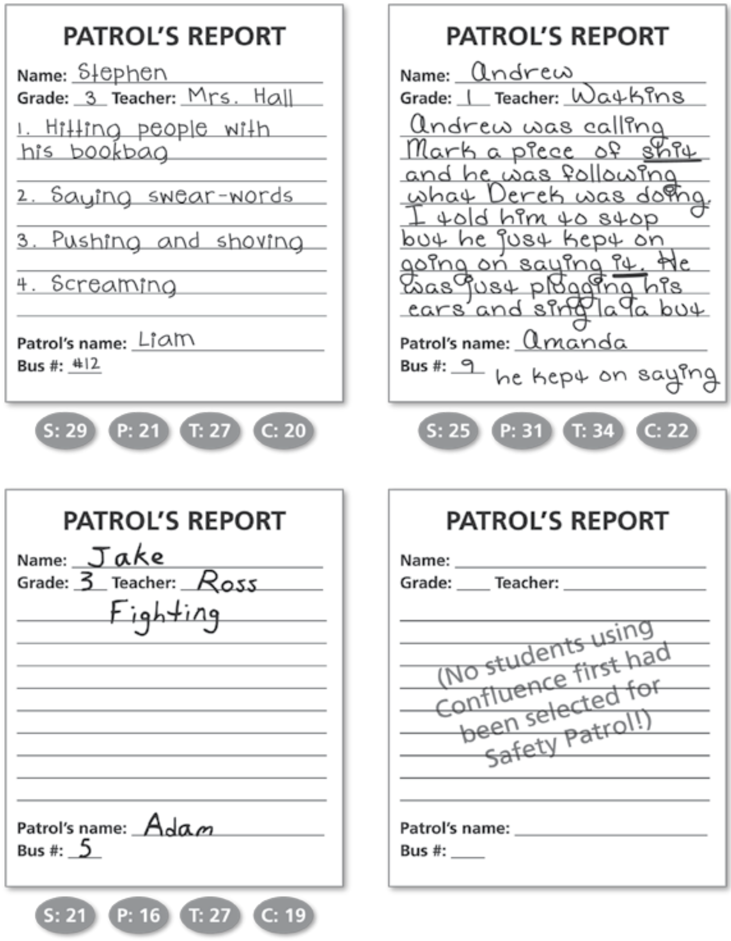
Responses to the short-answer questions are examined with a set of protocols that indicate the use of specific Learning Patterns. These responses are internal validity checks showing whether the individual's self-generated responses do or do not support the forced-choice answers. Additional data are used to validate LCI scores. These data include face-to-face discussions of scores, observations of learner behaviours, and examination of work products from varied learning tasks.

Student work product provides clear examples of student Pattern combinations. The following (Figure 1.5) are exemplars of actual student work products collected by a vice- principal who observed the different Learning Patterns among members of her fifth grade safety patrol. As you read the detailed description of each Learning Pattern, which appears later in this chapter, you may want to return to these visual representations of students' Pattern combinations and note the specific Pattern characteristics found in each.

Validity of the Learning Connections Inventory

Over the period 1994 to 2006, Christine Johnston, along with teachers and administrators at 19 national and international sites, including faculty at the University of Malta, Queens University Belfast, St. Johns York University, UK; University of Tarragona, Spain, Hofstra and Adelphi Universities, NY, and the University of South Florida, have tested the validity and reliability of the LCI. Gathering results from

Figure 1.5 Safety Patrol Reports indicating Pattern Differences



PATROL'S REPORT

Name: Stephen
Grade: 3 Teacher: Mrs. Hall
1. Hitting people with his bookbag
2. Saying swear-words
3. Pushing and shoving
4. Screaming
Patrol's name: Liam
Bus #: #12

S: 29
P: 21
T: 27
C: 20

PATROL'S REPORT

Name: Andrew
Grade: 1 Teacher: Watkins
Andrew was calling Mark a piece of shit and he was following what Derek was doing. I told him to stop but he just kept on going on saying it. He was just plugging his ears and sing la la but
Patrol's name: Amanda
Bus #: 9 he kept on saying

PATROL'S REPORT

Name: Jake
Grade: 3 Teacher: Ross
Fighting
Patrol's name: Adam
Bus #: 5

PATROL'S REPORT

Name:
Grade: Teacher:
(No students using Confluence first had been selected for Safety Patrol!)
Patrol's name:
Bus #:

over 15,000 6 - 18 year-old students (including regular education, special education, dispraxic/ neurologically impaired students, and Westinghouse National Science scholars) and 7,000 adult professionals, researchers from these institutions have directed a research agenda which has established the validity and reliability of the Learning Connections Inventory (the instrument used to launch the LML Process) and the LML Process in K-16 faculty and staff development and corporate human resource training (Borg & Calleja, 2006; Buchanan, 2005; Calleja, 1998; Campbell, 2005; Johnston, 2005, 2006; Kottkamp & Silverberg, 2006; Marcellino, 2001; McSweeney, 2005; Osterman & Kottkamp, 2004; Silverberg, 2002). The *Learning*

Combinations Inventory Manual (Johnston & Dainton, 1997, 2005) contains the original studies of validity and reliability (Addy, 1996; Borg, 1996; Hayes, 1996; C. Johnston, 1996; J. Johnston, 1996; Mifsud, 1996).

Understanding How Our Patterns Affect Our Learning

The first and most important LML skill involves understanding the depth and intricacies of each Pattern. Having developed this skill, you are able to understand fully the nature of the team of Patterns within you and, therefore, will be able to answer the over-arching question: "How can I get my individualised team of Patterns to work well with each other so that I can take in the world around me and make sense of it?" What follow are descriptions of each Pattern as well as the specifics of the nature of thought, action, and feeling that typifies it.

Figure 1.6

SEQUENCE

	Use First	Avoid
What I think	I think in **goals, objectives, steps** I think with **clarity,** not clutter. I think in phases – **start up, progress, completion**	These directions are **too wordy and too lengthy!** **I did this before,** why repeat it? **Why must I wait** for directions?
How I act	I break tasks into **steps.** I organize my life by keeping tight **schedules.** I strive to do a **task methodically** from beginning to end.	I **read as little of the directions** as possible. I **don't practice and rehearse.** I **fail to do all the parts of a task** leaving some incomplete.
What I feel	I feel **secure** when I have the **steps laid out.** I **thrive** on a **well-ordered life.** I feel a great sense of **satisfaction when I finish** a task A-Z.	I feel **confused by** the wording and order of most **directions.** I feel **frustrated and bored** when I am forced to **repeat** a task. I **don't feel bound by the requirements** of the task.
My internal "chatter"	What's the **goal?** What's the **first step?** There is a **place for everything** and everything in its place. Nothing feels better than **crossing off something on my to-do list.**	**Who wrote** these directions anyway? What a **waste of my time.** **Who cares how I do this** as long as I get it done?

Sequence (see Figure 1.6)

If your scale score for Sequence is between 25 and 35, you use Sequence at a Use First level. That indicates you want:

- Clear directions.
- Step-by-step directions.
- Time to do work neatly.

However, if your scale score for Sequence is 7 to 17, you avoid Sequence. That indicates you do not:

- Value directions.
- Plan or live by a schedule.
- Double-check your work.
- Follow directions easily.

Figure 1.7

PRECISION

	Use First	Avoid
What I think	I think in **information.** I think **knowing facts** means I am smart. I think **knowledge is power.**	How am I **supposed to remember** all this stuff? **Do I have to read all** of this? What am I **expected to write down and keep track of?**
How I act	I **write** things down and **document** everything. I leave no piece **of information** unspoken. I **research information** and **check sources.**	I **don’t have specific answers.** I **skim** instead of read details. I **take few, if any, notes.**
What I feel	I feel **confident** when I have **my notes or journal** to refer to. I **hate being “out of the know.”** I feel **frustrated when incorrect information** is accepted as valid.	I **feel stupid if I don’t have the one expected answer.** Pages of information make me feel like I am **drowning in words.** I **fear looking unprepared** because my **notes are so few.**
My internal “chatter”	Before I decide, I **need more information.** **Where did you get that** information? What was your **source?**	**Stop asking** me so many questions! **Don’t expect me to know names and dates!** Do I have to **read all of this?** Is there a DVD I can **watch instead?**

Precision (See Figure 1.7)

If your scale score for Precision is between 25 and 35, you use Precision at a Use First level. That indicates you want to:

- Receive thorough explanations.
- Ask lots of questions.
- Answer questions.
- Be accurate and correct.
- Analyse test results.
- Have written documentation.

If your scale score for Precision is 7 to 17, you avoid it. That indicates you:

- Rarely read for pleasure.
- Don't attend to details.
- Find memorising tedious.
- Hear wordy conversation as "blah, blah, blah."

Technical Reasoning (See Figure 1.8)

If your scale score for Technical Reasoning is between 25 and 35, you use Technical Reasoning at a Use First level. This indicates you:

- Look for relevance and practicality.
- Don't use a lot of words.
- Believe you can fix things.
- Prefer to work by yourself.

If your scale score for Technical Reasoning is 7 to 17, you avoid it. This indicates you:

- Hire others to do building and repair work.
- Don't venture into the tool aisle.
- Problem solve with others, not alone.
- Find it difficult to understand why some people use few words to express themselves.

Figure 1.8

TECHNICAL REASONING

	Use First	Avoid
What I think	What value does this have in the **real world?** I **figure out** how something works without using words. I don't want to read a book about it; I want to **get my hands on it.**	**Why should I care how this works?** Somebody has to **help me figure this out!** **Why do I have to make** something?
How I act	I charge in and **solve real problems.** I work in **my head and then with my hands.** I **tinker.**	**I avoid using tools or fixing**/repairing things. **I talk about it instead of doing** it. I **rely on reading the directions** in order to assemble a project.
What I feel	I feel **frustrated when the task has no real world relevance.** I enjoy competing with myself when **figuring out how something works.** I like the feel of **having the right tool** to get the job done.	I am **inept.** I feel **frustrated because I can't conceptualize the functions** involved in solving the issue. I am very **comfortable with my words and thoughts** - not tools.
My internal "chatter"	**Why am I required** to do this? I don't need to talk about it. I **already have it figured out.** I can't wait to **get my hands on this!**	**I don't care how it runs; I just want it to run!** I'm an educated person; I **should be able to solve this!** Why can't I **just talk or write about it?**

Confluence (See Figure 1.9)

If your score for Confluence is between 25 and 35, you use Confluence at a Use First level. That indicates that you:

- Thrive on generating new ideas.
- Use imagination to a high degree.
- Seek risk-taking opportunities.
- Do not fear failure but see it as an opportunity to learn and grow.

Figure 1.9

CONFLUENCE

	Use First	Avoid
What I think	I think to **risk is to learn.** I think **outside the box.** I **connect things that are seemingly unrelated.**	Has this been well thought out? I **hate brainstorming!** **Where is this heading?**
How I act	I take risks and **push the boundaries.** I **brainstorm.** I read over, under, around and **between the lines.**	I **don't take risks without a plan.** I **avoid improvising** at the last minute. I can't follow "outside of the box" thinking.
What I feel	I am **not afraid to fail.** I **feel energized by possibilities** that are still in the idea stage. I revel in **connecting the dots!**	I feel **unsettled.** I feel **left out because I can't come up with ideas fast enough.** This is **out of control!** No **more changes or surprises**, please!
My internal "chatter"	**Nothing ventured, nothing gained.** I have **an idea. No, wait! I have an even better idea!** Think **Big Picture!**	Let's not lose sight of the plan. **Stay focused!** **Where did that idea come from?** Get a grip! Let's **deal with current realities** not fantasies!

If your scale score for Confluence is 7 to 17, you avoid it. This indicates you:

- Think taking risks is foolish and wasteful.
- Would rather NOT make mistakes.
- Are cautious in how you go about making life decisions.

Patterns in the Use As Needed Range

If any of your Patterns are in the 18-24 scale range, then they are Use As Needed. You can use them when you need to. You just don't feel a great urgency to do so, especially if they fall into the 18-21 range. These patterns tend to lay dormant until you need to wake them up and let them know that you need to use them NOW!

Different Pattern Combinations

It is useful to understand the effect of different levels of Pattern usage. Below (Figure 1.10) are examples of different types of Pattern combinations and their effects on the learner.

Dynamic

If you use one or two of your Patterns at the Use First level and any other combination of the remaining Patterns at Avoid or Use As Needed, then you are a Dynamic Learner. You take in the world around you differently than those whose Patterns make them Bridge or Strong-willed learners.

Bridge

If you avoid no Patterns nor use any at a Use First level, then you are a Bridge Learner. You learn from listening to others and interacting with them. You are comfortable using all of the Patterns. Sometimes you feel like a "jack of all trades and a master of none," but you also find you can blend in, pitch in, and help make things happen as a contributing member of the group. You weigh things in the balance before you act. You lead from the middle by encouraging others rather than taking charge of the situation.

Strong-willed

If you use three or more Patterns at the Use First level, you are a Strong-willed learner. You are your own team. You prefer to work alone so that you can control the plan, the ideas, the talk, the decisions, the process and the outcomes. Sometimes others find it hard to follow your lead. (See Figure 1.14 below.)

The Second Tool: The Personal Learning Profile

The Personal Learning Profile is a record of your Learning Patterns described in your own words. It is a way of translating the Pattern scores into an authentic profile of you as a learner. It is your opportunity to personalise your Pattern descriptions by referring not just to the descriptive words and phrases from the Pattern descriptors, but by including examples of how you experience your Patterns both in the classroom and outside.

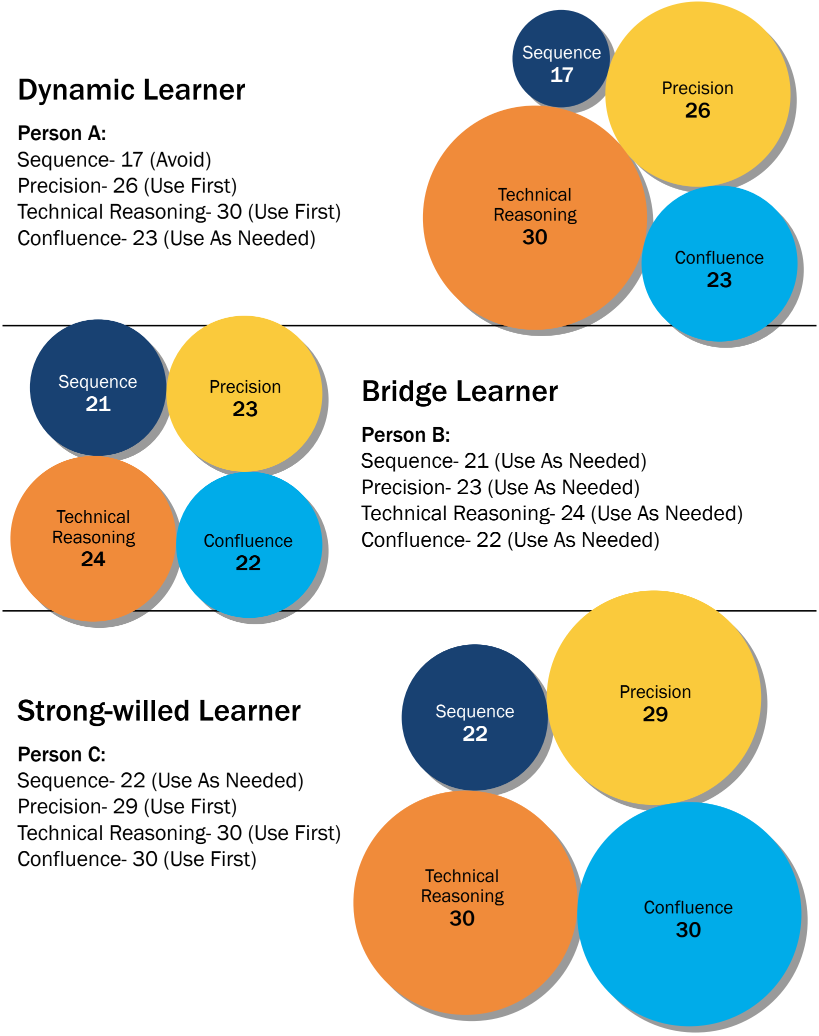


Figure 1.10 Dynamic, Bridge, and Strong-willed Pattern Combinations

Dynamic Learner

Person A:
Sequence- 17 (Avoid)
Precision- 26 (Use First)
Technical Reasoning- 30 (Use First)
Confluence- 23 (Use As Needed)

Bridge Learner

Person B:
Sequence- 21 (Use As Needed)
Precision- 23 (Use As Needed)
Technical Reasoning- 24 (Use As Needed)
Confluence- 22 (Use As Needed)

Strong-willed Learner

Person C:
Sequence- 22 (Use As Needed)
Precision- 29 (Use First)
Technical Reasoning- 30 (Use First)
Confluence- 30 (Use First)

Personalising Your Pattern Description

The first step in the personalisation of the Learning Patterns begins by reviewing the standard descriptors of each and identifying which of these describes you, the learner. After selecting the specific aspects, you convert the standard phrases into your personal phrases by recalling the words you typically use to describe your thinking, actions, and feelings when asked to complete a task that requires Sequence, Precision, Technical Reasoning, and Confluence as seen in Figure 1.11.

You may find your students and yourself revisiting and refining the Learner Profile from time to time as you gain additional insights into yourself as a learner. Strive to use this tool as a means of measuring your growth in understanding yourself as a learner. It isn't necessary to have it be perfectly, totally correct the first time. The development of the Personal Learning Profile also helps to emphasise that we are not just one Pattern but all four. This is essential to understanding the totality of an individual's Patterns. It is vital to acknowledge that all four Learning Patterns are always present and valued.

Figure 1.11 Personal Learning Profile

	Use First	As Needed	Avoid
Sequence			09
Precision		21	
Technical Reasoning		19	
Confluence	33		

Explanation

Sequence:
I am a person who avoids directions. They just don't make sense to me. The most I can handle is a three-step process. After that I prefer to figure it out on my own.

Precision:
I use precision as needed. While I read a lot, I don't read non-fiction, factual books. I do research and dig into information when I am interested in a topic. I don't seek information just to know facts. I am not a walking almanac of minutia.

Technical Reasoning:
I use my technical as needed similar to my precision. The part of technical that I relate to best is being able to work by myself. I am a loner not a joiner. I want just the right tool to get a job done, and I love gadgets, but I don't care how things work nor am I interested in fixing things.

Confluence:
I use my confluence as the leader of my personal learning team. I never met an idea I didn't like. If I do something once, the second time it becomes overworked and the third time boring. I like the excitement of pushing the envelope.

	Use First	As Needed	Avoid
Sequence			
Precision			
Technical Reasoning			
Confluence			

Explanation

The Importance of Teacher-Learner Completion of the LCI

At this point, we strongly urge you to go online to take the LCI and receive validated scores and an individual interpretation of them. You may do this at: http://www.lcrinfo.com/take_lci.html. Then click on “Adult Education Form.”

It is critical that teacher-learners complete the LCI and spend time comparing what their scores mean vis-à- vis their lesson plans, their classroom set-up and their manner of giving directions for learning tasks. Teacher-learners need to be prepared to share this information with their students.

Also with your LCI scores in hand, you will be able to examine and understand yourself as a learner while reading this book. Everything you have yet to read will make infinitely more sense if you take the LCI now—and infinitely less, if you don’t.

The Third Tool: The Word Wall

Once learners understand their LCI scores, they are ready to begin preparing themselves to use the totality of the advanced learning system. Scores on the Learning Connections Inventory mark the beginning not the end of the LML process. Once teacher-learners and student-learners have a good grasp of their personal team of Patterns, they can prepare to develop the next skill, decoding learning assignments. Putting it simply, the goal of decoding a learning task is to understand it as the teacher intended. In others words, “What Learning Pattern(s) does/do the task require you

Figure 1.12 Word Wall

Sequence Cue Words		**Precise Cue Words**	
alphabetize	order	accurately	explain
arrange	organize	calibrate	facts
classify	outline	certainty	identify
develop	plan	describe	label
distribute	put in order	detail	measure
group	sequence	document	observe
in a series	show a sample	exact	specific
list	show an array	examine	write

Technical Cue Words		**Confluent Cue Words**	
assemble	erect	brainstorm	improvise
combat engineer	experience	carefree	incredible
build	figure out	create	independence
concrete	graphically represent	different	invent
construct	just do it	dream-up	risk
demonstrate	visualize	far fetched	take a chance
draw	problem-solve	ideas	unique
engineer	tools	imagine	unusual

to use to accomplish it effectively? More specifically, "What Patterns in what ranges does the task ask you to use?"

A valuable LML tool to use when doing task analysis is the Word Wall shown in Figure 1.12. It consists of words organised under each Pattern designation which "cue" students to the primary Learning Pattern(s) required by the specific task. This tool facilitates rapid and relevant task analysis. Students of all ages find using the Word Wall a quick and effective aid.

To use the Word Wall, simply compare the written or spoken directions of a learning task against the cue words found on the Word Wall. Circle all words found within the assignment beginning with the verbs. Next, circle specific adverbs and adjectives that indicate the degree to which a specific Pattern is to be used. Now you are ready to decode the task.

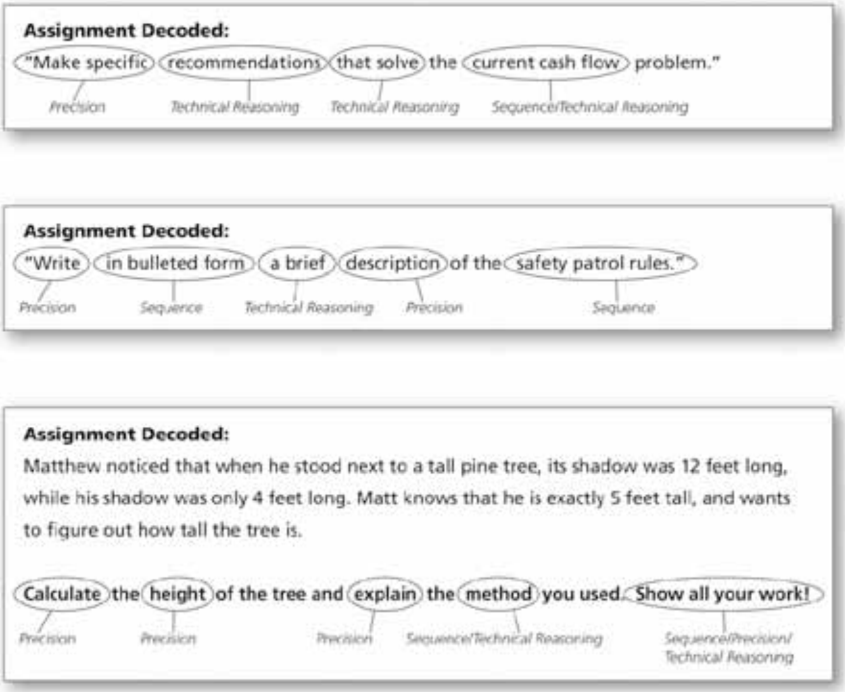
The Skill of Decoding

Decoding does not require a decoder ring; it requires knowledge of the learning Patterns and an awareness of what types of Patterns are required to complete the task successfully. Using the example which follows, examine how decoding works. First read the guidelines or directions for the task. Circle the key words which are intended to direct your action. Label each according to the Pattern it is directing you to use. Finally, analyse the amount of time you need to invest in using each of your patterns, in order to complete the task successfully. Say, for example, the task is to "Write in bulleted form a brief description of your newly installed security system." Your patterns are Sequence 28; Precision 17; Technical Reasoning 26; and Confluence 21. Without decoding this task in its entirety, you may shut down because your Avoid Precision 17 does not appreciate the word, "Write." In fact, writing is something you just don't want to do. However, if you allow your avoidance of Precision to keep you from reading the rest of the task description, you will fail when, in fact, you could have succeeded by using your Technical Reasoning and Sequential Patterns to overcome the frustration of avoiding Precision. Another example of decoding follows in Figure 1.13 Examine its wording and its decoding.

Clearly, decoding tasks makes them understandable and doable. Students enjoy breaking the "code" of assignments because they know that by doing so they will tackle the task with greater success and less frustration and wasted energy. Decoding your own assignments as you make your instructional plans will also provide you with an insight into what Patterns you

require students to use the most and whether there is an equal distribution of required Pattern usage within your classroom.

Figure 1.13 Examples of Decoded Instructions



Assignment Decoded:

"Make specific recommendations that solve the current cash flow problem."

Assignment Decoded:

"Write in bulleted form a brief description of the safety patrol rules."

Assignment Decoded:

Matthew noticed that when he stood next to a tall pine tree, its shadow was 12 feet long, while his shadow was only 4 feet long. Matt knows that he is exactly 5 feet tall, and wants to figure out how tall the tree is.

Calculate the height of the tree and explain the method you used. Show all your work!

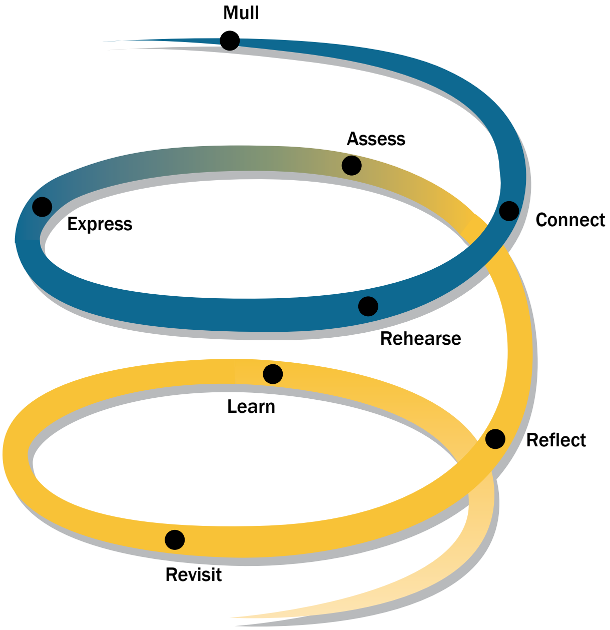
The Skill of Listening to the Internal Talk of Your Patterns: Metacognating

In the previous pages, you have read that Let Me Learn "is an advanced learning system that prepares all learners to be accountable for their learning outcomes." The explanation that follows demonstrates how that claim is achieved. The process used by learners to control their four Learning Patterns while engaged in a learning task is called the Metacognitive Process.

Metacognition in the LML lexicon is defined as our internal chatter or talk—the voices of our Patterns talking, arguing, negotiating how to proceed, how to achieve—how to reach our learning goals. A broad description of internal or self-talk, including Pattern associated talk has already been presented indirectly in the details of Figures 1.6 through 1.9. The kind of talk in these figures goes on in learners all the time but it is often unrecognised. LML helps learners tune in directly to this chatter within them and formulate strategies to use their Patterns with intention.

The LML Metacognitive Process consists of a series of phases through which learners move as they seek to make sense of, and respond to, a specific learning task. LML uses seven verbs to describe the Metacognitive Process: Mull, Connect, Rehearse, Express, Assess, Reflect, and Revisit. Use of these terms fosters real-time double-loop learning. The seven phases of talk are described below. Teachers often demonstrate the phases using what is called the Metacognitive Drill, a step-by-step practice of the Metacognitive Process. The phases of the drill are depicted in Figure 1.14 and described below:

Figure 1.14 The Metacognitive Drill



Mull	asks you to consider, “What am I supposed to be doing?”
Connect	asks you to recall, “Have I ever done this or something similar?”
Rehearse	asks you to practice, “Let me see if I can do this.”
Attend	asks you to stay focused, “Let me concentrate and not be distracted.”
Express	asks you to perform the task, “Go public. Turn in the assignment!”
Assess	asks you to evaluate yourself, “How did I do? Did I put forth the effort.”
Reflect	asks you to face yourself, “What did I do? What did I fail to do?”
Revisit	asks you to reconsider, “How could I improve the outcome next time?”

- Mull is considering, even wallowing in, the description or directions of an assignment until the learner understands the task expectations and how to make a conscious effort to begin his/her learning. Mulling may take minutes, hours, even days depending upon the nature of the task and the Patterns of the learner.
- Connect involves relating the current learning context to prior learning experiences, gathering and reading information, asking questions and reviewing previous learning. It may include linking up with a peer who can model what needs to be done and how to do it.
- Rehearse is exactly that—it is done privately and the only audience (and critic) is the learner - him or herself.
- Express is the public performance of knowledge and/or a specific skill, which opens the individual to receiving public feedback.
- Assess is the student's means of weighing his/her performance against the expectations for a specific task. Think of the scale of justice. Then ask, "Did my performance balance with the requirements of the task?"
- Reflect is viewing a hand-held mirror, facing oneself and asking, "What specifically did I do or not do that resulted in this learning outcome?" This is the heart of becoming an intentional learner, the phase where the buck stops.
- Revisit is returning to the original learning task, a similar task or an extension of that task and applying what was learned through the phases of Assess and Reflect for an earlier task. This phase fosters measureable improvement based on implementing new learning strategies.

Arguably, the most under-used phases are Assess-Reflect-Revisit because these are seldom, if ever part, of experience in school or work. The LML Process seeks to reverse that neglect by encouraging and re-enforcing the learner's use of strategies by providing a safe, non- punitive environment in which to re-consider strategies that worked or did not work.

Teachers who are aware of the Metacognitive Process and the "chatter" occurring in the learners within the classroom will often use the vocabulary that comprises the Metacognitive Drill to check on how students are progressing. For example, how many are still "Mulling" ten minutes into an assignment? How many have "Connected" and moved on to quiet "Rehearsal?" Who has skipped these processes and moved on to "Express" or even "Assess"?

Knowing how various learners are responding to a given assignment and having the terms to explain progress or lack there of in non-pejorative terms can enhance both the learning environment and the teacher's ability to respond and intervene appropriately.

The Fourth Tool that "FIT"s the Learner to the Task

Once learners have decoded a specific learning task and listened to the internal talk among their patterns, they frequently find their Patterns and the tasks requirements are mismatched. If that is the case, they need to modify their personal Patterns to align them with what the task requires. While no learner can stretch or hold back their Patterns for long periods of time, each learner, with practice, can achieve a temporary and limited modification of the degree to which they use each Pattern. We refer to this as "FIT"ing the learner to the task using the tools of Forge, Intensify, or Tether

The "FIT" Tools

The acronym, FIT, represents the three verbs forge, intensify, and tether. What follows is an explanation of how each works to help the learner adjust to a specific task.

- Forge: requires learners to increase the use of their Avoid level of a specific Learning Pattern in order to succeed in completing a specific task. An individual can Forge the use of a Pattern by as much as five points on the LCI scale for a limited period of time. Forging requires intention, strategies and focused energy.
- Intensify: requires learners to apply their Use As Needed Pattern(s) more forcefully. An individual can intensify use of a Pattern by as much as five points for a limited period of time. Intensifying requires intention, strategies, and focused energy.
- Tether: requires learners to restrain their use of a Use First Learning Pattern. This is done by pulling back and limiting the use of a Pattern that would otherwise mislead or dominate the learner's ability to redirect effort to meet the task at hand.

The Tool that Pulls it All Together: The Strategy Card

The Strategy Card is an immediate and powerfully useful tool. It summarises into one instrument all of the previously mastered LML skills and tools: Understanding Patterns, describing one's personal use of Patterns (The Learner Profile), dissecting the task (Decoding), listening to the chatter of one's Patterns (Metacognating); and identifying what degree of response is required to achieve success on a specific assignment (FITing). The Strategy Card is illustrated in Figure 1.15. It is a powerful tool for staying on task and accomplishing a specific learning assignment.

To complete a Strategy Card, simply follow the directions provided in the far left gloss of the card. Use the data you have accumulated about your learning Patterns (LCI Pattern scores and your Learning Profile), the skills of decoding, and the tools of the Metacognitive Drills, and FITing to complete the card. Encourage students to talk with classmates about their personal learning strategies. Develop a repertoire of these to refer to when completing different types of learning tasks.

Figure 1.15 The Strategy Card

	SEQUENCE	**PRECISION**	**TECHNICAL REASONING**	**CONFLUENCE**
Your LCI Scores				
Your Own Description of Your Learning Patterns:				
How do you ‘naturally’ use each of your Learning Processes? (Look at your Personal Learning Profile for the descriptions asked for here)				
Your Analysis of the Learning Patterns Needed to Complete the Task (See the Decoded Task Directions):				
What does the assigned task require each of your Learning Processes to do? (Look at the decoded task and determine each Pattern being required.)				
Your Strategies for Using Your Learning Patterns Most Effectively:				
How can you Forge, Intensify, or Tether your Learning Processes to complete the task successfully?				

The Overall Effect of Using LML Tools and Skills: Intentional Learning and Intentional Teaching

Intentional learning is making the learning experience work for you by decoding the task, matching the Pattern-use required to your Patterns, and then strategising how to Forge, Intensify or Tether your personal Patterns to meet those of the task. Intentional Teaching occurs when a teacher knows how to use his/her learning processes with Intention to shape the learning environment and activities of the classroom. Just like intentional learning, intentional teaching involves a conscious effort on the part of the teacher to respect, value, and mentor the personal learning processes of his/her students.

The Power of Let Me Learn's Integrated System

The power of Let Me Learn lies in the tools, skills, and shared language it offers teacher- learners and student learners to communicate about learning and learning support in real-time. No longer is the learning of any child a "mystery" to a teacher or to the child; no longer must a teacher attempt to "read the mind" of a student, or misperceive a student's response to a learning task. No longer must a teacher attempt to create differentiated forms of instruction to meet every learner's needs. Instead, all have a way to communicate about themselves as learners; all have away of understanding, respecting and building on the diversity of learners and learning tasks; all have accountability to make learning work and, when there are difficulties, all have the tools, skills, and terminology to diagnose, communicate, and problem solve.

This is the power that the advanced learning system, Let Me Learn, offers to all learners.

References

Addy, L. (1996, April). *Challenging the assumptions: The motivation and learning of children who have developmental coordination disorder*. Paper presented at the Annual Meeting of the American Educational Research Association, New York.

Borg, M. (1996, April). *A factor analysis of primary school student responses: The test of alearning instrument's validity*. Paper presented at the Annual Meeting of the American Educational Research Association, New York.

Borg, C. & Calleja, C. (2006). Using Technical and Confluent Patterns first: A recipe for underachievement? In C. Borg & C. Calleja, (Eds.), *Understanding children and youth at risk* (pp. 127-151). Blata l-Bajda, Malta: Agenda.

Bruer, J. (1994). *Schools for thought*. Cambridge, MA: MIT Press.

Buchanan, P. (2005, November). Leadership and learning. Annual Conference of the Society of Women Engineers, Los Angeles, CA.

Campbell, N. (2005, November). *Putting learning to work*. Annual Conference of the Society of Women Engineers, Los Angeles, CA.

Calleja, C.(1998). *Listening to the learner: Learner's characteristics to shape whole school reform.* Unpublished M.Ed. thesis, Faculty of Education, University of Malta.

Hayes, M. (1996, April). *Finding the voice: Hearing the voice—the under-represented in the reform movement.* Paper presented at the American Educational Research Association's Annual Meeting, New York.

Johnston, C. (1994). *Unlocking the will to learn*. Paper presented at the Twentieth Annual Meeting of the British Educational Research Association, Queen Anne's College, Oxford, UK .

Johnston, J. (1996, April). *Many voices - one message: A cross-cultural study of student learning processes with implications for learners, teachers and reformers . . . will the real learner raise a hand?* Paper presented at the Annual Meeting of the American Educational Research Association, New York.

Johnston, C. (2005, September). *Communicating from the inside out*. Keynote presentation at the National Writing Conference, Malta.

Johnston, C. (2006). *Promoting mindful learning in the mindless school*. Keynote presentation at the Let Me Learn International Conference, Sunshine Coast University, Queensland, Australia.

Johnston, C. (2010). *Finding your way: Navigating life by understanding your learning self.* Let Me Learn Inc. Publication.

Johnston, C., & Dainton, G. (1997). *The Learning Combinations Inventory (Manual).* Turnersville, NJ: Learning Connections Resources.

Johnston,,C., & Dainton, G. (2005). *The Learning Connections Inventory (Manual).* Turnersville, NJ : Learning Connections Resources.

Kottkamp R. B., & Silverberg, R. P. (2006). Reconceptualizing students at risk: Teacher assumptions about "the problematic student." In C. Borg & C. Calleja (Eds.), *Understanding Children and Youth at Risk: Narratives of Hope* (pp. 31-63). Blata l- Bajda, Malta: Agenda.

Marcellino, P. A. (2001). *Learning to be a team: A case study of action research in a graduate business management course*. Unpublished doctoral dissertation, Hosfstra University, Hempstead, NY.

McSweeney, R. T. (2005). *Merging cognitive and instructional theories into instructional practice in* *secondary mathematics: The impact of an advanced learning system implementation on teacher beliefs, student affect and achievement.* Unpublished doctoral dissertation, Hosfstra University, Hempstead, NY.

Mifsud, J. (1996, April). *Listening to the learner: Harnessing learner characteristics to shape school reform.* Paper presented at the American Educational Research Association's Annual Meeting, New York.

Osterman, K. F., & Kottkamp, R. B. (2004). *Reflective practice for educators: Improving student learning* (2nd ed). Newbury Park, CA: Corwin Press.

Silverberg, R. P. (2002). *From marginalization to relational space: A descriptive phenomenological study of teachers who changed their assumptions and beliefs about problematic students.* Unpublished doctoral dissertation, Hosfstra University, Hempstead, NY.

• CHAPTER 2 •

The Let Me Learn Process®: A Robust Theory with Practical Implications

Colin Calleja

Mezirow explains that:

> *"A practical implication of the theories (theories of learning) is that knowledge for the learner does not exist in books or in the experience of the educator. It exists only in the learner's ability to construe and re-construe the meaning of an experience in his or her own terms" (Mezirow, 1991b, p. 20)*
>
> *A prerequisite for personal transformation and, therefore, learning, is that a learner be actively involved in the creation of his/her own process of unpacking the knowledge and fit of it within his/her system of meaning perspectives. Mezirow also suggests that learning, identified as cognitive and intelligence styles, are factors that shape the meaning perspectives and structure of "assumptions within which one's past experience assimilates and transforms new experience" (Mezirow, 1991b, p. 42).*

Notwithstanding the important role this factor holds in the process of personal transformation, many studies show that the field of styles is riddled with "a high degree of concern with almost all of the published learning styles models..." (Maher & Slotnik, 2015).

This paper was first published in the VEGA JOURNAL – Journal of Culture, Didactics and Academic Training. Issue December 2010, Year VI, Number 3. Universita degli Studi Di Perugia. Universita Telematica e-Campus. Reprinted with permission.

A Critical Review of the Studies Assessing Major Learning Style Models

A number of studies produced critical analysis of some of the most prevalent learning style models that have been constructed (Bedford, 2004; Cassidy, 2004; Coffield, Moseley, Hall & Ecclestone, 2004a). The study by Coffield et al (2004a) is the most comprehensive study. This work started by analysing 71 learning style models and later focused on 13 major models based on theoretical importance, widespread use, and/or the impact on the overall field of learning styles.

Coffield's team applied a systematic review of the selected models with the results emerging being quite disappointing since "overall, the results revealed serious psychometric weaknesses indicated by varying degrees of validity and reliability" (Maher & Slotnick, 2015). Coffield et al also complain that research associated with learning styles has been "small scale, non-cumulative, uncritical, and inward-looking" (Coffield et al, 2004c, p. 4).

Coffield et al join earlier observations by Curry (1990) and draw attention to what Curry already highlighted, namely, confusion in definitions and weakness in reliability and validity of measurements (p. 51). In their findings, Coffield and his team show that the proliferation of concepts is the source for "confusion, serious failure of accumulated theoretical coherence and the absence of well-grounded findings tested through replication" (p. 4).

Bedford (2004) reached similar conclusions independently on more contemporary learning styles used in higher education. In his literature review, Bedford confirms that the application of learning style models lacked proof that learning styles had significant impact on learning. Bedford raises concern that, due to the diversity of conceptualisations and differing models, no coherent theory, consistent data and analysis are present.

Cassidy (2004) draws attention on the ambiguous terminology and the lack of a robust theory of learning. This led him to caution practitioners about the selection of a learning style model due to the "volume, diversity and apparent dissociation of writing, theory, and empiricism in the field" (p. 440).

What is interesting in these independent studies is that all three seem to agree in their conclusions. It is also interesting that these studies also agree with earlier studies (Sewall, 1986; Curry, 1990). In the research conducted by Timothy Sewall and Lynn Curry respectively, both raised serious concerns regarding the theoretical coherence and validity and reliability of the models they reviewed.

In the study by Sewall (1986), we find an extensive analysis of four most popular learning style instruments: Gregorc's Style Delineator, Myers Briggs Type Indicator, Kolb's Learning Style Inventory and Canfield's Learning Style Inventory. In his analysis Sewell found serious issues with their validity and reliability. He also raised concerns with the lack of satisfactory results when these instruments were applied in the learning environment.

He concluded his review of the data by stating that "it seems apparent that there are significant measurement and related technical problems present in all of the instruments reviewed" (Sewall, 1986, p. 60). He pointed out that firstly, none of the instruments "have established an appropriate normative base for the valid interpretation of scores" (p. 61). Secondly, he questions the theoretical constructs underlying the instruments. He points out that, while Myers-Briggs' instrument has minimal evidence supporting the construct validity, the remaining three have no evidence whatsoever. He further suggests that this is indicative of problems with both the construction of the instruments and the lack of the learning style paradigm.

Sewall also questions the reliability provided. He claims that the scores produced may not be reliable indicators of learning style preference. Finally, he concludes that "the combination of normative and ipsative frames of reference currently provided in the test manuals makes the interpretation of scores very difficult and less meaningful than would be the case with a consistently ipsative or consistently normative approach" (p. 63). Thus, he suggests that, "no learning style measure by itself provides an adequate basis" (p.63).

Curry (1987, 1990) questions the quality of the published evidence offered by studies in the field. She points to what she calls external threats to validity, which she claims researchers in the field systematically ignore in their research design. The first threat can be termed as the accommodation of the vested interest of members of the faculty who guide their doctoral students to substantiate a particular learning style conceptualization. The second problem regards research design in which comparative groups are selected on the basis of extreme scores, with the statistical potential consequence of regression towards the mean, thereby biasing the interpretation of results. Thirdly, Curry points to the effects of the pretesting which in her words "may sensitise students to experimental instructional conditions" (p. 52). Finally, "students may also be reacting to the experimental arrangement instead of to the experimental variable (Hawthorne effect)" (p. 53).

Curry also points to three pervasive general problems to the operationalisation of learning style theory, namely

1. confusion in definitions,
2. weakness in reliability and validity measurements. The "tendency... has been not to pursue the necessary iterative pattern of hypothesis – investigation – modification but rather to rush prematurely into print and marketing with very early and preliminary indications of factor loadings based on one data set" (Curry, 1987, p.52).

3. accuracy in identifying which of the possible micro- and macro-adaptations within educational settings will be effective in the interaction with which a range of learning styles are deployed(p. 52).

Carry (1987, 1990) makes a strong claim that, while those involved in the learning styles field "promise to deliver the power for students, teachers, and parents to take control of the learning environments and interactions," the foundation upon which they base the development of their instruments are weak, and thus "researchers and users alike will continue groping, like the five blind men in the fable, about the elephant, each with a part of the whole but none with full understanding" (1990, p. 54).

An Advanced Learning System

Concerned with this lack of clarity and sound theoretical base, Johnston and colleagues sought to understand the learning process as a function of the brain-mind connection, a process accessible to the learner and to be used with intention (Johnston, 2009). This model builds on the latest research in neorocognitive psychology, the brain-mind connection, and metacognition. The strength of the Process lies in its ability to transfer the theoretical conceptualisation to the realm of the practical: a practical process that supports educational practitioners and learners to achieve learning success (Johnston, 2009).

During the past 18 years, Johnston and colleagues have converged earlier thoughts on learning including Piaget (1952), Jung (1923), Flavell (1980), Kant (1988), Snow & Jackson (1992), Keefe & Languis (1983); MacLearn (1978) and others (see Johnston, 1996) to more recent work such as that of Bruer (1994), Dien et al (2008), and Flavell et al (2000) who have sought to decipher the brain-mind connection. The work of Johnston et al has yielded "insights into intentional learning... the development of a unique set of learning tools, and an array of practical skills, and a set of terms to equip learners of all ages to communicate with others about their individual learning process" (Johnston, 2009, p. 1). What follows is an examination of the theoretical, psychometric and practical application of this model.

Originally, Christine Johnston (1994, 1996a, 1996b) and Johnston & Dainton, (1997) conceptualised a model of learning built on the tripartite theory of the mind (cognition, conation and affectation), an aspect that received attention from various perspectives and fields of study. Philosophers, Plato and Kant, cognitive psychologists (Philip, 1936 and Snow & Jackson, 1992) and research in brain-based learning (MacLean, 1978) are a few examples.

Johnston (1994) developed a set of theoretical constructs which emphasises the interactiveness of the mental operations, i.e. cognition, conation and affectation respectively, and attributes specific behaviours to their internal interaction within each of four discrete operational processes termed learning patterns, and designated as Sequence, Precision, Technical Reasoning and Confluence (LCR, 2005).

According to Johnston's conceptualisation, cognitive processing occurs within each of the four operational patterns in the form of mental activity: memory, range of experiences, and level of abstraction and concreteness. Within these same four operational patterns one also finds conative performing which manifests itself as autonomy, pace, and engaged energy. Finally, the four operational learning processes manifest affect. Affectation gives a sense of self-worth as a learner and all attendant emotive responses to learning.

Johnston (1996b) further refers to these operational patterns as "patterned action tendencies", a phrase borrowed from Philips (1936). Johnston (1994) also posits that it is "a composite of all four of these operational processes which make up an individual's interactive learning process".

In later presentations (2005, 2006b) and publications (2009, 2010), Johnston has continued to refine the theoretical underpinning of the model through an explanation of the brain-mind connection. This development or amplification of the theory attempts to clarify further the role of the patterns as filters that sift the data channelled through our sensory stimuli (for a detailed description read chapter 1 in this volume).

According to this representation, the journey begins with the five senses that serve as the first line receptors that initiate learning. According to Johnston's representation, stimuli enter the brain travelling through its complex neuro-circuitry. Within the brain's electrochemical processing, an individual's operational learning process starts entering the brain-mind interface where the stimuli are ultimately filtered. Depending upon the make-up of the operational processes, the stimuli are either blocked, welcomed, or given limited access to continue on their way to operate within the mind and memory. The stimuli that make it through the interface are then translated into symbolic representations and passed to our working memory to become a part of our consciousness (declarative memory) or sub-consciousness (non-declarative memory) (Johnston, 2009; Squire & Zola, 1996).

These observable, individually patterned, stable-over-time learning behaviours help an individual "take in the world around them and make sense of it" (Johnston, 2007, p. 1). In order to be able to empirically determine which operational pattern(s) we choose to Use First; which one(s) we Avoid; which one(s) we Use As Needed, Johnston and Dainton (1994c) present us with a 28-item, self-report instrument, the Learning Combination Inventory (LCI), later renamed the Learning Connections

Inventory. This instrument uses the scale scores derived from the Likert force-choice responses and the open-ended responses to provide qualitative confirmation of the respondent's level of use of each pattern (Johnston, 2004, p. 7). Johnston contends that it is this knowledge of one's own learning processes that makes it possible for an individual to develop personalised strategies that direct the path of his own learning. Such knowledge is also important for strategised and intentional learning (Osterman & Kottkamp, 2004).

Validation Process of the Learning Connections Inventory

A common concern in the critique of learning styles discussed above is the lack of empirical evidence supporting the models' claims and their implication for pedagogy and impact on students' learning (Coffield et al, 2004b). Johnston too shared the same concerns, and, therefore, as early as 2004, she published a framework consisting of four keystone questions to be used as a means of determining the viability of an authentic learning model. The questions were the following:

1. Does the model consist of a robust and inclusive conceptualisation of the brain, the mind, and the relationship and function of each to the other in an explanation of learning – Does it have a sound theoretical foundation?
2. Does the model include a comprehensive lexicon of terms that would provide a means of communicating one's experience of learning with others – a true pedagogical tool?
3. Does the explanation of learning foster a learner's responsibility – Impact on the process of learning?
4. Is there empirical evidence revealing a measurable difference in the behaviour of learners who use the model – Impact on the learners?

The first criteria or aspect was reviewed and discussed in some detail above. What follows is an analysis of Johnston's model in respect to the three remaining criteria.

A lexicon of terms

The concept of metacognition explained by Flavell (1979) as a tool for a learner to regulate his/her learning, emphasises three equally important categories of knowledge: knowledge of self, knowledge of the task variables and knowledge of strategy knowledge. All three categories call for a common and comprehensive lexicon of terms that would facilitate communication between the learner and the learning environment.

According to Kottkamp (2004), the learning construct proposed by Johnston introduces the learner "to a lexicon of terms that can then be practically applied to teaching metacognitive/reflective skills" (p.168). The lexicon of terms includes the learning patterns and the psychological functions of cognition (thinking), conation (doing) and affectation (feeling) as associated to one's particular profile.

In addition to the terminology associated with the self-awareness and validation of an individual's learning profile, this advanced learning system provides related terminology of metacognition – or what Johnston refers to as the 'metacognitive drill' (LCR, 2005). This drill aims to help "learners control their four learning patterns while engaging in a learning task..." (Johnston, 2009, p.17). This, according to Maher & Slotnick, "enhances the process of task analysis and the related strategic choices" (p. 14). The terms associated with the drill are: Mull, Connect, Rehearse, Express, Assess, Reflect, and Revisit. According to Johnston (2009), "all of these terms foster real-time double-loop learning" (p. 17). Therefore, such a process would allow the learner to reflect on his/her response and then consciously and intentionally adjust one's reaction to the task demands. Once learners are aware of the dynamics of their personalised combination of patterns, they can then manage the impact of their response to demands of each learning task or challenge (Calleja, 2009; Calleja & Montebello, 2007; Johnston, 2009).

Learner Responsibility

Johnston's main concern is whether a learning model fosters learner's responsibility to develop an awareness of one's potential for developing a learning path suited to his/her learning profile. Pearle (2001) in her research on implementing the Let Me Learn Process in higher education suggests that rather than focusing on instruction, educators should focus on "how learning occurs, and how to use understanding of learning with intention" (p. 2). Harvey (2004), also working with higher education, emphasises the importance of giving the learner the skills to control *how* to make learning work, hence ensuring a more powerful and positive learning experience, regardless of the instructional approach used. For this purpose, Johnston and colleagues, working in K-12 and higher education classrooms, developed what is called a strategy card (LML, 2010). Through this tool a learner reflects and generates practical strategies conducted in response to a specific learning task or expectation. Through the strategy card, learners first describe in practical terms how they use their learning patterns basing their description on their validated LCI scale scores. In the next stage, learners use the four-patterned combination to analyse a task's demands. Finally, learners identify specific strategies to tackle the demands of the task as well as their own knowledge of their ability to utilise each pattern and the appropriate aspects of the metacognitive drill (Johnston, 2009). This will, therefore, allow learners to develop life-long learning skills and strategies while acting on the task at hand (Johnston & Dainton, 2004a).

This does not preclude the use of this awareness for a more intentional, strategised pedagogy that would help educators to plan their lessons with intention. Calleja and Montebello (2006) propose two metacognitive models based on Johnston's model – one highlighting the learner as an intentional performer in which a learner decodes the task in terms of the operational patterns and decides whether he/she needs to intensify, forge or modify the personal set of patterns to perform a task at hand. The second model proposes a strategy for the teacher to plan with intention – thus goes through the same process as the learner but this time with an emphasis on modification to support the learner in the process of learning.

This collaborates with Coffield & colleagues' propositions that a learning model should emphasise both the pedagogy and the learning process (2004a).

Empirical Evidence

Coffield et al (2004a; 2004b) and others (Sewall 1986; Curry 1987 and Bedford, 2004) criticised the lack of empirical evidence supporting the models reviewed. These authors also insist on the importance of providing evidence that an impact on pedagogy has occurred as a result of using the advanced learning system as an intervention.

Johnston, aware of the criticism and advice of researchers in the field, ensured a rigorous process of validation and reliability throughout the development of the Learning Connections Inventory, through multiple measures of validity and reliability (Johnston & Dainton, 2004). The first pilot inventory was constructed with repeated key phrases and student reported experiences collected from three previous studies (Johnston, 1994; 1993; Johnston & Dainton, 1994a and Johnston & Dainton, 1994b) during which time the researchers observed overt learning behaviours as they related to the constructs of action control theory, self-regulated learning, and action schema.

This first draft of the instrument was field-tested with 80 students (Johnston, 1994; Johnston & Dainton, 1994a). After careful analysis of the piloted responses and refinement of the pilot instrument, a second iteration was conducted with over two thousand students in thirteen private, public, and parochial school districts in New Jersey. Mean scores were calculated for each item and the item correlation matrix was factor analysed, and items, which did not load conceptually or psychometrically (with a minimum factor loading of .34), were eliminated.

A second analysis resulted in retaining four factors with Eigenvalues from 4.54 to 1.18 and explaining 47% of the variance. A second order factor analysis was then performed on the four first order factors or sub-scales. The four-factor solution after varimax rotation yielded two well-defined factors and a third factor which loaded on two subscales. While the first two were interpreted as discrete categories of learning connections with a target value of high to moderate (.83 – .55) the third factor required further analysis.

These pilot studies were followed by six separate studies at 16 sites in the United States of America (Johnston, C., 1997), Malta (Borg, 1996), United Kingdom (Hayes, 1996 and Addy, 1967) and Ireland (Johnston, J. 1996). The sites of this research ranged in size from 240 to 1900 and all covered various socioeconomic and geographical categories with a total population of 5193 participants.

The results from the second pilot study, together with the other studies conducted with thousands of students and adults both in the U.S.A and in other international sites, have led to the development of the current inventory with 28 items.

The adult LCI version, which is often used with teachers, has undergone a correlation matrix that was then factor analysed. The results strongly support the factor structure identified in earlier pilot studies. Items loaded on the appropriate subscales and had high loadings on only one factor. The interactive dimension as well as the discreteness of each scale held as theoretically expected.

The instruments were further tested for reliability (test-retest studies) (McLaughlin & Angilletta, 1995; Johnston & Capasso, 1995). These studies confirmed not only the reliability of the instrument but also its construct validity which was first identified by the factor analysis when the items behaved as predicted confirming the cohesiveness of the constructs of sequence, precision, technical reasoning and confluence.

As for validity, three tests were conducted, one for content validity, one for construct validity and another for predictive validity. The test for content validity was carried out with 20 teachers teaching at different levels and types of schools. Each educator was given a single sheet of descriptive definitions of the four interactive learning patterns. They were asked to take the definitions, looking at each item on the LCI, and identify to which subscale the item referred. Out of 560 possible correct classifications the participants had a 95% rate of correct responses. As claimed by the researchers (LCR, 2004), "the rate of correct responses indicates that the LCI has strong content validity with readily identifiable items comprising the instrument's scales" (p. 12).

The second test for construct validity used three identical methodologies in three sites. This involved analysis of the match between students scale scores and their written responses. Three individuals using scoring protocols with an inter-rater reliability of .92 scored the written responses. Each of the 600 respondents' three written responses were assigned numerical values and a correlation was run of the respondents' scale scores to the specific written responses. The correlation for both Form I and II occurred in the predicted directions though not significant on all scales. As the researchers explain, this might be due to students' maturation, since there were better correlations in Form II (older students) than those in Form I (younger students). One needs also to mention that, in addition, two test-retest studies discussed above, were conducted with groups totalling 242 and 803 respectively. In each case the data showed that on a scale-by scale basis, significance at .01 was achieved.

Finally, the LCI manual (Johnston and Dainton, 2004) reports the level of predictive validity of the instrument. Two researchers (McLaughlin and Haye, 1995) sought to confirm the LCI Education Form I and II's predictive validity. Teachers from four different school sites familiar with the concepts underlying the four scales (of sequence, precision, technical reasoning and confluence), had to predict how their students would score on each of the four LCI scales. Teachers' predictions of students' performance were significant on three of the four scales. This ability of the teachers to predict the range of student scale scores, according to the researchers, suggests that the learning patterns of the students are not only observable but also definable in the terms used by the LCI scales. A reason the researchers give for lack of significance in the confluence scale is that the school culture "is more rule-oriented where independent or nonconforming behaviour is discouraged" (p. 14) and where confluence is often perceived as lack of attention or lack of cooperation on the part of the learner.

The manual also reports international studies which in total cover over 2000 primary school students from United Kingdom, Northern Ireland, Italy, and Malta who participated in tests aimed at confirming the reliability and validity of this instrument. The data from Northern Ireland which has been factor analysed confirm those already described above. From this data emerging from the international sites, an interesting insight emerged showing that there seems to be common phraseology representative of the characteristics of each learning pattern across all ethnic and geographic locales (Johnston and Dainton, 2004, p. 14).

The previously cited studies address the concerns which critics raised over the years of other learning styles instruments by illustrating that the tool (LCI), on which the Let Me Learn Process is built, is conceptually driven by a conceptually sound representation of the human learning process; and address the issues of reliability and validity by employing methods which empirically test the level of delivery of the conceptualisation of the learning process.

Coffield's team also emphasises the need for empirical evidence supporting the successful implementation of a learning model. While Coffield and colleagues phrase the impact in terms of pedagogical impact, Johnston, on the other hand, is concerned with evidence that learning has been positively impacted. To date, numerous studies have been presented and/or published demonstrating the impact of the Let Me Learn Process on learning from a variety of educational and workplace settings. This review and other chapters within this volume will report on some of these studies.

Dr. Ruth Power Silverberg (2002), in her Doctoral dissertation, documents the experiences of teachers who reported a change in their thinking about students initially perceived as problematic. This study reports that there was major qualitative change in teachers' approach to these children after they had experienced the Let Me Learn Process. Nine elementary teachers of varying ages, grades, and locations provided descriptions of their experiences regarding changes in thinking about problematic students in open, in-depth interviews. This qualitative research study showed "the importance of teachers' 'understanding' of their students and themselves as learners" (abstract). In her summary of the findings, Silverberg reported the teachers' thinking about students, whom they defined as problematic, as being heavily influenced by the interaction of their learning patterns with their students' learning patterns before they had an understanding of the Interactive Learning Model (p. 122). Teachers, according to Silverberg, looked at their problematic students through their own unknown patterns; students who had different patterns had behaviours they couldn't make sense of, so they made attributions that led to responses that didn't work. After this initial observation, the study showed that, once the teachers became aware of their own patterns and the students' patterns and how these allow for different modes of learning, it allowed "them to reach across their differences and connect with students with whom such a connection had previously seemed impossible" (p. 122).

This study discussed the transformative quality of the change process experienced by the participants, the power of understanding and the importance of connection in the teaching and learning relationship. This study provided ample evidence that, through personal development, teachers' professional development was affected.

Silverberg's findings led to an understanding that, prior to developing understandings of their own learning patterns and those of their students, teachers assumed and believed that:

- Students should learn the way the teacher teaches;
- Teachers attributed lack of learning to student causes; thus, students who were not learning the way the teacher taught had a character/personality defect or deficient home situation that caused failure to learn;
- Teachers felt that the cause of the problem was outside of their ability, thus there was no point in continuing to try to help the students to learn;
- Teachers marginalised students who appeared not to be learning and believed that the problematic behaviour must be modified through a system of consequences.

After developing awareness and skills, the teachers:

- Became aware of their teaching as a reflection of the way they (the teachers) learn. They also realised that, since students might learn differently, their teaching might hinder a student's learning; thus, they came to the realisation that they need to teach the way students' learn, or work with them to discover a way that they can learn it best.
- Became aware that "if a student is not learning the way I am teaching, it is because the students needs strategies to provide access to the curriculum through his/her learning patterns" (p. 129). Thus, the attribution of cause turned on the process and not any longer on the individual.
- Realised the complexity and uniqueness of the students' learning patterns, but felt empowered for the fact that they are "knowable when the students and I share tools and vocabulary for communicating about our own learning patterns" (p. 129).

Finally, the research reported better engagement with students change in behaviour – students who were previously viewed as problematic are reduced. The student and his/her peers develop strategies to turn disruptive behaviours into valuable contributions.

This study, therefore, showed that the LML process allows teachers to discover their own combination of learning patterns and places themselves in "the problematic experience with the student" (p. 131). Thus the problem is not in the actor but in the learning/teaching interaction. The participants also indicated that understanding of students and understanding of themselves were linked in their change process.

The study also claims that, in line with Mezirow's transformative learning theory, teachers have "described an experience that went beyond a change in thinking about students or a change in perspective. All the participants talked about how important it was to them that their changes in thinking and perspectives led to an ability to create better connection with students. Eight teachers described a change in their ways of learning about all aspects of their lives" (p. 145).

Terri McSweenay carried out another doctoral study at Hofstra University in 2005. This study reports on the author's action research project in which she investigates the relationship among teacher beliefs, student achievement, and the development of teacher and student metacognition through the implementation of the Let Me Learn process.

By grounding the Let Me Learn process within the social cognitive theory, the researcher showed how this process aimed to "develop meta-level processes and empower learners with sophisticated learning strategies" (abstract). This study, which spanned over a scholastic year, concluded that, while admittedly one year was insufficient to implement the process in its entirety, notwithstanding, it was observed that teachers, through reflection and growing knowledge of their own learning process, improved their understanding of themselves and their students as learners. The study concludes that "teachers' self-confrontation with previously formed beliefs about teaching and learning was pivotal in re-conceptualising their classroom role, a state reached by 80% of them".

Another study offers insight on the effect of this process on the learner. Gregory Haviland Dunham's doctoral study focuses on "the emancipation of the learner" through a change in perspective of one's leadership and shows how this new understanding of the theories forming the style of leadership for learning helps the leader "create an environment that would allow me to emancipate those learners that I believed were being held captive by an insensitive and uncaring system" (p. 115). Through the process of emancipation of the learner, the researcher realised yet a personal emancipation:

> *"The emancipation that I thought I was going to experience for the students in Cycle I, actually turned out to be my own. I was emancipating myself from the previous relationship that I had with the instruction process. This is why I was able to view these learners through a different lens. This revelation inspired me. I had to do something" (pp. 115 – 116).*

The above quote from this study shows how a study which initiated with the aim of emancipating the students, ended up with a realisation of self-emancipation which in turn brought about a change in the learning environment and the whole learning scenario.

Concluding Thoughts

The studies reviewed in this chapter, suggest a systematic, carefully-tested process in the development of the Advanced Learning System known as the Let Me Learn Process. Both the tool (LCI), used to identify learners' characteristics, and the theoretically robust basis of the Process suggest that the issues previously raised on learning styles can be addressed. Claims and critiques calling for the need of strong measurement of reliability and validity in the design and development of a process for studying learning have been in my opinion vindicated by research presented here. The Let Me Learn Process has withstood both the empirical testing which helped design and develop the instrument and the test of time when practitioners consistently reported positive transformations in their teaching and learners' empowerment to learn.

References

Adams M.J. (1990). *Beginning to Read: Thinking and Learning about* Print. Cambridge MA: MIT Press.

Addy, L. *Challenging the assumptions: The motivation and learning of children who have developmental coordination disorder.* Paper presented at the Annual Meeting of the American Educational Research Association. New York.

Anders P.L., Hoffman, J.V., & Duffy, G.G. (2000). *Teaching teachers to teach reading: Paradigm shifts, persistent problems and challenges*. In M.L. Kamil, P.B. Mosenthal, P. D. Pearson, & R.Barr (Eds.), Handbook of reading research (Vol.III, p.719-742). Mahwah, NJ: Lawrence Erlbaum Associates.

Bedford, T.A. (2004). *Learning styles: a review of literature*. Toowoomba: The University of Southern Queensland.

Borg, M. (1996). *A factor analysis of primary school student responses: The test of a learning instrument's validity*. Paper presented at the Annual Meeting of the American Educational Research Association. New York.

Bruer, J. (1994). *Schools for thought*. Cambridge, MA: MIT Press.

Buchanan, P. (2005, November). *Leadership and Learning*. Annual Conference of the Society of Women Engineers. Los Angeles, CA, USA.

Calleja, C. (1998). *Listening to the learner: Learner's characteristics to shape whole school reform*. Unpublished M.Ed. Thesis . Msida, Malta: Faculty of Education, University of Malta.

Calleja, C., & Borg, C. (2006). Using the technical and confluent patterns first: A recipe of underachievement? In C. Borg, & C. Calleja (Eds.), *Children and Youth at Risk: Narratives of Hope*. Malta: Agenda.

Calleja, C., & Montebello, M. (2006). Let Me Learn in-service training: A teacher's experience. *Journal of Maltese Education Research* , 4 (2), 54-66.

Cassidy, S. (2004). Learning Styles: An overview of theories, models, and measures. *Educational Psychology* , 24 (4), 419-444.

Coffield, F., Moseley, D., Hall, E., & Ecclestone, K. (2004a). Learning styles and pedagogy in post-16 learning: A systematic and critical review. London: The Learning Skills and Research Centre.

Coffield, F., Moseley, D., Hall, E., & Ecclestone, K. (2004b). *Should we be using learning styles? What research has to say to practice.* London: The Learning and Skills Research Center.

Coffield, F., Moseley, D., & Ecclestone, K. (2004c). *Learning styles for post 16 learners: What do we know?* (Summary Report). London: Learning and Skills Research Centre from the School of Education, *Communication* and Language Sciences, University of Newcastle.

Curry, L. (1990). A critique of the research on learning styles. *Educational Leadership* , 48 (2), 50-53, 54-56.

Curry, L. (1987). *Integrating concepts of cognitive or learning styles: A review with attention to psychometric standard*s. Ottawa, ON: Canadian College of Health Service Executives.

Dawkins, B. U. (2008). *Honouring the learner: One teacher's experience implementing the Let Me Learn Process*. Unpublished doctorial dissertation . Hempstead, New York, USA: Hosfstra University.

Dien, J., Franklin, M., Nichelson, C. A., Lemen, L. C., Adams, C. L., & Kiehl, K. A. (2008). fMRI characterization of the language formulation area. *Brain Research*, 1229 (10), 179-192.

Dunham, G.H (2006). *The Emancipation of the Learner.* Unpublished doctorial dissertation. Rowan University, 2006, 163 pages; AAT 3200731. Downloaded from www.letmelearn.org /research/k-12-dissertations/ (9th August, 2010).

Flavell, J. (1980, Fall). *A tribute to Piaget. Society for Research in Child Development Newsletter* (1).

Flavell, J., Green, F., & Flavell, E. (2000). Development of Children's Awareness of Their Own Thoughts. *Journal of Cognition and Development* , 1 (1), 97-113.

Freese, S. F. (1999). *The relationship between teacher caring and student engagement in academic high school classes*. Unpublished doctorial dissertation . Hempstead, New York, USA: Hosfstra University.

Harvey, R. (2004). *Beyond learning styles: Understanding the learning processes of engineering students through the interactive learning model.* Paper presented at the American Society for Engineering Education Annual Conference & Exposition.

Hayes, M. (1996, April). *Finding the Voice: Hearning the Voice - The Under-represented in the Reform Movement*. The American Educational Research Association's Annual Meeting. New York, NY, USA.

Henry, J. (2003). *Learning to modify teaching strategies to better meet needs of student learning patterns*. Action Research. Overland Park, KS: Shawnee Mission East.

Johnston, C. A. (2005). *Communicating from the inside out.* Keynote presentation . Malta: National Writing Conference.

Johnston, C. A. (2004). *Drop dead data*. Philadelphia, NJ, USA: The Seventh Annual Let Me Learn Summer Institute.

Johnston, C. A. (2010). *Finding your way: navigating life by understanding your learning self.* Turnersville, NJ: LML inc.

Johnston, C. A. (2009). *A Comprehensive Description of the Let Me Learn Process, an Advanced Learning System including Bibliography and Lexicon of Terms*. Pittsgrove NJ: Let Me Learn Inc.

Johnston, C. A. (2002). *Implementing the Let Me Learn Process in K-12.* Turnersville, NJ: Learning Connections Resources.

Johnston, C. (2006a). *One in a million*. Paper presented at the Let Me Learn 2006 Summer Institute, Vineland, New Jersey.

Johnston, C. A. (2006b). *Promoting mindful learning in the mindless school.* Keynote presentation at the Let Me Learn International Conference . Sunshine Coast, Queensland, Australia: Sunshine Coast University.

Johnston, C. (2006c). "The Educational Maze". In *Understanding Children and Youth at Risk*. Ed. by C. Borg and C.Calleja. Media Centre Publications, Malta.

Johnston, C.A. (1993, August). *A request for funding: Unlocking the Will to Learn*. Unpublished proposal, Rowan College of New Jersey, Glassboro.

Johnston, C. A. (1994). *Unlocking the will to learn*. Twentieth Annual Meeting of the British Educational Research Association. Oxford, UK: Queen Anne's College.

Johnston, C. A. (1997). *Using the Learning Combination Inventory*. Educational Leadership , 55 (4), 78-82.

Johnston, C. (1996a, April 17). *Many voices - one message: A cross-cultural study of student learning processes with implications for students, teachers and reformers*. Paper presented at the International Symposium on Economics, Cultures, Communities, and Schools: Finding the Connection, Examining the Alternatives. New Jersey, Glassboro: Rowan College .

Johnston, C. (1996b). *Unlocking the Will to Learn*. Thousand Oaks, California, USA: Corwin Press.

Johnston, C. (1997). *Using the Learning Combination Inventory*. Educational Leadership, 55(4), 78–82.

Johnston, C. (1998). *Let me learn*. Corwin Press: Thousand Oaks, CA.

Johnston, C. (2010) *Strategic Learning*. Let Me Learn Inc. NJ

Johnston, C. & Capasso, R. (1995) *A test-retest of the LCI: Secondary school study*. Unpublished report. Rowan College of new Jersey

Johnston, C., & Dainton, G. (2004a). *Cooperative learning Synergy, chaos or inertia*. Paper presented at the annual meeting of the American Educational Research Association. New Orleans, LA.

Johnston, C., & Dainton, G. (1994b). Death by classroom: The perpetrator and the victims. In J. Rowan (Ed.), *Occasional papers on collaboration in education*. Vineland, NJ: Standard.

Johnston, C., & Dainton, G. (1994c). *Learning Combination Inventory*. Pittsgrove: Learning Connections Resources.

Johnston,C., & Dainton,G. (1997). *The Learning Combinations Inventory (Manual).* Turnersville, NJ: Learning Connections Resources.

Johnston,C., & Dainton,G. (2005). *The Learning Connections Inventory (Manual).* Turnersville, NJ, USA: Learning Connections Resources.

Johnston, C., & Johnston, J. (1997). *Understanding and using the child's will to learn: A longitudinal study.* Paper presented at the European Conference on Educational Research. Frankfurt, Germany.

Johnston, C. A., & Johnston, J. (1998). Achieving staff development through understanding the learner. *British Journal of In-Service Education* , 24 (1).

Jung, C. (1923). *Psychological types*. (H. G. Baynes, Trans.) New York: Harcourt Brace.

Kant, I. *The philosophy of Kant as contained in extracts from his own writings*. (J. Watson, Trans.) Glasgow, UK: Maclehose & Jackson.

Keefe, J., & Languis, M. (1983, October). *Operational definitions*. Paper presented to NASSP Learning Styles Task Force. Reston, VA.

Kottkamp, R. B. (2002). *The problematic student*. Poster session presented at the Let Me Learn 5th Annual Summer Institute. Philadelphia.

Kottkamp, R. B. (2006). *Unrecognized bias in high-stakes writing tests*. Presentation at the Let Me Learn 9th Annual Summer Institute. Vineland, NJ.

Kottkamp, R. B., & Silverberg, R. P. (1999). Exploring the mental models of administrative aspirants: Assumptions about students, teaching and learning. Paper presented at the Annual Meeting of the *American Educational Research Association. Montreal.*

MacLean, P. (1978). A mind of three minds: Educating the triune brain. *In The 77th yearbook of the National Society for the Study of Education.* Chicago: University of Chicago Press.

Maher, P. A., & Slotnick, R. (2015). From Learning Styles to Learning Connections: Minding the Gap. In Calleja, C. & Johnston, C.A. *A Learning Paradigm Informed by Knowledge of The Learning Self: A Compendium of Applied Research on the Let Me Learn Process*. Horizon Publications. Malta.

Mather, N. (1992) 'Whole language reading instruction for students with learning abilities; caught in the crossfire'. *Learning Disabilities Research and Practice,* 7, 87-95.

Marcellino, P. (2000*). Learning to become a team*: A case study of action research in a graduate business management course. Unpublished dissertation. Hosfstra University. http:www.letmelearn.org/research.

McLaughlin. J. & Angilletta P. (1995) *A test-retest of the LCI: Elementary school study*. Unpublished report. Rowan College of new Jersey.

McSweeney, R. T. (2005). *Merging cognitive and instructional theories into instructional practice in secondary mathematics: The impact of an advanced learning system implementation on teacher beliefs, student affect and achievement.* Unpublished doctoral dissertation . Hempstead, NY: Hosfstra University.

Mezirow, J. (1991). Transformation theory and cultural context: A reply to Clark and Wilson. *Adult Education Quarterly* , 41 (3), 188-192.

Mezirow, J. (1991). *Transformative Dimensions of Adult Learning*. San Francisco: Jossey-Bass.

Miles T.R. and Miles E. (1983). *Help for dyslexic children* UK: Routledge

Nichols, J. (2002). *Using the LCI to Connect Teaching Methods with Student Learning Strategies*. Action Research .

Orton, J.L., (1966). *The Orton Gillingham approach*. USA: Orton Dyslexia Society.

Osterman, K., & Kottkamp, R. (Eds.). (2004). *Reflective Practice for Educators: Professional development to improve student learning*. Thousand Oaks: Corwin.

Pearle, K. (2001). "*Metacognition as vehicle for organizational change: How 'thinking about thinking' and intentional learning break the mold of 'heroic' teaching in higher education*." http://www.letmelearn.org/research).

Pearle, K. (2003). *Metacognition as vehicle for organizational change: How 'thinking about thinking' and intentional learning break the mold of 'heroic' teaching in higher education*. Retrieved June 25, 2010 from Let Me Learn Inc: http://www.letmelearn.org/research/he-dissertations/

Piaget, J. (1952). *The origins of intelligence in children* . (M. Cook, Trans.) New York: International Universities Press.

Philip, H. (1936). *An experimental study of the frustration of will-acts and conation*. Cambridge, UK: Cambridge University Press

Sewall, T. J. (1986). *The Measurement of Learning Styles: A Critique of Four Assessment tests*. Winsconsin University, Green Bay, Assessment Centre. Winsconsin: ERIC Document 267247.

Silverberg, R. P. (2002). *From marginalization to relational space: A descriptive phenomenological study of teachers who changed their assumptions and beliefs about problematic students*. Hempstead, NY: Hosfstra University.

Skinner, B. (1989). The origins of cognitive thought. *American Psychologist ,* 44 (1), 13-18.

Squire, L.R., & Zola, S.M. (1996, November). Colloquium paper: Structure and function of declarative and non-declarative memory systems. *Proceedings of the National Academy of Science*, USA. Vol. 93, pp. 13515-13522.

Snow, R., & Jackson, D. (1992). *Assessment of conative constructs for educational research and evaluation: A catalogue*. Washington, DC: U.S: Department of Education, Office Research and Improvement.

• CHAPTER 3 •

From Learning Styles to Learning Systems

Patricia A. Maher

Over the past 30 years, a long and elaborate history of learning style instruments can be traced, each attempting to decipher the learning code of the mind. Many instruments and their related constructs have developed on theoretically parallel tracks, sometimes with similar concepts, and at times based on overlapping concepts. As a result, a plethora of learning style models and instruments has been produced along with a wide range of promises by the instrument developers (Coffield, Moseley, Hall, & Ecclestone, 2004b). Unfortunately, this broad array of learning style models in the practice of education has in effect created more confusion than clarity about learning (Bedford, 2004; Cassidy, 2004; Coffield, Moseley, Hall, & Ecclestone, 2004a).

Professionals who prepare academic success tutors and mentors and support their work should apply the most up-to-date and theoretically sound information in their training programs. This chapter will briefly summarize several comprehensive critiques from the literature on learning styles, suggest an organizational framework of questions intended to assist learning professionals in the selection and application of an instrument or learning model, and briefly describe how one comprehensive learning system may be applied in the tutor or mentor training process.

Many learning professionals agree that such a thing as a learning style or innate preference does appear to exist. It is in fact the unique individuality of each human mind that creates difficulty in creating universal models of how learning occurs. Each

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This paper was first published in Agee, K. & Hodges, R. (Eds.) (2012). Handbook for Training Peer Tutors and Mentors (pp. 47-50). Mason, OH: Cengage Learning. Reproduced with permission.

mind absorbs and filters experience distinctively and differently and consequently produces, or "learns," something different as a result. So if learning is so individual, how can the process be defined in a way that practically and realistically helps our tutors and mentors work effectively with students as opposed to offering them merely an enjoyable self-awareness exercise that remains isolated from their practice?

A definition of learning style more than 30 years ago has not been seriously challenged and still offers a firm foundation. As reported by Keefe (1979), a national task force in the United States defined learning style as a "composite of characteristic cognitive, affective, and physiological factors that serve as relatively stable indicators of how a learner perceives, interacts with, and responds to the learning environment" (p. 4). Key issues that arose from this work included the idea of an interactive composite of cognitive, affective, and physiological factors, and the recognition that the framework for the way each person perceives (through the individual lens or framework), interacts with the world (utilizes strategies) and responds (presents the results of learning) is relatively stable. To this idea, Curry (1987) added the onion model, supporting the concept of integrating multiple dimensions of personality (emotional/affective), information processing (cognitive), social interaction, and multidimensional/instructional preferences. Based on Curry's model, several professionals (James & Blank, 1993; James & Maher, 2004) advocated for building a comprehensive learner profile through assessments in each dimension (cognitive, affective, and physiological). While this thinking helped professionals become more aware of the importance of all three dimensions, assessment of each dimension as a separate "function" or "layer" assumed the dimensions lacked interaction, which is not an accurate representation of the brain-mind function.

To better depict the interactive nature of the mind, Johnston (1995) developed the Interactive Learning Model or ILM (1995). While this work continues to evolve, to date it has produced the Learning Connections Inventory or LCI (Johnston & Dainton, 1996) and the Let Me Learn Process® or LMLP® (Johnston, 2006). These theories and associated analytic tools represent a convergence of earlier thoughts on learning as well as more recent developments in deciphering the brain-mind code to produce a comprehensive strategic application system. The system provides an interactive profile along with a lexicon of terms that empowers both instructors (Marcelino, 2003; Osterman & Kottkamp, 2004) and learners (Boyer, Maher, & Kirkman, 2006) to identify learning strategies based first on the inherent demands of the learning task.

The theoretical foundation for the LMLP® rests on the definition of learning as "taking in the world around you and making sense of it" (Dawkins, Kottkamp, & Johnston, 2010, p. 6). Whereas most measures of personality, multiple intelligences, and learning styles categorise or compartmentalise learners, Johnston (2010a) explains the translation process as a filtering system that sifts sensory data through a set of patterned operations termed Sequence, Precision, Technical Reasoning, and Confluence. While all four patterns are available to every learning mind, the individuality of each person's filtering system lies in the unique combination of the degree to which each pattern is utilised.

The mental processes of cognition, (thinking), conation (will to action), and affectation (emotion) are situated within each pattern, further defining the tendencies of each individual mind to think, act, and feel when the patterns are operating. This interaction creates "metacognitive internal chatter" (Johnston, 2010b, p. 26) in the working memory. The LCI (Johnston & Dainton, 1996) yields a profile that measures the level of each of the four patterns, offering each learner an awareness of how and why some demands are comfortably accomplished while others become insurmountable hurdles. In contrast with most other learning assessments, the LCI does not pigeonhole or categorically delineate learners; rather, the LCI describes a flexible and practical learning paradigm aimed at equipping learners with a lexicon of terms that apply to self-awareness, task awareness, and strategic options.

Selecting a Learning System

Although cost and availability are practical factors in choosing a learning style model for learning center use, it is more important to determine if a model is theoretically and empirically sound. Coffield et al. (2004b) reviewed learning style instruments by applying a series of research questions to each instrument in order to address the empirical evidence reported by each model, identify the broad implications for pedagogy, and determine if the model offered proof of an impact on student learning. The more recent and comprehensive framework of Dawkins, Kottkamp, and Johnston (2010) challenges educators to apply four analytical questions (summarised here) as a means to evaluate any learning model for effectiveness:

- Does the explanation of learning include a robust and inclusive conceptualisation of the brain, the mind, and the interface between them?
- Does the explanation include a means of communicating an individual's real-time experience with learning?
- Does the conceptualisation of the learning process lead to growth in autonomous and independent learning?
- Are the outcomes of the model's implementation measurable?

The weakest aspect of some learning models is actually the most important: whether recommendations for learning can be drawn from the learning profile. Other than in small studies of limited scope, the majority of available learning models lack metacognitive strategies and practical processes for applying the results of the learning profile to enhance learning success (Coffield et al., 2004a). This contention is supported by the results of a large meta-analytic study conducted by Marzano (1998), which indicated that matching strategies with the innate aspects of a learning task, regardless of learner preferences, had the most significant effect on learning outcomes. Concurring with this thinking, Merrill (2000) posited the importance of understanding the strategies inherent in the instructional goals or learning activities. Merrill emphasised that adaptation requires an understanding of task demands together with awareness of individual preferences or style.

Here again the LMLP® can be distinguished from other learning models in that the system offers the learner analytic tools that can be applied directly to learning task demands and thus customised strategies. Further, the learner can return to his or her individual profile to determine which learning tools of the mind will need to be energised or muted in order to apply the right level of each learning process for the task. Hence, the process integrates into the training curriculum as a means to help tutors and mentors understand themselves as learners, to analyse learning task demands, and to determine the most effective strategies for the task. For example, math tutors may determine that a particular math process requires a highly sequential (orderly) and precise (detailed) approach. Therefore, a tutor not naturally inclined to sequential and precise processing can intentionally focus on strategies that will enable him or her to present information to tutees by applying a detailed, step-by-step, system representing the intentional use of a more precise and sequential approach, while at the same time deliberately avoiding utilising the tutor's own preferred approach. As Merrill (2000) indicated, most learners tend to do what comes "naturally" or what has worked in the past, rather than considering what strategies will most effectively deal with the learning task at hand. The analytic tools of the LMLP® offer tutors and learners a framework to use their metacognition more effectively to address each task more intentionally.

In their analysis, Coffield and colleagues (2004a) asked a critical question: "How can we be serious about creating a learning society if we have no satisfactory response to the question, what model of learning do you operate with, and how do you use it to improve your practice?" (p. 1). The work of Coffield et al. in the United Kingdom challenges tutor and mentor trainers elsewhere to be alert to recent advances in understanding of the brain-mind connection and to trainers' responsibility to help student staff take an intentional approach to learning. Learning is complicated, but if the goal is to develop the next generation of problem solvers, critical thinkers, collaborators, and self-reliant lifelong learners, then learning support professionals, tutors, and mentors must offer students the most up-to-date tools available, based on an integrated model of learning.

References

Bedford, T. A. (2004). *Learning styles: A review of literature.* Toowoomba, QLD: The University of Southern Queensland.

Boyer, N. R., Maher, P. A., & Kirkman, S. (2006). Transformative learning in online settings: The use of self-direction, metacognition, and collaborative learning. *Journal of Transformative Education, 4,* 335-361. doi:10.1177/1541344606295318

Cassidy, S. (2004). Learning styles: An overview of theories, models, and measures. *Educational Psychology, 24,* 419-444. doi:10.1080/0144341042000228834

Coffield, F., Moseley, D., Hall, E., & Ecclestone, K. (2004a). *Learning styles and pedagogy in post-16 learning: A systematic and critical review*. London, UK: Learning Skills and Research Centre. Retrieved from http://www.hull.ac.uk/php/edskas/learning%20styles.pdf

Coffield, F., Moseley, D., Hall, E., & Ecclestone, K. (2004b). *Should we be using learning styles? What research has to say to practice*. London, UK: Learning Skills and Research Centre. Retrieved from https://crm.lsnlearning.org.uk/user/order.aspx?code=041540&src=XOWEB

Curry, L. (1987*). Integrating concepts of cognitive or learning style: A review with attention to psychometric standards.* Ottawa, ON: Canadian College of Health Service Executives.

Dawkins, B. U., Kottkamp, R. B., & Johnston, C. A. (2010). *Intentional teaching: The Let Me Learn® classroom in action.* Thousand Oaks, CA: Corwin.

James, W. B., & Blank, W. E. (1993). Review and critique of available learning-style instruments for adults. In D. D. Flannery (Ed.), *New directions for adult and continuing education: No. 59, Applying cognitive learning theory to adult learning* (pp. 47-57). San Francisco, CA: Jossey-Bass.

James, W. B., & Maher, P. (2004). Understanding and using learning styles. In M. Gailbraith (Ed.), *Adult learning methods: A guide for effective instruction* (3rd ed.). Malabar, FL: Krieger.

Johnston, C. (1995, September). *Dimensions of the interactive learning model.* Paper presented at the European Conference on Educational Research, University of Bath, Bath, UK.

Johnston, C. (2006, June). *One in a million.* Keynote address at the Let Me Learn 2006 Summer Institute, Vineland, NJ.

Johnston, C. A. (2010a). *Finding your way: Navigating life by understanding your learning self.* Charleston, SC: CreateSpace.

Johnston, C. A. (2010b). *Strategic learning.* Pittsgrove, NJ: Let Me Learn.

Johnston, C., & Dainton, G. (1996). *Learning connections inventory*. Pittsgrove, NJ: Learning Connections Resources.

Keefe, J. W. (1979*). Learning style: An overview.* In *NASSP's student learning styles: Diagnosing and prescribing programs* (pp. 1-17). Reston, VA: National Association of Secondary School Principals.

Marcellino, P. (2003, April). *Creating communities of learners in higher education.* Paper presented at the American Educational Research Association, Chicago.

Marzano, R. J. (1998). *A theory-based meta-analysis of research on instruction.* Aurora, CO: Mid-Continent Research for Education and Learning.

Merrill, M. D. (2000). Instructional strategies and learning styles: Which takes precedence? In R. A. Reiser & J. V. Dempsey (Eds.), *Trends and issues in instructional design and technology* (pp. 99-106). Upper Saddle River, NJ: Merrill/Prentice Hall.

Osterman, K., & Kottkamp, R. (Eds.). (2004). *Reflective Practice for Educators: Professional development to improve student learning*. Thousand Oaks: Corwin.

PART II

The Let Me Learn Process Applied to Professional Development, Reflective Practice and Leadership

• CHAPTER 4 •

Achieving Staff Development through Understanding the Learner

Christine A. Johnston & John Q. Johnston

Introduction

The *Let Me Learn* staff development process began with an invitation to teachers to participate in a program intended to increase student achievement and decrease the number of referrals to Child Study Team and Pupil Assistance Committees. Once into the process, the participants recognised that what had begun as a program of staff development focusing upon student learning problems soon became a study of the student-as-learner, the teacher-as-learner and teacher-as-teacher. What prompted this shift in focus as well as what were the documented outcomes, form the substance of this report.

Effective staff development is a key issue for many educational leaders and one on which the quality of educational provision increasingly depends. Reliance on the widely-used 'sit and git' form of staff development, in which educators are passive recipients of 'received' wisdom from an 'expert', has produced little lasting change in the classroom. This type of staff development could also be thought of as 'go and get' because 'learning' has typically meant leaving the job to participate in the event (Fullan, 1977, p. 4). More recently, the emphasis has focused on the need for staff development to be a participative process which:

This paper was first published in 1998 in the Journal of In-Service Education.

1. Invites growth and development;
2. Provides a safe context within which teachers explore new ideas and grow in understanding;
3. Facilitates not just individual, but also collective implementation of the changes. (Johnston, 1994)

To achieve these aims, it is of considerable importance that staff development should be innovation-orientated, continuous during the course of implementation and involve a variety of formal and informal Components. An effective staff development programme is one in which participants acquire and/or enhance the competence they bring to their educational practice.

It is a distinct possibility that in the future the amount of time devoted to external training of teachers and administrators may diminish. This could mean an increasing emphasis on various forms of job-embedded activities (Sparks & Hirsch, 1997, p. 52). To the extent that this is the case, effective staff development will entail job-embedded learning. In other words, the training would occur at the site where what is being learned is to be implemented. This is consistent with the reasonable proposition that the most powerful learning is that which occurs in response to the challenges currently faced by the learner and that facilitates immediate application, experimentation and adaptation.

Yet another key component of effective staff development is the provision of opportunities for staff to know and relate to multiple classrooms – to see and work with other teachers and their classrooms. Teachers need time to talk, share, reflect, and discuss the development they are experiencing – in terms of both snags and successes. It is clear from both research and practice that, "Unless teachers are given ample opportunities to construct for themselves educational visions through which they can reflect on educational practices, the instructional programmes will be trivialised into 'cookbook' approaches (Brooks & Brooks, 1993, pp. 121-122) and forgotten and/or ignored. As Zimmerman (1997, p. 86) argues, there is real power in group conversations and where opportunities for real dialogue are created, a higher consciousness will start to percolate.

Methodology

The *Let Me Learn* staff development programme sought to establish job-embedded experiences which included time to meet and discuss concerns and plans with colleagues in a non-threatening atmosphere. The 16-week process involved six elementary teachers in one school (20% of the professional teaching staff) in a total of 42 hours of training. The specific activities in which the teachers participated included the following activities:

1. Introduction to the interactive learning model (ILM).
2. Administration and interpretation of teacher and student (LCI) scores.
3. Data gathering and interpretation.
4. Selection of key learners for portfolio development using:
    a. situational analysis – analysing the needs of the learner;
    b. the intervention strategies – matching strategies to student needs.
5. Implementation of cooperative learning and alternative assessment.
6. Presentation of insights.

During the staff development process, the teachers met in 12 three-hour sessions and 2 six-hour sessions. The goals of the process were to have each teacher:

1. Understand the interactive model of learning (Johnston, 1996);
2. Interpret and analyse teacher and student learning combination inventory (LCI) scale scores (Johnston & Dainton, 1996);
3. Observe students in small group interaction and through their work product in a classroom setting;
4. Dialogue and discuss with colleagues and students the effects of the use of interactive learning patterns on teaching and learning.
5. Maintain anecdotal records on each of six students who the teachers felt fit each of the following categories of students: *'The Enigma', 'The Student Who Drives Me Nuts', 'The Student I Can't Reach', 'The Organizer'* and *'The Ideal Student'.*

As a result of completing activities 1-3 above, teachers were made aware of the degree to which their learning patterns of sequence, precision, technical reasoning, and confluence affect the manner in which they create a classroom learning environment. Armed with this knowledge, participants explored adaptations to their teaching methods and brought student portfolios, audio tapes, video clips, and student projects to the training sessions to demonstrate the nature and effectiveness of their new teaching/learning strategies and their students' responses to them.

Teacher-participants then consulted with one another on how they could refine their techniques. These laboratory sessions also allowed the *Let Me Learn* staff development facilitator an opportunity to have the participants focus on the inclusion of special needs students, cooperative learning, assessment measures and teacher-student-parent interactions. At the conclusion of the training, teachers presented their case studies, focusing particularly on changes which had occurred in instructional planning, academic performance, classroom management, sense of self-as-learner and sense of self-as-teacher as a result of the teacher-learner partnership. A more specific list of activities and development is available from the authors.

Data

The qualitative data reported in this article are derived from the transcription of 42 hours of audio-tape and 7.5 hours of video tape collected during the fourteen staff development sessions in the Alloway Township School District, Alloway, New Jersey. Each segment of each case study consists of verbatim comments as spoken by the teachers during the course of the staff development sessions.

For the purpose of this report, the data for each case study is reported in topical segments:

1. The teacher's initial perspective on student-teacher learning;
2. The teacher's stages of growth and development in the *Let Me Learn* process;
3. An example of the teacher's ability to analyse a specific learner vis-à-vis the interactive learning model and the student's learning combination inventory;
4. The teacher's perspective on learning at the conclusion of the staff development process.
5. The specific outcomes identified by each teacher as a result of having participated in the staff development process.

Case Study I: Esther B, teacher of 6th grade

Description of Esther's Learning Processes

Uses first: sequential and confluent
Use as needed: precise
Avoids: technical reasoning

Initial Perspective on Teaching and Learning, January 1997

> *When we began, I believed that I was a teacher who tried to take account of the various modalities and learning styles, the multiple intelligences and the personality types of those folks living in my classroom from 8:00 a.m. to 2:20 p.m. I always believed that it was my responsibility to do so. It never occurred to me that the children needed to understand this too. I watched as we became more understanding of what the LCI scores told us about ourselves as students and as we played with that knowledge in the various projects attempted. Before long, that knowledge seeped into everything we did in the classroom: daily lessons, assignments, reports, even homework.*

Stages of Growth During the Staff Development Process

Stage I

> *At the time our staff development began, my six grade classes were already knee-deep in cooperative learning projects in social studies, doing simulation studies on the Maya. My groups were formed prior to taking the Learning Combination Inventory. At one point the suggestion came from the students that we should reconfigure the groups according to LCI scores, but the nature of the simulation would not allow the switching around.*

Stage II

> *The next activity was a writing assignment. I told the students to each write a letter to the Superintendent of Schools explaining what they knew about their own LCI profile, what their LCI profile meant to their school experience and how the information would be helpful to their teachers. I was very surprised by their level of understanding. I had been giving the students examples of the different processes and matching them with the labels incidentally whenever the opportunities arose and, apparently, the kids were listening. The letters were 'right on' for the most part.*

Stage III

> *The next project we did was the 'Design a School' activity. This time, cooperative groups were constructed by me according to student LCI scores. I tried to balance the groups as evenly as possible. Although these groups were formed to support the work, each student turned in an individual project. I observed many things happening in the course of this activity:*
>
> - *students working in mixed groups interacted naturally with lots of constructive discussion;*
> - *students on task;*
> - *individuals would move into and out of groups seeking specific support;*
> - *students felt free at times to separate from the group to work totally alone;*
> - *students located classmates who could provide strength in certain processing they needed; help was given willingly.*

> *What sticks out most in my mind is that the work was consistently on task and positive. The class manageability was incredible. They would start to work when told to begin, would proceed with little or no attention to order or behavior necessary, and would organise themselves to move on when told to do so. There was more attention paid to presenting a thoroughly complete project than I had seen in previous opportunities and it appeared that the motivation came from within the group. In other words – I didn't have to nag anyone about doing a good, complete job!*

A Demonstration of Esther's Skill of Student-Learner Analysis using the ILM and LCI

Dan 'The Enigma'

Uses first: technical
Uses as needed: sequential, precise and confluent

Dan's LCI scores appear to make him the man in the middle and that is exactly how I saw him to be for much of the year. Dan embedded himself within the group, keeping a low profile and coasting through his assignments. When questioned about anything to do with school work, he had ready excuses that were weak, and he knew it. He would pass them off with a little grin and a shrug. Prior to learning Dan's LCI scores, I noted that he was most involved when given group projects. He would organise, create solutions, be integral in presentations and most often guide the group work as a leader. It was in daily assignment work that Dan was non-descript. As Dan and I became aware of his learning profile, we both grew in an understanding of who he is as a learner and class participant. As group work became a larger part of our practice, Dan became more of a contributor in his own learning. His capacity and ability became something he trusted more and more. Dan's performance in group activities had always been very good, but I began to see some of this success also in his individual learning efforts. Dan began to use his sequential, precise and confluent processes more in day-to-day work, and found an improvement in his product. With this improvement, Dan gained confidence. Dan's hearing problems (from early childhood) had left Dan as a compensator, always unsure if he was doing well. I saw greater levels of self-assurance in Dan at the end of the year than I ever could have predicted. The change came not because of my teaching, but because of Dan's awareness and acceptance of who he is as a learner.

Concluding Perspective on Teaching and Learning, April 1997

> *Having analysed, recognised, organised and realised our learning combinations, I am astounded by what we now are going to be able to do. Each student (including myself) is now able to understand how we approach a learning task, and how that is unique. We are capable of determining which learning process best fits each task and can seek to draw on our natural inclinations as they fit. We also recognise that if we need to use a process that is not a strong one in us, we can look to classmates to model for us how we can do what we need to do. This has the potential to open my students and myself to greater learning. It will empower my students in learning for the rest of their lives.*

'Outcomes' Statement

> *It seems that innovation is everywhere in education, sometimes ready to trip us up, and other times ready to boost us to new levels of teaching skill. Our group analyses of student learning processes have opened me to such better understandings of my learners that no matter what I do – be it following traditional or contemporary models – my focus is more solidly on how my students understand their learning. I can now shift my main focus away from philosophies, practices and materials and truly see who my students really are as learners.*

Case Study II: Mary Beth F., teacher of 4th grade

Description of Learning Process

Uses first: precise
Use as needed: sequential, confluent (both low range)
Avoids: technical

Initial Perspective on Teaching and Learning, January 1997

> *I was not at the first two hour after school introductory meeting. So, when I came into the training, I came into it totally blind. I had no idea about any aspect of this information on learning styles or its application to the classroom. In the first session, I was overcome. I thought, "there is so much here."*

The Stages of Growth During the Staff Development Process

Stage I

[Mary Beth has not used cooperative learning as a part of her teaching repertoire. Early in the *Let Me Learn process*, she decided to develop the facilitation of cooperative learning in a more effective manner. The following transcript details her efforts.]

> *At the end of last week, my students and I discussed our learning patterns more in depth. When I put the students into groups, they did produce but they didn't end up listening to each other. This week I put them back in their groups and told them that they needed to listen to each other, and I still had some problems with some groups, but...I have them working together more than I have before. Usually, I used to have them work in pairs so having them work in groups of four is very different.*
>
> *Last week they read a story about going into outer space. I asked them to cooperate in making a list of the things they would need to take with them and why. I had them talk about their learning styles and what they were each going to bring to their group. They did that very quickly because they knew the information. Then we discussed how we have to allow for other people. I feel they did much better this time. However, I did observe one group that had only two people listening to each other and for the most part closed out or ignored the ideas of the most technical member of the group. I'm going to show you a video of that interaction. Watch to see what happens by the end of the activity.*

Stage II

[Mary Beth presents a video tape of her class working in cooperative learning groups. She explains what her colleagues are seeing and hearing on the tape]:

> *Jessica is highly precise, Adam is highly sequential, and Kemp is highly technical and precise. Jessica is recording things in sentences, Adam is also making a list and Kemp has no paper and no pencils in front of him. He's saying, "You're not taking my ideas. Why won't you listen to me?" His ideas are accompanied by serious reasoning on his part but no one is taking him seriously. Jessica is erasing and correcting what she's written.*
>
> *The last time we did cooperative learning, Kemp wouldn't get up off the floor when the group presented. Now he's interacting with the group, although they're still not listening to him. And he is leaning forward trying to explain to the*

> *group. Jessica is telling Adam, "just write weapons", although Kemp is trying to give a more extemporaneous explanation of what he (technically) thought they should include. She's filtering the responses and only writing down what she thinks they should be. Now she's trying to convince Adam to record what she's writing. Lots of students turn to Jessica because she tries to control.*
>
> *Now watch. It's ten minutes later and the groups are wrapping up their activities; and where is Kemp? He's no longer sitting with his group. (She pans the camera) Kemp is reading a book.*

Stage III

[Mary Beth invites her colleagues and research facilitators from the USA and Northern Ireland to meet with her students and interview them on their latest cooperative learning project. The interviewer chooses to follow-up on the Adam-Jessica-Kemp grouping since Mary Beth has been working to have her students use their knowledge about how they learn to work together more cooperatively.]

> *Interviewer: Well, tell me what you have here?*
> *Adam: Well, we...*
> *Jessica: (interrupting): We have a chart.*
> *Adam (back on track): A chart of who's the most sequential in the class, and precise and confluent and technical.*
> *Interviewer: Ok! Well tell me what you have here.*
> *Jessica: We made a chart. We asked everybody what they were highest in.*
> *Adam: (learning patterns), and then we made four sections.*
> *Jessica: Yeah. And we had a different colour for each one and we each traced over a certain thing.*
> *Adam: Like I traced over this one and this one, and Kemp traced over that one and that one.*
> *Jessica: And Adam was drawing little things.*
> *Interviewer: OK, you're sequential, and you're precise; and Kemp's technical, because I saw your picture on the video where you left your group and went off by yourself and read a book. You became famous when you did that (laughter). That was a very interesting decision you made.*
> *Kemp: (Mutters – inaudible)*
> *Jessica: Well we've been using a lot of his ideas now.*
> *Adam: And we've been getting along and doing a lot better since.*
> *Interviewer: You had good ideas that day of the things that you would take along on a spaceship. I thought that they were very interesting.*

Jessica: Since then we've decided to keep track of how we work with Kemp.
Interviewer: What has Kemp suggested recently that you took seriously?
Adam: I don't know.
Jessica: (overriding): We were making a bridge out of styrofoam and we used a lot of his ideas about how to make it.
Interviewer: What kinds of things did you suggest'?
Kemp: Ummm.
Adam: He suggested putting milk cartons on the back.
Kemp: And putting support...
Adam: And putting the straws for support
Interviewer: So you built bridges too (Chorus of "Yeahs") That's great.

A Demonstration of Mary Beth's Skill of Student-Learner Analysis using the ILM and ILC

Melvin: 'The One Who Drives Me Nuts'

Uses first: technical reasoning and precision
Uses as needed: sequence and confluence (low range)

> *Prior to my understanding of Melvin's learning patterns, he always seemed that he was never ever with me. He was so distractible. Melvin is very technical and very precise, so he keeps to himself and won't engage himself unless he knows exactly what is expected. Words aren't his primary tool, so he has to work hard to express himself as precisely as he would like. I misinterpreted this as a slowness of understanding. I think my understanding has helped him a lot. Before, I would put 10 tasks on the board, and he just couldn't do it. But now, I ask, "Are you with me?" And when he isn't, I'll say, "Then go back to where you were and work on the task together another time." And before I wouldn't have done that. I would have said, "You need to sit here and do this task and concentrate right now." But now I understand that Melvin can't do that and that's okay. I'll ask him the next morning or after lunch if he's ready to take the math quiz and he'll say, "I'm ready." And he does okay on them.*
>
> *Strategies that I have worked with Melvin include asking for more time and finding a partner who can help [clarify] a specific assignment. I see progress when, like the other day, he sought help from another student for writing sentences. He has also asked for an extension on a project, the flags project,*

whereas before he simply wouldn't have done the project at all. And on a multiplication test of 20 problems when he became distracted we put the quiz aside and found time later in the day when he could focus. Then he did fine. On the "River Run Wild" project he chose to construct a diorama which he completed on time and met all the requirements. When he stood up to explain, he had trouble choosing words. I now understand why – his predilection for precision. But he did explain it!

Now that I more fully understand technical learners, I have found I can better understand Melvin's learning preferences and how he processes information. When Melvin does not complete assignments, we now talk about his stumbling block. When he has trouble with writing he is to tape-record his thoughts and words. I play them back to hear and assess the final written project. If he can't get started, he seeks advice on where and how to start. For organisation he has two desks. Any important papers he may put on my desk so they're not lost. If he might forget an important upcoming event, due date, etc., he writes it down in his assignment book. I allow Melvin to go to the restroom as a means of taking short walks to clear his head.

During the first marking period, Melvin had all Fs and one B. The second marking period 2 Cs, 2 Ds, & 2 Fs. At this point he was failing fourth grade. In the present marking period (January through March) he has had many fewer zeros. His grades are all Cs! I believe Melvin feels better about his grades and also about himself. He can effectively use some strategies to help him when completing assignments outside his preferred learning style. When working on group projects, Melvin has gained confidence in sharing his ideas of how to construct things. In our bridge project he felt very comfortable working with the tools and got great feedback when the bridge was built well.

Concluding Perspective on Teaching and Learning, April 1997

Reading Unlocking the Will to Learn really helped. I knew after all my years of teaching that each kid was different and had different learning styles. But to put names to them helped me really understand more fully. And at first, I was hesitant because I was afraid I was labelling the students. But I realised that by talking to them about who they are as learners I wasn't. I was empowering them to learn.

‘Outcomes’ Statement

> *In my teaching I’ve not focused a lot on cooperative learning. Last year, I had Lorraine’s class, and I would never have been able to do the things she’s done. Had I been empowered with this knowledge last year, my classroom would have been completely different. And many of those students would have succeeded far beyond the level they did had I had this knowledge. I feel empowered by the Let Me Learn project and I think it’s empowered the kids as well.*

Case Study III: Sandy D., teacher of 7th grade

Description of Learning Processes

Uses first: sequence and precision
Avoids: technical reasoning and confluence

Initial Perspective, January 1997

> *I was initially a reluctant participant in the Let Me Learn process because I looked at the staff development on student learning as something extra to do. I love teaching and I enjoy the work, but just don’t give me extra things. I participated in the project because there’s a lot going on (politically) in the school, and I came in because of what I heard. I can’t fight against something I don’t know about. So I decided “I’ll go into the program and learn about it and find the reasons why I don‘t want to do it, and then say it’s no good.” So I came in and was changed, but the change wasn’t sudden.*

The Stages of Growth during the Staff Development Process

[Sandy was at first quite resistant to having student evaluations take any other form other than paper and pencil. However, 4 weeks into the training she allowed the students to complete an alternative assessment. The process went well, and she reported so to the teachers in the training project. Then the next week she related the following].

> *Yesterday, we worked on assessment. I still give my students my type of test, my written test or multiple choice, but I also allow them to choose if they would like to do something else to show me what they have learned. So far they have done well in showing me they understand the underlying meaning of the literature,*

that they understand the elements because they talk about it – what they like etc. I am more comfortable with that approach now, but I wouldn't want to just let them choose always, but I'm more open to that. I don't feel that they are learning any less, and they are showing me that they have learned, that they are understanding what they are reading.

The 7th grade had just had a test on Monday on their history unit. They had just finished a play on it. So they said, "We've been talking. Will you give us one period?" "A period for what?" "We want to do something for our next unit. Our Choices unit." Now we haven't even got into this. We have not introduced it. We have not skimmed through it. Nothing. I said, "Well, what do you think you'd do?" "We want to surprise you." "Well, you have to give me some guidelines." They had talked a bit but they didn't know what I meant by guidelines. I asked if they had seen a rubric and they hadn't. So I showed them one and gave them a copy of one. I didn't let them read it. I just showed them and said, "This is what one looks like. And I explained to them what it meant, etc. Well, each of them started to write down what they thought it would be. Kirby took the lead on this the whole way through. And Courtney wrote it all down. And Sarah wrote it all down. Now Sarah, she stops them. She asks questions. She wants to get this down. Courtney is writing and getting this down, but she doesn't want to collaborate with Sarah, and she wants it in her words exactly, even when it's three times as long as Sarah's. Katie sat back a while and then would say something and Colleen joined in a little bit. Casey sat back and would say nothing, but would interrupt and say, "What do you mean? I don't understand."

They decided that to earn a "3" on the presentation they were to a) stay on the topic of choice; b) that they'd have to have equal participation; c) that the presentation would have to have complete relevance to either their unit or the story that they chose; and d) it had to be presented in a logical sequence. That a "2" would require a) must show choice or relevance to the unit; and b) equal participation in the preparation. "1" was a) little group participation and b) just relevance to the unit. "0" was a) little group participation or agreement; and b) little relevancy to the unit.

Now I'm waiting to see what their surprise is. I already gave them a period for planning, and they are now discussing how to get together after school but they can't do it because of the different things they're involved in. One parent said she can't have that many people at her house to work on this. And the other three

> *said, "Oh, my mom will." And they got off track talking about the refreshments they would have and then they said, "Okay, we're getting off topic." And they noticed that quite early without me having to say a word. This is progress! I say this because these students are learning to listen to one another and let their learning patterns work for them. They are using their strengths to work together. They are learning to respect each other's approach to learning. No more one-upmanship or arguing.*
>
> *The day I was here in the training session, they were with a substitute teacher. They finished the rubrics and word-processed them in the computer lab and had things all tidy and set. They left their work on my desk. I couldn't believe my eyes when I returned. They had done it without me and even more detailed than I would have expected.*

A Demonstration of Sandy's Skill of Student-Learner Analysis using the ILM and LCI

Courtney "The One Who Drives Me Nuts"

Uses first: sequential, confluence and precise
Avoids: technical

> *Courtney was a student who would tell you what was right or wrong. If another student was asked a question, she would answer it for him. She interrupted other students, etc. Quite frankly, until I understood her LCI, I would say Courtney was the one student who really drove me nuts because she dominates the class with her rapid flow of ideas. Now that I understand her learning patterns – specifically that she has so many in the use-first category – I recognise that it isn't just her personality. She truly is a strong- willed learner. The other students understand this about her now, and they have even commented on how she is learning to wait for others to express their ideas. The other day she actually said, "Excuse me, I shouldn't have butted in when you were speaking." Not only did I notice this, but her classmates commended her for it also. I have now been able to sit back and allow her classmates to rein her in when she is getting so overbearing. And they do it nicely. It has made a real difference in how I perceive her – that's for certain.*

Concluding Perspective on Teaching and Learning, April 1997

> *When I went into this [Let Me Learn], I went in with a negative attitude. But once I gave the kids the learning inventory , I could really see that it gives insights into the learners which I would not have had any other way. In my preferences for learning I am very high in sequence and precision, and low in technical reasoning and confluence. Now that we know who we are (as teacher and students), I allow my students to do different things. I really believe that every student should be given this because even, if we didn't tell them their scores, I think that information helps the teacher. Now I have had a great problem convincing a couple of the other teachers that there is worth in this. One of the worst [disbelievers] kept quizzing me, "Well, what if this kid's this and what if that kid's that?" And I said, "Well, if this kid's such-n-such, you could do this." "Well, when am I ever going to have time to do that? I can't take apart every kid and do this." Well, I think we may not have to. If we start with this in the lower grades, by the time they're older the kids are going to self-start when they get there.*
>
> *In any case, I'm more open to my students suggestions now. I am more willing to let them do different types of things. My acceptance that things may not develop as I planned really shows how I have changed.*

'Outcomes' Statement

> *Over the course of the year, what I have found is that I am very much empowered. I do see a lot of value in the (LCI) inventory. At first I didn't think it would work, but now I think it is really worth the work and effort. The staff development project and my use of the inventory has helped me focus on learning and the learning process in a way I haven't done before.*

Discussion

The data suggest that an increase in a teacher's awareness of his/her learning processes as well as his/her students' learning processes can result in:

1. an increase in the use of alternative teaching methods;
2. an increase in tolerance of students' varied learning behaviours; and
3. an increase in both teacher and students' willingness to work on teaching-learning strategies which facilitate student success.

The *Let Me Learn* staff development process has had a significant effect upon those who participated in it. The change in their perceptions on teaching and learning are deep and broad-reaching. A conversation with a teacher who participated in the staff development process helps explain the change which occurred as a result of the *Let Me Learn* staff development process:

> *The staff development focused on children's learning. But in doing so, change occurred in our teaching. Now I understand that neither changes in teaching or learning will be effective or long term unless we look at these as parallel activities.*

Another participant said:

> *After the very first session, I realised this was a chance to really put the control of the learning process into the hands of the learner. As a teacher you can read research documentation, periodicals, etc. but until you really have a handle on it - that is until you can walk into the classroom with it and begin to use it - it is truly difficult to implement new understandings in a meaningful way.*

Clearly, one strength of the *Let Me Learn* approach was the building of a community of professionals who were undergoing change simultaneously. As Esther remarked:

> *All six of us came in with different levels of tolerance and understanding of our students' learning patterns and behaviours. We've all become more skilled and especially more tolerant of learner diversity.*

The degree of professional growth Esther is referring to can be attributed to the removal of what has typically been described as the 'state of semi-isolation' among the professional staff which often exists in schools. The *Let Me Learn* intensive schedule helped the participants to make connections with each other and to optimise the quality of their working relationships.

Johnston (1996) explains how deep change, such as that demonstrated by the data, occurs when those involved in its implementation have an opportunity to increase their awareness of the issues, to develop an enhanced knowledge base, to have opportunities to act upon their new knowledge, (i.e. tak action and apply their newly developed skills within their professional work context) and are afforded ample opportunity to reflect upon the outcomes, (i.e. review with peers the judgement they used in applying the newly attained knowledge and skills). Most importantly, she suggests that this process needs to occur in a non-threatening atmosphere wherein participants can revisit their thoughts and actions without concern for criticism or correction. That was precisely the climate in the semester-long *Let Me Learn* developmental process for these teachers.

Probably the most telling evidence of the depth to which teacher growth and development occurred can be found in the following anecdote from Esther. This points to the potentially long-term legacy and degree of impact of the staff development process:

> *A teacher came to me the other day and explained that she had two students whose cases are being brought to the Pupil Assistance Committee for review. She had not been a participant in the Let Me Learn programme. She asked, 'Can you help me with this?" And so we started looking at the LCI scores of these students. I told her some things right off the bat and she said, "Exactly. That's who this kid is." Now I didn't know these two children at all except through seeing their responses on the LCIs. But the cool thing was we were able to construct some interventions that had never occurred to her when she first started pacing these kids. I think it's neat that even teachers who are not involved in the Let Me Learn process are starting to recognise there may be some value to this and that we could use this [knowledge] under different circumstances to help our kids be better learners.*

The outcomes of the study reported in this article strongly make the case for staff development which is job-embedded and steeped in practical application. In this study reported here, focusing on how the learner learns proved to be a powerful means of bringing about an enduring invigoration of the teacher.

References

Brooks, J. & Brooks, M. (1993) *The Case for Constructivist Classrooms.* Alexandria: ASCD.

Caine, R. N. & Caine, G. (1997). *Education on the Edge of Possibility.* Alexandria:

Fullan, M. (1990). *Changing School Culture Through Staff Development.* Alexandria:ASCD.

Johnston, C. (1994). *Empowering the Organization Through Professional Talk*. Dubique: Kendall Hunt.

Johnston, C. (1996). *Unlocking the Will to Learn. T*housand Oakes: Corwin Press, Sage.

Johnston, C. & Dainton, G. (1996). *The Learning Combination Inventory.* Thousand Oakes: Corwin Press, Sage.

Joyce, B. (1990). *Changing School Culture Through Staff Development.* Alexandria: ASCD.

Leithwood, K. (1990). *Changing School Culture Through Staff Development.* Alexandria: ASCD.

Sparks D. & Hirsh, S. (1997). Staff development,innovation and instructional development, in *A New Vision for Staff Development*. Alexandria: ASCD.

Zimmerman, D. (1997). Principal, Patwin Elementary School, Suisun, California, in ASCD Innovation. Ga. Ut untiorrum re, voles voluptaquid ut estis moluptium intia que vendit et essim est et labores

• CHAPTER 5 •

Teacher Transformation through a Professional Changing Experience: the Let Me Learn Professional Learning Process

Colin Calleja

Introduction

This research sets out to explore how a group of nine educators from a Catholic Church school in Malta, who have attended a professional learning Process targeting self-knowledge and knowledge of processes of learning, experienced personal and professional transformation. Those factors influencing participants in their transformative learning journey are investigated. The exploration of the dynamics of transformative learning and an analysis of whether individual transformation affects the school's transformative learning experience also form part of the study. More specifically this study set out to explore how teachers who participated in this professional Learning process have experienced transformative learning.

Literature Review

Mezirow's theoretical framework serves as a conceptual framework for the study. The theory's complexity and multifaceted nature enabled the researchers to better understand and analyse contextual data, which from its nature is complex and multifaceted.

Learning, according to Mezirow (1996) is "understood as the process of using a prior interpretation to construe a new or revised interpretation of the meaning of one's experience in order to guide future action" (p. 162). Such meaning making is accomplished by "projecting images and symbolic models, meaning schemes based upon prior learning, onto our sensory experiences and imaginatively use analogies to interpret new experiences" (Mezirow 1996, p.162). As can be appreciated, such an insight has particular relevance to teacher education. Acculturalisation of teachers within the profession can only take place when they become aware of the knowledge, influences and hidden theories accrued over the years.

Mezirow's rendering of transformative learning, emphasises the importance and centrality of experience, the understanding of one's frame of reference and the role of disorienting dilemma. It acknowledges the importance of critical reflection and critical self-reflection as well as the role of rational discourse and of dialogue when communicating with others.

In his work, Mezirow amply discusses the conditions that foster such transformation. A discussion of these concepts would reveal "a picture of transformative learning theory that is much more complex and multifaceted than originally understood" (Taylor, 2000).

Mezirow's analysis of adult transformative learning was used as a background to understanding the transformation experienced by a group of educators who participated in a 24-hour professional learning process spread over a 6-month period. This process is based on a model of learning that helps one to understand one's own learning preferences, develop a "unique set of learning tools, and an array of practical skills, and a set of terms to equip learners of all ages to communicate to others about their individual learning process" (Johnston, 2009, p.1).

Methodology

This study takes a qualitative phenomenological approach. It seeks to identify phenomena of personal and professional transformative learning through the perceptions of the educators participating in this study. Through the use of semi-structured interviews it seeks to gather 'thick' data. This data represents the voices of those educators who have participated in this professional development in the past years, emphasising the importance of the personal perspective and interpretation. The whole process allowed this research to understand the subjective experience, motivation and actions of the participants.

Findings and Implications

The study showed that all participants, albeit at different levels, have gone through the ten-phases proposed by Mezirow in their professional transformation. What follows is an analysis of the voices of the participants describing their change process as educators.

1. Disorienting dilemma

A disorienting dilemma is an incident or experience that disturbs the individual's current view of reality. For the purpose of this study this phase is seen as a trigger event that initiates reflection and challenges the participants' 'engrained professional behaviour'.

This study generated four themes that were seen as triggers that initiated reflection by participants on the need to transform their practice. The themes generated from the interviews with participants were the following:

1.1 Awareness of incumbent diversity
1.2 Urge for social justice
1.3 Incongruence between espoused and prevalent values
1.4 Policy decisions

The text analysis showed a high concentration of the school's leadership references falling under the first three themes, with a total of thirteen references compared to four references made by the teachers. The teachers' main trigger for attending the LMLpLp was instigated from an external force. The school leadership saw value and congruence between the values being promoted by the school and the philosophy underpinning the Let Me Learn process. This led to an open invitation to all teachers to participate in this course. Those teachers, who accepted the invitation, participated in the training.. The teachers were sent for the training in groups over an extended period of time.

The school's senior management team's (SMT) shared concerns, triggered their search for means of transforming the school's "visual image and educational goals" (Bezzina & Testa, 2005, 145). Their main concern originated from an awareness of the challenge of the incumbent diversity within the student population and the need to address it efficiently. They discovered it was no easy task to encourage teachers who had developed a set of teaching behaviours to adopt different approaches to teaching which address the diversity of needs of the students.

> *"Since we have a mixed ability school, I think that it is part of our school ethos that we try to cater for differences found in our students, so it was really important that we do something of the sort." (Chiara – Assistant Head)*

This prompted the urge for the fair treatment of all students, irrespective of their social and academic background. As members of the SMT, they wanted to create a school that is based on the realisation of the principles of equality and solidarity – a school that understands and values each student's worth.

> *"... we are eternally engaged in the context of justice and by justice I mean the need to realise that each child is different, each needing their own space and we need to find the means - the responsibility of every educational entity is to find the means to reach each child's aspirations" (Joseph – Head of School)*

> *"I worry about those students falling behind maybe because we are not finding the best ways to tackle them..." (Chiara – Assistant Head)*

The interviews with the teachers show that they shared the same concerns with the school leadership. The impetus, though, came as a result of the leadership's policy decisions. Carmen, a primary school teacher, felt that the school's encouragement to attending this training had addressed her need to:

> *"... understand the students more than I already was. To be given tools which were practical tools in the classroom."*

Thus, what became evident was that a seminal group, which includes the participants of this study, saw the opportunity to attend the training as an opportunity to learn and transform their practice:

> *"I was one of the first teachers who were approached by the headmaster, where we were told of his idea of having teachers in our school trained in the Let Me Learn process... I accepted because it was something new which I wanted to be trained in." (Andrew – A primary teacher)*

2. Self-examination

Self-examination is a natural consequence of action when one is faced with a disorienting dilemma that makes one question the intentions driving professional practice. This research yielded four themes that could be categorised under this phase, namely:

2.1 Realisation of limitations
2.2 Recognition of 'Fad' syndrome
2.3 Culture of labelling *and*
2.4 Scepticism

Most participants expressed their initial disappointment when their expectations of being handed universal strategies that would solve all their problems were not delivered. Joseph, as Head of school, reflects on these initial expectations and came to the realisation:

> *"… that Let Me Learn is not a recipe but a process of understanding."*

Chiara highlights the limitations that the administrative pressures often cause. She admits that notwithstanding the good intentions,

> *"… what happens to us during the year, … is that you don't have the strength, you don't have the energy because you would have other things on your plate as well."*

Yesmin, a primary school teacher, voices this same concern:

> *"… sometimes there are things which teachers go through, there is a day when you might say 'oh I feel I haven't dedicated so much time to that particular student'…*
> *… sometimes you want to reach every student in class, it is like you are running against time to check that no student leaves the class with a question mark on his mind…"*

Sarah, another SMT member, refers to the failure of the educational system to guard itself from novel, but not necessarily theoretically sound processes or systems of learning; these tend to fade quickly but leaving behind a trail of negative consequences. At times this led educators to look at new school initiatives with a sense of scepticism, fearing of yet another fad that comes and goes quickly. Initially, the LMLpLp experienced the same fate:

> *"To tell you the truth, I was very sceptical at the beginning, and to be honest I wasn't expecting anything really. I thought it was just another fancy programme that we encounter in everyday life." (Sarah)*

3. Critical reflection and re-evaluation of assumptions about oneself and one's professional learning

Whilst self-examining their intentions for participating in the LMLpLp, participants reflected on their professional learning. This study has generated six themes that describe the type of reflection that the participating educators underwent in their transformative process. The themes generated were the following:

3.1 Problemisation of past intents
3.2 Problemisation of practice
3.3 Global re-evaluation of the implications to one's practice
3.4 Reflection on the process of collective transformation

3.5 Reflection on inter/intrapersonal relationships and
3.6 Reflection on the non-linearity of the process of change.

The Senior Management Team reflected on the intentions that propelled the school towards the Let Me Learn process in their search for tools to help them achieve their new school vision. Joseph, as head of school, speaks of the Let Me Learn process as that programme which made him aware of the contradictions that often cloud one's perspective:

> *"... it made us aware of a number of contradictions. ... I think that there were a number of situations where these contradictions were evident."*

Joseph, Sarah and Chiara saw Let Me Learn as a tool that helped them become aware of how their learning processes were ordaining their teaching:

> *"I think Let Me Learn was instrumental as a tool to first and foremost realise this sense of diversity even in the way we learn. Secondly, we as teachers realise why we prefer to teach in certain ways and why we may distinguish between the students in the classroom." (Joseph)*

For Sarah the Process has helped her to question her practice:

> *"In that sense I started questioning myself, on what I was achieving in class, was I fulfilling my learning patterns or the students'? I started to notice how my learning patterns were influencing the students."*

Chiara perceived Let Me Learn as the means by which she could rise to the challenges of her new experience within a new school with a new vision for meeting the diverse needs of the student population.

Similarly, amongst the participating teachers, there were those who emphasised the fact that the Process made them re-evaluate their teaching methodology and therefore enabled them to appreciate Let Me Learn as an opportunity to learn new ways for addressing the diverse needs of their students.

One of the teachers, Josephine, a secondary school language teacher, reflects on how the Process led the school community to:

> *"discuss the learning process. To [reflect on] the part the students play in the whole process. [We often talk about] what we should be doing and we question our teaching methods when we're not reaching particular students. A lot of focus is on the student and the learning process. Definitely. More than ever."*

Participants problematised and re-evaluated their practice as a result of the new awareness. The SMT reflected on how Let Me Learn impacted practice on different levels of communication and in particular, on the curricular and pedagogical level.

> *"… I think that the effect it had was on a personal level, on the level of relationships and also on a curricular level and also on the pedagogy. It obviously helps you think about different ways of working." (Joseph)*

This change was also highlighted by Mary, another language teacher in the secondary school, who attributed the change in her perspective and approach towards teaching, to the Process:

> *"Like I told you, this has changed my life, and this change was reflected in the way I teach…"*

Sarah, on the other hand, emphasised how the Process has provided the community with intentionality of purpose. Whilst good practice was already in place and teachers always gave their best to respond to the needs of the learners, the response was often impulsive and not based on the knowledge of students' learning preferences:

> *"… (after attending the LMLpLp) it was possible for us to understand different strategies and why some weren't working… with Let Me Learn we became aware that there are different patterns that one can develop, so in that way it helped the process that we had already started, in a way that we could help our students better."*

All participants agree that a deeper understanding of the programme and its application to one's practice requires time. Notwithstanding, participants felt they have acquired the skill to address individual needs and have a better understanding of how different learners learn.

> *"… whereas before I had one approach, which had to apply to everyone, nowadays I know that I had to change, I changed my own approach trying to appeal to more than…to individuals." (Josephine)*

Three of the teachers highlighted the fact that the Process gave them the possibility to target more precisely their response to individual learners. It gave them the skill to plan and respond with intention.

The head of school expressed his trust that when a critical mass is formed and a culture of change takes over progressively, others within the community will be swayed towards the collective vision. He believes that as a leader, he needs to respect the pace of different individuals that make up the school's community, without losing sight of a common vision and a clear path that leads to the realisation of the same vision.

The next theme that emerged from this research concerned the way the Process helped the participants reflect on the self as a learner and the effects of this awareness on the relationship with others. Joseph and Sarah reflect on how the Process helped them understand themselves better. Such an intrapersonal understanding has led to an improved interpersonal communication with colleagues and students. One of the teachers underlines this positive relationship with the school senior management:

> *"The idea that the school has faith in you, makes me appreciate it even more. It is like they know what you can do, what you achieve and they give you a certain responsibility to carry out the work." (Paul)*

Joseph reflects on how his new understanding of himself as a learner has led him to discover a colleague who due to lack of communication was hidden behind a false façade. He explains that he could only bypass this façade once he understood the obstacles to communication that he was causing.

Three of the participating teachers comment, on how the Process helped them to better understand their students and as a consequence a marked improvement in interpersonal relationship was experienced.

> *"I think that is it, that I value each student as an individual... I think the students feel this a lot, the fact that you are not relating to them in a generic manner, the fact that you continue to motivate them, you don't give up, if there is someone facing a difficulty in a particular task, you encourage him to continue to try and not accept it, I think that is what I value most, that everyone feels comfortable in the classroom..." (Jane)*

Joseph points out the importance of certain aspects of the Process that in his words have enriched and supported the process of transformation, these being the role of the trainers as mentors. Here mentors intervene and support the school and individual teachers in their quest to transform their practice.

> *"One of the positive things about the Let Me Learn team was the sense of support..." (Joseph)*

One of the teachers looked at the relationship with her mentor as an opportunity to fuel her determination to grow and transform into a more effective teacher.

> *"Nowadays, I think I have taken a lot out of it. I used it a lot." (Josephine)*

The experience of growth is an experience when "at times you feel there are tangible improvements whereas at other times, you feel that there is the need for more, more, ..." (Joseph). This perception is corroborated by Taylor (Freire, 1994)(2000) who suggests that the transformative learning process is not as linear as Mezirow might have suggested. Taylor and others have suggested that transformation is in fact recursive, evolving and spiral in nature. This study shows that the transformative experience of the community is characterised with fluidity and change.

4. Dialogue and discourse with others

Taylor (2009) affirms that "engagement in dialogue with the self and others" (p.9) is one of the core elements of transformative learning. Taylor defines dialogue as a "relational and trustful communication" (p.9). According to Schapiro, Wasserman and Gallegos (2012), dialogue provides a unique container for transformation. This study generates six themes that describe the "transformative dialogic moments" (Wasserman 2004 cited in Schapiro et al., 2012) as expressed by this group of educators. The themes are the following:

4.1 Dialogue between mentor and teacher being mentored
4.2 Dialogue between teachers
4.3 Dialogue between teachers and parents/guardians
4.4 Dialogue between SMT and practitioners
4.5 Discourse with self and others to problematise alternative perspectives and
4.6 Development of a shared language of possibility.

Two members of the Senior Management Team (SMT) refer to the mentoring service as one of the major strengths of the LMLpLp. It is their opinion that the mentoring process created a possibility for educators to enter in a dialogic communication with their mentor about their practice. This dialogic communication helped participants reflect on the realities of their practice in the light of their new understandings. Sarah views the mentor as that person who brings the knowledge and expertise into the realm of practice. Sarah also refers to the process of mentoring and training as one that respected the pace and curiosities of the participants, allowing space for reflection and praxis.

> *"...they encouraged a free process, they didn't pass on any kind of recipe. ... when I realised that it was a free process, which you discover as you go along, nothing had to be done because you had to, then obviously my expectations started to change." (Sarah)*

Joseph, as head of school, spoke about the need for a safe dialogic environment, where individuals can talk without being judged or exposed to inquisition. Such a safe environment allows for communication space to 'think together'. Josephine, Mary and Jane also make reference to this. Josephine claims that dialogue between teachers would lead to a better understanding of concepts and issues. Mary continues to explain that an effective professional dialogue would lead to collective reflection and a clearer understanding of the dynamics of learning.

> *" ...we spend a lot of time, most of our PD days discussing the learning process. What we should be doing is questioning our teaching methods when we're not reaching particular students. A lot of focus is on the students and the learning process" (Josephine)*

> *"I have learnt to share things that have worked for me with my colleagues... when we find something that works, we share it together..." (Paul)*

Paul emphasised the sense of empowerment he felt when the SMT showed interest in his initiatives. This sense of freedom facilitated the communication channels between the teaching staff and the school management while it ensured a motivating learning experience for the learners.

> *"Our leadership has given us the freedom to choose certain things (here he continues to explain a creative art activity which he organised for his class and which created a mess)... Not only did I not get – 'oh be careful because you will create a mess on the roof', but I was encouraged, even having them offering me materials that I needed for this activity." (Paul)*

Dialogue about the Process went beyond the confines of the school and also included the parents. Joseph refers to the importance of communicating and dialoguing with parents. He claims that parental exposure to Let Me Learn gave the school community a common language to talk about the teaching/learning process and to talk about the development of their son in what Freire (1994) calls a language of hope. Through this shared language, talk about learning needs was facilitated without recurring to negative labels. When shared language is part of the dialogue, communication is facilitated and parents truly become collaborators in the educational project. Christine, a primary school teacher, also underlined the value of dialoguing with parents to help them understand their own children's learning processes.

> *"Because even parents, sometimes they don't accept their children the way they are, but when I am with them, and I explain the learning patterns and explain 'it's his way of learning, listen, try to help him in this way', yes there are parents who understand..." (Christine)*

Joseph explains that knowledge of the process of learning helped parents to "relate to their children" better and to create a constructive dialogue with them. It helped teachers to communicate more effectively with the students' parents through a positive language of possibility. According to Chiara, parents can truly and effectively get involved in the learning process of their children through an informed dialogue and a shared language.

By acquiring the language, Christine was in a better position to identify the need and "name it". It also gave her the skill to share this knowledge with the children that she teaches:

> *"I didn't have the skill to use the characters (representing the learning patterns proposed by the Let Me Learn Process) to make the students understand, but the characters help the students a lot." (Christine)*

Sarah and Andrew spoke about a language that led to a positive response. Sarah spoke about a language that enabled her to isolate the problem from the student. In her new paradigm, the student became the learner and the problem was transformed into a challenge. The use of strategies for learning enabled her students to take control of their learning and overcome that challenge. According to Andrew, through the refinement of the language, learners can experience the thoroughness of the dynamics of learning.

5. Exploration of options for new roles, relationships and actions

The enriched communication within the school has led participants to the exploration of new options for their professional practice. This study generates five themes that highlight the different roles adopted by the participants as a result of their new awareness. The themes generated from the interviews with participants are the following:

5.1 The educator as a catalyst of change
5.2 The educator as an 'archaeologist' of learning potential
5.3 The school as an example for other schools
5.4 The educator explorer of alternative discourse and
5.5 The educator as an explorer of alternative pedagogical praxis.

Participants saw their role within the wider educational community as catalysts of change. Chiara believes that her role is primarily that of an educator, and thus she strongly believes that she needs to lead by example and apply the Process in her teaching of Math.

Mary, a secondary English language teacher believes that by sharing her practice, she would be helping colleagues to transform their practice whilst transforming her own in the process.

Paul speaks about how structured opportunities for teachers and other educators to share their practice, have served as an opportunity to spread the word even amongst those who have not as yet attended the training. These structured opportunities create space for cross sector sharing.

The theme "the educator as an 'archaeologist' of learning potential" refers to the teacher's role in recovering, surveying and excavating learning potential. Most participants made reference to this theme, including one member of the SMT who makes three references.

As a deputy head, Sarah speaks of a school that tries "to find out what students are good at." She explains that through a change in the language used, afforded by their new awareness through the Let Me Learn Process, the school can now

> *"… use what he (the student) is good at, and tackle the difficult situation."*

Jane explains how students are encouraged to work outside their comfort zone, allowing for their full potential to emerge. She also talks about a strategy she implemented, allowing students to explore their preferred mode of learning while sharing their learning experiences on a diary.

Both Andrew and Paul speak of how Let Me Learn has provided them with the knowledge of pupils' learning processes. Through such knowledge they have a better understanding of how they can best support students in their learning and boost their self-esteem.

> *"So when you take a look at their patterns, and you adapt your lesson to their needs, they start to realise that 'yes even I can do this'. (Andrew)*

> *"This year's group is doing really well because we have found the right programme that can cater for them, and it is catering for their needs and there I think that they are improving and the most important thing is that their self esteem is increasing..." (Andrew)*

Two participants have referred to theme 5.3 since they could identify their school as a model for other schools that might also be aiming towards transforming their practice into a more learner centred approach.

New roles, relationships and actions instigate a type of discourse that is aligned with the new perspective. The head of school and a teacher from the Secondary mentioned the acquisition of a discourse that reflects the new perspective. Joseph views the Let Me Learn process as an agent for problematising the traditional educational system and therefore the dominant hegemonic culture. Through the exploration of new discourse, Joseph believes that one can approach 'old problems' with a new transformed perspective.

Jane refers to a language which helps learners to move away from their comfort zone and strategise to find ways of forging, intensifying or/and tethering their preferred patterns of learning, leading them to maximise their learning potential. This is a fundamental role of a teacher who has experienced a perspective transformation and thus is exploring new ways of making his role relevant to the new perspective.

Acquisition of this shared language leads to the exploration of alternative pedagogical praxis that emerges from a process of reflection. Sarah refers to how her new awareness has made her realise how her teaching, which reflected her learning profile, could be hindering the process of learning for certain students whose processes of learning patterns differ. This awareness has brought about an intentional change in her teachinwg. Other teachers speak of how this process made them re-think their approach to teaching and to explore other methodologies and strategies.

> *"Basically I changed the way I used to teach in class." (Mary)*

> *"The fact that you realise that it is not because they are no good, but because they learn in a different way, 'so let's see what I can do so that I help them and make them realise', 'yes we are good, we only learn differently from others." (Jane)*

6. Planning of a course of action

Once new options were explored, participants could start planning a new course of action. This study generates four themes that represent how participants planned a course of action reflecting the new perspective. The themes reflecting this phase are:

6.1 Initiating others into the Process
6.2 Reflecting on school policies
6.3 Bringing about change at a paced growth and
6.4 Changing practice as a result of a better understanding of the learners.

The first theme refers to how the participants in this study promoted the Process with their colleagues. It explains how they supported each other in the initial stages of the Process. All three SMT members made reference to this theme, with Chiara making as much as five references.

Both Joseph and Chiara make reference to the importance of a strategy that ensures the creation of a critical mass. A critical mass needs to be formed before any effective change can occur. Joseph explains that the strategy was to first send those educators who showed a positive disposition towards the Process, and were therefore willing to learn further. Chiara deemed this strategy as important because it gave the community a shared language that facilitated communication between members of the community of practice.

Chiara recognises the limitations and hurdles that the education system offers and the difficulties these impose on teachers who are trying to immerse themselves into this whole process. Often this led to an initial reluctance.

Josephine believes that immersing students into the discourse afforded by the Process should be the initial step. In her interview she speaks of introducing her students to the Let Me Learn Process and its language to help her communicate more effectively:

> *"So once (...) I embarked my students on the Let Me Learn project, (...) when I take up a Form 1 class, (...) I embark my students on Let Me Learn, knowing that I'll be using it every single day for the rest of their lives here." (Josephine)*

The next theme (6.2) refers to the re-thinking of the school policies as part of the plan of action inspired by the new perspective. Chiara reflects on the process of building a school's learning policy, in which the Let Me Learn process plays a key role.

> *"It was a very long process (referring to the process of writing the learning policy), (... and) Let Me Learn is part of the checklist, where eventually a policy is going to be introduced." (Chiara)*

Here the Let Me Learn Process is seen as forming a part of the school's learning policy, acting as a means to help initiate further learning initiatives.

A school policy that respects diversity should respect the paced growth of the different members within the community of practice. The next theme (6.3) refers to the importance of a change process that takes its due time without being rushed. This provides participants with ample time to reflect on how this new perspective affects their actions and their persuasions.

Joseph and Chiara reflect on how the school community has grown to challenge the dominant discourse. They claim that while in the past certain values would find opposition from certain teachers, nowadays teachers are more open to accommodate the students' diversity of needs. Obviously, every course of action needs to respect the fact that different teachers might be at different stages within the new perspective. The school therefore needs to respect the pace of every individual within the community.

The final theme (6.4) in this stage refers to the development of pedagogical practice fitting the new perspective, aimed at guiding the course of action. As the head of school and the motivator for the embodiment of the new perspective within the school community, Joseph noticed that the shared LML language as a result of the school involvement in the LML process, has had an impact at classroom level. Sarah talks about a change in approach once the new perspective became the dominant discourse within the school community. She claims to have witnessed a change in the teachers' approach to teaching. This was sustained by Josephine who claims that Let Me Learn has permeated all the work that they, as teachers, do with the children. The awareness of their learning patterns has become an important aspect of their planning for learning.

7. Reference to acquisition of knowledge and skill for implementing one's plan

For this phase the study generates five themes that refer to the knowledge and skills acquired by the participants through their participation in the LMLpLp. The themes are:

7.1 Improved personal and professional interpersonal communication
7.2 Improved understanding of learners' needs
7.3 Intuitive deciphering of learning patterns
7.4 Reference to success and
7.5 Application of differentiated strategies.

The first theme refers to the improvement in interpersonal communication within and outside the professional community. Two members of the senior management team make reference to personal understanding of self. Both Joseph and Sarah feel that through their exposure to this new knowledge they are now in a better position to understand their reactions to certain situations, contexts and the dynamics of interpersonal communication.

> *"I started to make sense of the way I work. I began to understand myself better, that is, the way I work has a logical meaning behind it. I think Let Me Learn gave me a model to make more sense of what I was doing and how I was acting. It also gave more sense to my social life and relationships with others...." (Joseph)*

Joseph also refers to the newly acquired ability to understand the processing patterns of others and hence their conduct. During his interview he refers to a colleague whom he used to consider as an individual who "kill(s my) spirit". He explains how by understanding her processing patterns, he is now in a position to understand the conflict between both sets of patterns, namely the colleague's and his. This resulted in an intentional change of comportment towards the person.

Jane explains that she can now

> *"... look at people individually not like you have a whole group in front of you, I think that is it that I value each student as an individual."*

Jane, Mary, Josephine, Paul and Christine also spoke of how the Process has helped to boost their communication with students. Students now feel valued as individual persons and not lost in a crowd.

> *"My relationship with them (the students) improved, they learnt more, they remember more." (Mary)*

> *"I started to understand myself and other people a lot better." (Jane)*

Sarah, Andrew, Paul and Christine feel that through the acquired knowledge they can have a better understanding of the students as learners. They can better understand their academic, emotional and social needs and adapt to these needs. Mary explains that she can now better understand certain classroom situations and the behaviour of certain students. Christine explains how now that she understands her students and their learning pathways; she can better understand what drives their actions and react with intentionality of purpose. She asserts that while before her participation in the process she was able to identify certain behaviours in her students, she feels that now she has a deeper understanding of what triggered such behaviours and can react with more precision and skill to their needs. She is now able to identify each student's 'learning comfort zone' and to initiate her response from there.

Both Chiara and Mary explain how this new awareness has opened up a space for communication that led to a collaborative spirit amongst teachers.

> *"… we are not afraid of speaking about things with each other although this is not always easy to do.." (Chiara)*
>
> *"We 'steal' each other's ideas, that is how we work." (Mary)*

The ability to decode and use the knowledge of learning patterns to inspire and drive one's response is a fundamental finding of this research. Joseph speaks about how his teaching staff can now respond to situations that in the past would have caused great distress. He explains that now they can communicate their needs better and respond more effectively to specific situations. He observes that teachers' individual strengths have turned into collective strengths because they are able to recognise their learning patterns and identify those needs that can be supported by the rest of the community.

The skill to decode the patterns and to use specific categorisations and descriptions in one's interpretation and evaluation of the actions of others has helped Joseph and Paul to modify their response to the specific needs of others. Similarly, Sarah explains how her ability to decipher how students and teachers process information, has helped her understand certain reactions and behaviours. In understanding such reactions, she could then guide others in their response to alerted situations. Mary and Andrew on the other hand link this to their learning activities and explain how it helped them create activities that respect the students' learning profile whilst still delivering the required content.

> *"The fact that you can understand others through observing the things they do, and knowing how you act, you can react in a better way and you can make leeway where necessary." (Joseph)*

Participants highlight their learning transformation by referring to their successes in implementing the Process. This next theme captures the different aspects which participants experienced as a result of their learning transformation. Joseph refers to two observed improvements, namely the nurturing of solidarity amongst the student community and the marked improvement in the delivery of lessons. He observes that now, students are more engaged in the learning process.

Mary and Andrew also make reference to their successful metamorphosis in the way they deliver their lessons. Through allowing multiple approaches in expressing one's knowledge, the students and the teachers themselves experienced academic satisfaction.

The quality in the delivery of lessons resulted in an observed academic improvement:

> *"… by the end of the first year I compared their first writing task to their last writing task (and) it was impressive…" (Josephine)*

The teacher's feeling of success mirrored itself in a shared feeling of accomplishment amongst the students. Josephine and Andrew make reference to how the students felt and how the experience has boosted their self-esteem.

The feeling of success is the result of, and has resulted in, the application of differentiated strategies. Throughout the data generated one can find numerous references to the teachers' effective response to their learners' needs that resulted from their understanding of the learning process. Joseph, Josephine and Mary make clear references to this as a way of incarnating their perspective transformation.

Joseph refers to an observable change in the general approach to teaching. When reflecting on the qualitative change of his teaching, he explains how through this new awareness he can better understand his students and thus he can respond with more specific intentional strategies.

> *"… if I had to look at what I am doing now, as opposed to what I used to do before, it is different. So the processing of why I am doing certain things has changed, and has changed for the better." (Joseph)*

Mary also refers to her newly acquired awareness and how this has changed her approach to the teaching of poetry.

Josephine also makes reference to her improved skill in creating individualised strategies that respond to the needs and processing patterns of the learners. She explains how she successfully helped learners to generate strategies to succeed. This could be done once the learners themselves became aware of what was driving their learning.

8. Provisional trying of new roles

Acquisition of knowledge and skills pertaining to the new perspective equips the learner with the tools needed to start experimenting with new roles. This study generated five themes that describe this stage in Mezirow's conceptualisation:

8.1 The moment of realisation – Aha moment
8.2 Exploring different venues for implementation
8.3 Attempts at integrating the Let Me Learn process with other tools/methods and/or processes
8.4 Application of the Process in non-formal situations and Awareness of the challenges ahead.

The first theme refers to that moment when the actor realises the usefulness of the process and starts thinking of provisionally experimenting with the new perspective in new roles. Joseph refers to that moment when during the training he was asked to administer the Learning Connection Inventory (LCI) with members of his team. On learning about his colleagues' processing patterns, he could apprehend how and why certain individuals behaved in certain ways. This realisation helped him explore differentiated ways of working with these individuals.

> *"I had told the learning assistants to do the LCI and it was very revealing as you begin to understand why certain persons work in certain ways." (Joseph)*

Paul realised that this acquired knowledge about himself and those around him, was crucial to help those with whom he interacts both at school and within his immediate family.

> *"… during my presentation, something clicked, I am not saying a miracle occurred, but I realised that we need to find a way on how to help the others around us." (Yesmin)*

Mary, on the other hand, had this moment of realisation when she experienced the application of the Process with a colleague of hers. Her colleague who was attending the training at the same time presented a lesson in a way that respected the students' processing patterns. Her success prompted Mary to start applying the Process in her own practice.

> *"As regards the profound moment, … it happened when a colleague of mine and myself shared (a common lesson)." (Mary)*

Teachers experienced the Process and started to associate certain positive outcomes with the application of this knowledge to their practice. This prompted some of them to implement their acquired skills in various locations, within and outside the school environment.

Joseph and Chiara both explored how one can use the Let Me Learn process as a means to strengthen professional collaboration amongst the teaching community. This is believed to provide a way in which the isolated and often unvoiced wisdom (Shulman 2004, p. 505) of teachers is given the space to develop and blend into the perspective of the school.

> *"I think that it can be a very important tool even to eventually interpret a sense of community that is the sense of diversity that we have among us." (Joseph)*

Joseph also suggests that the Process could also benefit those that still have an important role to play in the perspective transformation of the school even though they are not teachers. Christine commends the work of a Learning support assistant, who although not trained as a teacher, gave an important contribution in providing students who were struggling, an alternative learning environment where their learning processes could be accommodated.

Sarah, Josephine and Andrew explored the sharing of this perspective with parents. It is believed that strengthening the collaboration and communication with parents would heighten the possibility of sharing the transformed perspective with the larger community of the school.

Both members of the senior management team and teachers could see avenues through which knowledge and skills learnt through their participation in the LMLpLp could be fused to other methodologies and subject specific processes. Joseph and Chiara refer to collaborative learning, while both the two language teachers and two Primary teachers refer to the Writing Process.

As educational leaders, both Joseph and Chiara believe that their guiding perspective can be translated into practice through the fusion of different techniques. Let Me Learn is seen as a foundational scheme that helps one to utilise different strategies and techniques with intention.

Participants also refer to how knowledge and skills learned could be applied in non-curricular purviews. Chiara mentions an extra-curricular activity (Education unplugged) in which the knowledge and skills gained in Let Me Learn could be easily transferred and applied. Here Chiara brings to the front a reality of our educational system that is conditioned by what Armstrong (2006) calls the 'academic achievement discourse' – a discourse that is obsessed with documentation of results of instruction. In an activity such as 'education unplugged' teachers can really address each learner's preferred modes of learning.

Jane refers to how this knowledge helped her in her private life. She can now better understand her family dynamics and thus agree on how they can compensate for each other's idiosyncrasies.

9. Building competence and self-competence in new roles and relationships

Competence is the result of directed experience. Directed experience leading to learning involves a range of experiences in which knowledge is seen as a process of "finding coherence in and giving meaning to the multiple forces and relations that make up our lives" (Fawler, 1981, p.4). Through practice and negotiation with others within and outside the community, a learner gains greater control over one's understanding and the quality of one's actions through meaningful learning (Mezirow, 2012, p. 77). This phase generates four major themes namely:

9.1 Feeling of competence in adapting to response
9.2 Feeling of competence in motivating students
9.3 Feeling of competence in understanding oneself and
9.4 Awareness of the challenges of reintegrating the Process into new roles and relationships.

The first two themes are most popular with the teachers whilst the third and fourth themes are most popular with the SMT. The first theme refers to the sense of competence that an educator feels when responding to the needs of the learners. Chiara and Christine refer to the successful collaboration between teachers and Learning Support professionals in supporting students who are academically challenged. Both Chiara and Andrew believe that the school has succeeded to boost these students' self-esteem and in providing them with learning opportunities to help them develop their areas of strength.

A key competence of any educator is surely the ability to motivate learners to learn. Sarah and Josephine share their respective experiences in which they capture a 'ray of light' in some of their students who otherwise are seen as problematic. Their new perspective has given them a new awareness, forging a renewed relationship. For Sarah, the experience with a particular 'problematic' student gave her a reassurance of her ability to motivate the student to learn and to use this experience to mentor other teachers. Josephine explains how, through her renewed approach, she had successfully motivated students to give their best and to never to give up.

A sense of accomplishment was achieved as a result of the new awareness and acquired skill in understanding oneself as a learner. Joseph, Sarah, Christine and Andrew speak of an epiphany through which they could better understand their private and professional behaviours and actions.

> *"First and foremost I started to make sense of the way I work. I began to understand myself better that is the way I work has a logical meaning behind it. I think Let Me Learn gave me a model to make more sense of what I was doing and how I was acting." (Joseph)*

The final theme within this phase refers to the challenges that inhabit our lifeworld and govern our actions. Such challenges require us to sustain and reintegrate the new perspective in all our actions and environments. This requires perseverance but when achieved, a feeling of accomplishment is experienced.

Joseph feels satisfied with the level of integration of the Process within the school community, even though he is aware that there is still work to be accomplished. He is aware that the school's professional and student community is in a constant shift and there is a perpetual need to ensure that the school's perspective continues to be shared by all. Sarah is also pleased with the level of integration of the Process within the school community, not just amongst the teaching staff but also amongst the student community, who have a voice in the school, which if cultivated can be very effective.

> *"… salt gives the taste but does not necessarily show, but you can notice the taste and I think that for a number of people, which, luckily is not small in number, it has made a difference, … (Joseph)*

> *"In a way Let Me Learn has managed to infiltrate in all the school processes." (Sarah)*

10. References to a reintegration into one's life on the basis of conditions dictated by one's perspectives

The final phase in Mezirow's 'phases of meaning' (Mezirow, 2012) refers to the actualisation of the new perspective into the lived experience of the actors. Thus according to Mezirow (2012), "[a] mindful transformative learning experience requires that the learner makes an informed and reflective decision to *act* on his or her reflective insight" (2012, p. 87). Thus for Mezirow and others a true transformative learning experience should be mirrored in action.

This research generates four themes that either point to the location in which the transformative learning is embedded or refer to statements that highlight a recognition or reaffirmation of an action informed by the new perspective. The themes generated are the following:

10.1 Extensive use of language conditioned by the new perspective
10.2 Reference to recognition of competence from outside the school community
10.3 Critical reflection as an integral aspect of professional practice and
10.4 Assimilation of the Process as an integral part of one's actions.

The fourth theme has been referred to by all the participants, most of whom made multiple references to observed changes in practice as a result of the change in perspective. Yet another important theme emerging from this research is the extensive use of language conditioned by the new perspective and the integration of the new discourse within the community's personal and professional interactions. The senior management team makes reference to the fact that this change in perspective has been recognised by outside agencies (other organisations and/or individuals). Some even go as far as to try to emulate this practice. During the interviews, teachers in particular (four out of six teachers) and the Head of school emphasized the importance of critical reflection on assumptions made within the community. They argued that an integral aspect of the professional practice is to engage in effective discourse as a means of validating one's own beliefs and experiences.

The first theme points out the level of reintegration of the new perspective within the professional discourse and serves as a witness to the transformative learning experienced by the participants and the school as a transformed community. The integration of an inclusive language inspired by the Let Me Learn process permeates the prevalent discourse within the school community.

> *"The professional attitude that we have taken is to find means of how to articulate this discourse so as not to remain the run of the mill, that we always take the common sense interpretation of things, but that now Let Me Learn has helped us continue to develop this discourse of diversity and community." (Joseph)*

Josephine and Andrew refer to the sharing of this language with the students as a tool that helps them to become aware of their learning patterns and to engage themselves in metacognitive talk about learning. Both Josephine and Andrew refer to it as a language that helps them, as teachers, to better articulate their strategies and approaches to learning and support.

Joseph and Paul show how this language has pervaded their way of thinking about themselves. Every action is seen from the perspective obtained by this language:

> *"(Through this language) I could make more sense of the way I act and how I am going to act with others, ..." (Joseph)*

> *"Even nowadays when I am doing something, I start saying to myself, I am doing this because I am precise, I'm doing this because I am sequential, deep down even every day thoughts would be linked to (the patterns)" (Paul).*

The ability to reflect on what informs our perspective and what is driving our actions is of fundamental importance in our quest to tackle the challenges that our professional practice presents. As we have discussed in earlier sections of this discussion, one of the major themes emerging from the interviews with this group of educators is the qualitative change in language used in their interactions and diagnostic exchanges. Language has changed and now includes positive action that connects with the processing patterns of each learner. Yet a major disconcert amongst these educators is that the espoused language informing their transformed perspective is often burdened with external forces "of increased performativity (Ball, 2013) and accountability in the education sector driven by neoliberal policies" (Kreber 2012, p.335).

When others from outside the immediate community of the school recognise certain actions as distinctive qualities and start to associate the school with these qualities, it might be the case that this is a reaffirmation of a perspective transformation that has been reintegrated within the existing patterns of action. This makes a distinctive difference in the lived experience of those within this particular school community.

Joseph mentions how their transformation has been instrumental in highlighting contradictions in values within the community of church schools. This led other schools to refer to the school under study as an example that they can follow in their quest to bring about a transformation within their own communities.

What clearly emerges from this research and from the analysis of the interviews is that most teachers were very much aware that through the inherent shared perspective, they have transformed their classroom practice and their personal as well as professional relationships with their students and other adults. Joseph refers to the discourse related to the profession within the school community. He notes that as a community they engage in what he terms as "continual exploration" of issues that arise in the school. He talks at length about a community that is always questioning and discerning one's own practice in the light of a perspective led by social justice.

This type of collective critical reflection that Joseph refers to can be seen as a creative professional discomfort, an attribute of change that is led by a value system that would transform on the basis of conditions dictated by one's perspective. Joseph believes that "what you believe can be done into practice and what is done in practice fuels the theory behind it". This statement defines Joseph's understanding of transformative learning. Joseph reflects on his role to bring about an ethos that is reflected in the type of practice that takes place in the school, an ethos that sets it apart from all other schools. It is therefore Joseph's wish, as head of this school, to expand and 'indigenise' the Let Me Learn process within the ideological belief system of the school community.

According to Kreben (2012) we would be working towards critical reflection in our professional practice when we carefully consider the implications of our actions and examine whether what we say and do inadvertently sanctions or contributes to power relations.

Christine explains that through the internalisation and critical appraisal of the Process, she is now able to use the knowledge to defend her actions.

> *"If someone comes up to me asking me why I allowed a student to behave in a certain way, I can give them an answer. I'd say that boy is behaving in that way because at that time I was giving that type of lesson and for him that is not interesting, it is not part of his life, it is not concrete, I can give a reason." (Christine)*

The final theme explores how different participants integrated the Process and assimilated it as an integral part of their actions. The Senior Management team refer to a number of locations in which the Let Me Learn perspective plays a central role. Both Joseph and Chiara believe that Let Me Learn has become an integral part of their decision-making process. It has given them a framework through which they can make educational decisions built on a value system inspired by the new perspective.

Joseph and Chiara explain how they refer to and share this perspective outside the immediate context of their school. Joseph explains how on a number of occasions, he had the opportunity to talk about his school's experience in dealing with differentiation issues, especially with those schools that are also exploring different authentic means for transforming their practice. Chiara on the other hand refers to how she shares her experience with student teachers during her lectures on collaborative learning.

Both Joseph and Sarah mention how the students themselves also shared the value of the new perspective with other European schools. This European project was an opportunity for the teachers involved, to show how this perspective has given them and their students an effective means for teaching and learning.

The integration of the new perspective informed by the Let Me Learn process in the personal and professional life of the participating teachers is very convincing throughout the generated data. Jane explains how her knowledge of the patterns has helped her develop a process of support for students in their scientific writing, starting from their strong pattern/s and gradually developing strategies to stretch other patterns needed to complete the task. Andrew explains how knowledge of Let Me Learn has impacted his planning. He therefore makes a conscious effort to plan activities that respect students' diverse combination of patterns. Josephine, on the other hand, explains how her knowledge of the Process and its internalisation has helped her to understand her son's mode of working and to allow him to learn through his modality without imposing her own.

Mary explains how Let Me Learn has been fundamental in the process of changing her approach to teaching. Andrew, Paul and Christine describe how the Process has become an integral part of the way they think and plan for learning. For Josephine, Mary and Paul, Let Me Learn has permeated their actions and they claim that it has become a foundational concept that informs their pedagogical decisions.

For Andrew this process of reintegration and assimilation is a collective effort. The school community as a whole are moving in this same direction, sharing the same perspective.

> *"I wasn't on my own, other teachers did the same thing, even during the staff meetings, those teachers who attended the training had ample time to share what they had learnt with other members of the staff" (Andrew).*

Conclusion

This research has shown that individual constructs are strongly determined by an individual's personal learning characteristics. Awareness of these personal learning characteristics (self-knowledge) helped educators assess their practice and understand how their personal characteristics were determining their approach to teaching and affecting their interpersonal relationships with students and colleagues.

This research showed that transformative learning is a mutually interdependent experience. Individual transformation amounts to and is influenced by the collective transformation. This study highlighted the role of the school community in the pursuit of personal transformation.

Yet another important finding of this research is the importance of a shared language of possibility. Through a shared language, a learning community can create a dialogic environment through which intentions, beliefs and interventions can be shared among the professional community. This research accentuates the importance of a shared language as a means of articulating a change in perspective.

The study identified three main agents of change. The LMLpLp, the teachers, who internalised the Process and applied it to their practice and the school's senior management team, who internalised the Process, positioned it into the larger vision of the school and created a conducive environment through which the whole school community was empowered to take responsibility to bring about change in practice.

A number of implications emerge from this study that could inform policy on teacher professional learning. A major implication concerns the importance of a shared language – a language that reflects the shared values and ideological position of the community. Such language frames the learning process and makes learning visible for teachers to be able to respond effectively with strategies that respect each learner's learning preference. The language also makes learning visible to the learner him/herself.

Another implication from this study arises from the finding that the transformative learning process of any individual educator and effectively of the whole school community, goes beyond the effectiveness and limitations of any one professional development programme. True and deep-seated transformative learning comes from within the individual educator. This statement has serious repercussions on any professional development programme that aims to aid participants in their quest to transform their practice.

This study also emphasised the importance that any professional development requires to be seated in the local experience and needs of the school community. Any attempts at developing comprehensive, nation-wide projects with pre-packaged approaches, are doomed to fail. What this research has shown is that for effective professional development, the identified outcomes must correspond to the local requisites of the school, rather than the national guidelines, detached from the realities of the particular school.

Finally, this study accentuated the importance of incorporating mentoring support in any professional development proposal. Delivery of information and skills without follow-up tends to lead to superficial application. Transformative learning presupposes a period of shared reflection on practice and collegial mediation of ideas through contact between teachers and their leaders and on-the-job support from their professional development mentors.

References

Armstrong, T. (2006). *The Best Schools: How Human Development Research Should Inform Educational Practice.* Alexandria: ASCD.

Ball, S. J. (2013). *The Education Debate* (2nd ed.). Bristol, U.K: The Policy Press.

Bezzina, C., & Testa, S. (2005). Establishing Schools as Professional Learning Communities: Perspectives from Malta. *European Journal of Teacher Education , 28* (2), 141-150.

Fawler, J. W. (1981). *Stages of Faith: The Psychology of Human Development and the Quest for Meaning.* San Francisco: Harper & Row.

Freire, P. (1994). *Pedagogy of Hope.* Continuum Publishing Company.

Johnston, C. (2009). A Comprehensive Description of the Let Me Learn Process, an Advanced Learning System including Bibliography and Lexicon of Terms. Pittsgrove , NJ: Let Me Learn Inc.

Kreber, C. (2012). Critical Reflection and Transformative Learning. In E. W. Taylor, P. Cranton, & Associates, *The Handbook of Transformative Learning: Theory, Research, and Practice* (pp. 323-341). San Francisco: Jossey-Bass.

Mezirow, J. (1996). Beyond Freire and Habermas: Confusion a Response to Bruce Pietrykowski. *Adult Education Quarterly , 46* (4), 237-239.

Mezirow, J. (1978). *Education for perspective transformation: Women's re-entry programs in community colleges.* New York: Teacher's College, Columbia University.

Mezirow, J. (2012). Learning to Think Like an Adult: Core Concepts of Transformation Theory. In E. W. Taylor, P. Cranton, & Associates, *The Handbook of Transformative Learning: Theory, Research, and Practice* (pp. 73-95). San Francisco: Jossey-Bass.

Schapiro, S. A., Wasserman, I. L., & Gallegos, P. V. (2012). Group Work and Dialogue: Spaces and Processes for Transformative Learning in Relationships. In E. W. Taylor, P. Cranton, & Associates, *The Handbook of Transformative Learning: Theory, Research, and Practice* (pp. 355-372). San Francisco: Jossey-Bass.

Shulman, L. S. (2004). *The wisdom of practice: Essays on teaching, learning, and learning to teach*. S. Wilson (Ed.). San Francisco: Jossey-Bass, Inc.

Taylor, E. W. (2000). Analyzing Research on Transformative Learning Theory. In J. Mezirow, & Associates, *Learning as Transformation: Critical Perspectives on a Theory in Progress.* San Francisco, CA: Jossey-Bass.

Taylor, E. W. (2009). Fostering Transformative Learning. In J. Mezirow, E. W. Taylor, & Associates, *Transformative learning in practice: Insights from community, workplace, and higher education* (pp. 3-17). San Francisco: Jossey-Bass.

• CHAPTER 6 •

Teacher Professional Development and Social Networking: a Case Study of a Professional Learning Experience

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This chapter explores professional learning experiences, particularly those which build on teacher networks, together with their shared values, norms and understandings, that facilitate cooperation within and amongst groups of teachers. Our driving argument is inspired by Putnam's 'Bowling alone' metaphor (1995, 2000) wherein he urges the development of a social capital which facilitates cooperation and mutually supportive relations in communities and which would be a valuable means of tackling issues and problems inherent to the particular community (Putnam, 2000). Burt's (2000, p.5) argument will further inform our discussion. He explains that connections which people have, in terms of trusting relationships and support groups, render a social capital which, for certain individuals or groups can create a competitive advantage in pursuing their ends. Social interactions and relationships help to make accessible information, ideas and support to those members involved in the network structure.

Although teaching is a social profession, teachers are often forced into isolation through the fast nature of their work and the lack of opportunities which arise for them to collaborate and to construct a professional community in their school. The human, cultural and political dimensions in schools rarely allow the bringing together of teachers to engage in reflective, collegiate and experiential interaction that is increasingly considered as the basis of effective professional development (Parrott and Riding 2002, p.1).

This chapter was first published in the peer-reviewed proceedings of the 5th EUE-net Conference on Entrepreneurship and Career Development, Nicosia, 29 April – 3rd May 2009.

We shall thus commence this paper with a brief discussion of the individualistic nature of the teaching profession and the gains that teachers can make when they form teacher communities. This is followed by a critical review of current in-service teacher professional development provisions found in Malta. The strengths and limitations of such provisions, in terms of how these address teachers' professional capital, are briefly discussed. Then we shall explain how a local in-service continuing professional development (CPD) initiative, namely the Let Me Learn Professional Learning Process, utilises teacher networks in order to strengthen the practices of teachers engaged in differentiated instruction. This learning process also aids in teacher transformation through knowledge gained from individual and collective resources and strengths. We shall conclude this discussion by proposing ways of how CPD initiatives can capitalise upon, and generate, teachers' capital.

A solitary Profession

Teaching is a solitary profession. Teachers spend most of their time isolated in classrooms with their students (Anderson 2004, p.114). As Shulman (2004a, p.505) argues, there is probably more and indeed a distinctive wisdom about teaching among practising teachers than there is among academic educators. Yet, this wisdom is isolated and unvoiced. Teachers' work in lonely circumstances and it is difficult for them to articulate what they know and to share what they have learned with others.

The principles of collective rationality are indeed called for in a profession whose demands are so great for any one teacher to succeed as an individual. The range of talents required are too broad and varied and the requirements for learning from experience exceed the capacities of an individual learner. It is difficult for any teacher to monitor his/her performance with great accuracy; to act critically, decisively and self-correctively under conditions that do not promote or support these processes. (Shulman 2004b, p.324)

The individualistic nature of teaching and the lack of the social dimension preclude it from improving its efficiency by facilitated coordinated action. (Putnam 1993, p.169) This coordinated action can develop when teachers work with one another, scaffold each other's learning and help each other to question actively, critically and reflectively. Teachers can supplement each other's knowledge when they collaborate (Shulman 2004a, p. 515): however, although the principle that teachers be given opportunities to learn from others is highly laudable, there are few facilitating structures, and even fewer incentives, for those who seek to collaborate. Oftentimes teachers are not afforded opportunities for authentic professional collaboration.

One of the most effective ways to promote professional collaboration is through in-service teacher Professional development and learning. During this learning process teachers can become aware that they form part of a professional community, a community that can nourish itself from the wealth of its own practice and experiences, both as individual resources and as collective experiences. We believe that, if these professional communities are not nurtured, then teaching will continue to be doomed to professional stagnation and to limited critical reflection. In the words of Carney (2003), independent forms of behaviour place profound limits on deep, extensive and widespread professional growth.

As we know, not all professional learning processes manage to create the ambience and the adequate support structures for these communities to develop. What follows is a critical review of the present in-service teacher education and training scenario in Malta with considerations of how the structure governing this provision is allowing or inhibiting the social dimension of learning.

The context: A review of Professional Development provision in Malta

Professional development provision in Malta is of two kinds. Teachers can engage in professional education by undertaking post-graduate courses organised by the University of Malta and the various institutions which offer distance education opportunities. Options for further qualification have been significantly increased in recent years and a number of agencies for foreign universities, as well as academies and tuition centres for higher education, have mushroomed across the island.

Teachers also have the opportunity to undertake professional development courses offered by the two directorates within the Ministry of Education and Employment, this entity being the main agent in providing courses for all teachers in state and church schools (Bezzina 2002b, p.59; Bezzina, Bezzina and Stanyer 2004, p.48). Teachers in independent schools may also choose to attend this centralised training, but often these schools prefer to organise their in-house staff development.

The Professional Development programmes on offer by the directorates for education tend to fall under a top-down structure and address issues mainly at the system level that principally relate to policy and government-initiated reforms, but also to curricular needs that education officers, employed by the Ministry, perceive the need of addressing. Such sessions are usually held during the three days prior to the teachers' commencing of duties in September, or immediately following the closure of schools for the summer recess. However, there are also a number of training opportunities, on a minimal scale, offered throughout the scholastic year, together with occasional scholarships and bursaries which teachers can pursue. The directorates for education, the Foundation for Educational Services and other training agencies at a local or European level organise these training opportunities.

A number of schools and colleges periodically decide to organise 'school-based' or 'in-house' professional development sessions that are specifically directed to the teachers belonging to any one school or college and aims to address needs pertinent to the context in question. This autonomy in taking initiatives regarding professional development can help schools be more specific in addressing the particular needs of the school and staff. This kind of arrangement is in fact sometimes helping to increase the relevance of these sessions to the teachers concerned and giving them the possibility to organise and provide part of the professional development themselves. Nevertheless, one must say that, even when professional development is organised by the school itself, it often fails to use teachers' field experience; so the learning experiences intended are not grounded in the lives of the practitioners.

The present structure of professional development provision is particularly effective in dealing with a large number of teachers. Indeed, a considerable number of teachers from all educational sectors receive training during a short period of time on an annual basis. Yet, notwithstanding the variety of training opportunities, teachers are still not sufficiently supported to address the several changes they are experiencing within their schools and classrooms. For instance, students are expected to acquire a wider range of skills, greater flexibility and adaptability. Teachers of the different subjects and classes are thus expected to collaborate in the planning of projects centering around particular themes. They are also expected to deliver lessons taking into consideration the various levels and types of intelligence and attainment. However, despite the fact that teachers frequently express difficulties in acknowledging individual differences and in implementing inclusive policies, professional development in differentiated instruction is still quite limited.

Continuing Professional Development (CPD) which promotes teacher collaboration

The reform agreement between the Government and the Malta Union of Teachers, signed in July 2007, facilitated the possibility that teachers meet and discuss their work on a weekly basis (Ministry of Education, Youth and Employment 2007, p.32). However, a number of small schools are finding it still difficult to set up these meetings because of the shortage of teachers to replace those participating in the meeting. Moreover, the format of these meetings is often structured and follows a prescribed agenda, set by the head of school or college principal. We feel that this formality can inhibit teachers, to a large degree, from taking any spontaneous initiatives and from collaborating on common projects.

In our opinion, teachers should also be given the opportunity to meet a wider community of teachers than that within their immediate school context. At present, the only opportunity for this to occur is during subject-based in-service courses which are organised by education officers of the relevant subject for a number of teachers from different schools.

Hence, although one needs to acknowledge that some favourable steps are taken to promote the development of learning communities, schools are to search for new and wider ways which enable teachers to meet and develop quality experiences out of these meetings. These teacher meetings, rather than being an end in themselves, should be considered as part of a wider approach to support professional development. They should be seen as opportunities where teachers can teach others the strategies that have been successful with their own students. In accordance with Lieberman and Pointer Mace (2008, p.227), we feel that schools should strive to develop networks of teacher communities from such meetings that go beyond the school or college in question.

Teachers' autonomy in CPD

Another aspect that is of concern in the present provision of CPD is that, although efforts are being made for schools to become more autonomous, this is not always being reflected in the development of professional development programmes for the teachers concerned. Teachers are very often excluded in the decision-making processes regarding their training, and they are often subjected to forms of training which do not necessarily respond to their particular needs. This prescriptive approach does not encourage teachers to put forward their ideas and contribute to the learning process of their profession. If teachers' individual experiences are not externalised, it is all the more difficult for teachers to make use of them in their quest to build a professional capital for their profession. Although workshops are sometimes organised within these courses for teachers to discuss issues, the three-day format of training is too short for any teacher educator to succeed in propagating a sense of community within the group and urge its members to generate a collective knowledge base from the collaborative activities that take place. More often than not, teachers attending CPD courses do not get the chance to meet the same group of teachers in the successive years; this makes it all the more difficult for them to build relationships of trust and collegiality, and for the teacher educator to document any activities effected from this collegiality.

Does the present provision allow and promote professional capital?

The present training scenario is composed of large groups of teachers who are obliged, on an annual basis, to attend a CPD programme in the company of other teachers, who out of circumstance, happen to form part of the cohort. The design of these courses purports individualism because teachers are asked to attend solely on the basis of their respective duties/responsibilities within their classroom. Any opportunity to spawn further knowledge is largely lost because the lack of time and format of the courses do not permit for this to be so. Partnerships between teachers and course providers are also rare occurrences. These collaborations need time to develop and at present the huge lack of human resources that the Directorates are experiencing make it difficult for teacher educators to attend to the multitude of duties they are burdened with while at the same time attend to the demands such collaboration demands.

What follows now is an evaluation of a particular in-service programme which forms part of the local Education Directorates' provision but which strives to depart from the governing structure typical to the majority of PD models found in Malta and which specifically tries to form cohorts of teachers who gradually build learning communities within their group and within their school context. We thus present the methods of study we have utilised to evaluate this CPD approach, together with an analysis of the data.

Methodology

The aim of this study has been to evaluate whether particular PD provisions are being effective in cultivating teacher communities and networks that help to generate further teacher knowledge. The research has thus focused on two broad questions: Which are the right learning environments which enable teachers to meet and garner support from each other? Why do teachers feel it necessary to be part of a teacher community?

Data collection

The data collected regards one Continuing Professional Development process with which we are involved, namely the Let Me Learn Professional Learning Process (LMLpLp). In order to understand teachers' dispositions to the social aspect of this training experience we randomly selected sixteen narratives from a group of teacher journals collected over a span of two consecutive scholastic years. These narratives, or journals, consist of a series of accumulated written reflections and form part of the required portfolio that teachers construct throughout their training to document their learning. A longitudinal case study of another teacher, who has participated in this programme and who has documented over a period of five years the impact that this has left on her practice, has also been utilised.

Confidentiality of these narratives has been retained and only the initials of the participating teachers accompany the excerpts we are including in this paper. The reason for this is primarily because, during this professional development programme, teachers often disclose intimate and personal details when raising issues concerned with their role and identity as teachers. A professional rapport based on trust is gradually built between the trainer and the group of teachers; this offers the adequate space for such reflections to be externalised. Nevertheless, teachers often feel vulnerable in sharing their journals with a wider audience.

Data analysis

In our journal analysis we have examined the social and collaborative experiences in which teachers were engaged throughout their exposure to this professional learning. We have also evaluated what they claimed to have benefitted from these experiences and the evidence for learning propagated specifically from social encounters and teacher networks. We have also assessed examples of how teacher knowledge has been generated across the teacher cohort as a result of these social encounters. Our primary hypothesis has been that CPD, which specifically addresses teachers' isolated practices and attempts to develop teacher communities, is indeed a practice which aids individual teachers (their professional and personal concerns) and the teaching profession as a whole.

Discussion

The LMLpLp

Before presenting the data, it is necessary to enable the reader to understand the way LMLpLp is structured. The educational policy inherent in this learning process builds on constructivist pedagogy as it respects teacher professionalism and identifies the need for developing effective and responsive learning methodologies. In contrast to some of the above examples, it attempts to capitalise on reciprocity, teacher communities and networks to generate further learning.

LMLpLp is one of the few currently available programmes which is organised during the scholastic year on a structured and sustained basis. One of the advantages of this arrangement is that teachers are exposed to a much longer period to the training involved, and the teaching community that accompanies them during the training. Once the sessions come to an end, they can choose to be mentored for the subsequent scholastic year in order to be supported in their new endeavours and any alternative practices they may want to carry out. This increases the course's effectiveness and the likelihood that what has been achieved through collegial interactions will not end abruptly once the course is concluded. Mentoring and other support structures are highly appreciated, as the following comment demonstrates:

> *After the last course I attended, I tried to do something new at our school and put forward some ideas from what I've learnt, but I felt discouraged by some of my colleagues as they said they preferred staying the way they were than apply new techniques; but as this course (the Let Me Learn Professional Learning Process) was offering mentoring and help, I realise that finally something is going to be done. (R.M. Secondary School Teacher, Session 5)*

In line with constructivist thinking, the professional development programme does not depart from any policy-initiated or institutional imperative imposed by the directorates of education. The learning objectives are continually evolving to meet the current challenges experienced by teachers. The aim of the PD is to support teachers in differentiated instruction, but teachers start by defining their own needs because, although the learning objective applies to all teachers, the learning needs are pertinent to each individual teacher who attends. Hence, as far as possible the PD is customised to each participant, who, together with a trainer, marks the priorities set to be achieved and works towards gaining the necessary skills to adapt to present and future challenges. The quest towards customising the professional development experience contrasts sharply with what teachers are usually subjected to in other PD programmes.

Although the role of the trainers is crucial, this does not render that of the teachers a participatory one. Teachers do not merely work in groups and do role-plays. The whole training programme is devised and developed with the agreement and contribution of all the educators involved. This is in accordance to what Shulman (2004, p.514) claims, that authentic and enduring learning occurs when the teacher is an active agent in the process. Teachers need to experiment and inquire, to write, to engage in dialogue and in questioning. Professional development should provide teachers with these opportunities and with the support required for them to become active investigators in their own teaching.

Shulman additionally stresses that teachers need to become reflective about their work, yet also admits that the nature of their work and conditions make it very difficult to do so, and they also lack an adequate discipline in documenting their practice. This makes it all the more important for teachers to team up with colleagues, who can help them observe or monitor their own teaching behaviour, thus transcending 'the limitations of one's own subjective recollections' (Shulman 2004b, p.24).

One of the measures adopted by the LMLpLp in this regard is that of teachers documenting their reflections in a journal and sharing these thoughts in groups. This exercise is an interesting and engaging experience and teachers can become aware of common challenges and dilemmas, and support each other; additionally, teachers are also asked to develop assertions about their practice as a result of this sharing. The outcomes are qualitatively different from mere acknowledgement and support (though important in their own right). During these journal-sharing sessions, teachers develop ways in reconsidering their experiences and attempt to make sense of them. They start questioning individual practices, in the full knowledge that the teacher community they now form part of can buttress their hesitance with the wisdom collectively nourished:

> *Now that I have gained this insight I think I can be more understanding, more flexible, and hopefully more patient as a teacher. (D. F. Primary School Teacher, Session 5).*

A collective learning experience

The data has revealed that teachers reach common understandings and also derive a sense of ownership from the whole process because future reflective practice is enhanced through these new perspectives they collectively conceive (Loughran 2002, p.38). As the following observation from a secondary school teacher demonstrates:

> *I have started communicating with students in the way I have seen teachers doing on the DVD. I am also reflecting a lot. I have started observing the way I react and whether my reactions are helping me become a good teacher.*
>
> *Doing this course through online learning is not a good idea. Interaction among teachers is fundamental; you get to understand different scenarios and others' ideas contribute to help one address problems. (M. C. Secondary School Teacher, Seminar 2)*

Dogancay-Aktuna (2006, p.280) speaks at length about teacher development processes which integrate the reflection-oriented approach, grounded in teachers' exploring and reflecting on their classroom experiences. It is stressed that reflective practice should also devote attention to the socio-political role that the teacher possesses, an approach derived from critical pedagogy. Teachers, as transformative intellectuals, are expected to be socio-politically conscientious and empower their learners to allow their learning to transform them.

In line with this argument, we feel that a teacher's socio-political role needs to be extended to the teaching profession of which s/he forms part. Thus, reflections and problem-posing activities within the training process are also intended to prompt understanding of behaviours. Teaching, as an activity, forms part of a larger cultural, discursive or ideological order and teachers need to be made aware of the global context of their work and how their local knowledge can contrast sharply with various other approaches to pedagogy. A critical awareness aids them to see, and respect, the broader social, historical, cultural and political contexts of teaching and learning. It also aids them to develop transformative learning activities that broaden learning environments beyond classroom walls. As one primary school teacher comments:

> *Hearing about the experience of a teacher employing the Let Me Learn strategies was a real eye-opener for me. (D.M. Primary School Teacher, Session 2)*

Having said that, it is difficult to expect teachers to engage in critical questioning, when many teacher education programmes still appear to focus on the subject-theory and methodology, at the expense of preparing teachers with political awareness. During the LMLpLp, we often receive mixed feedback from teachers at being exposed to a dose of critical pedagogy which has often been absent in other courses.

While teachers express relief at having attended a course which empowers their thinking and enables them to become articulate and questioning of their surrounding realities and social roles and responsibilities,

> *Above all, this course has taught me how important it is to stand back and assess myself as a teacher. I discovered that I needed to change my attitude towards my students. (D.F. Primary School Teacher, Session 5)*

Nonetheless, they often find it difficult to embark on this journey. As Shulman points out, this requires scheduled time and substantial support (2004a, p.514).

Generating collegial relations

The narratives we have analysed demonstrate that the discussions and workshops which are organised during every training session help to develop a collective reality which draws the focus away from the individual teacher's tribulations to a realisation that collaboration can contribute to each other's success. In the same way, the individual teacher's realities are juxtaposed against a collective experience and one teacher's strengths become the strengths of the whole group. So, apart from the fact that collegiality helps teachers to find respite from their isolated work lives and discuss professional matters, the professional community established, helps to maintain quality teaching practices because teachers are empowered to adopt teaching methods through collegial relations. The following excerpts from teachers' journals illustrate this point:

> *What I liked most in this seminar was the experience of a primary school teacher attributing the Let Me Learn with the Year 3 class. Her belief in the process has started to convince me that it can really work in practice after all. (D. F. Primary School Teacher, Seminar 2)*

> *I found myself telling others how to go about it because I had lots of ideas which I knew were good. I hoped others would pool in ideas so that I would widen my perspective and gain more ideas myself. (E. F. Primary School Teacher, Session 1)*

Effective approaches are developed in the training with the intention of drawing on shared knowledge. One approach that seeks to accumulate teachers' wisdom is the externalisation of tacit knowledge. Each teacher has a wealth of wisdom, a tacit knowledge base that is largely unexposed and not articulated. The Let Me Learn Professional Learning Process continually seeks to expose this knowledge and to generate its wisdom to the rest of the community. Teachers' journals document the benefits of this approach:

> *Together we started to learn from each other … I learnt a lot from the people around me. The sessions I attended were important as we learnt from one another. (C. S. Primary School Teacher, Session 5)*

The first step in the externalising approach is a deconstruction process that enables the teachers to appreciate their valid practices and recognise any alternative practitioner knowledge that is worth receiving. As Whitehead and Fitzgerald (2006, 43) maintain, the act of teaching is not amenable to finite mastery and new and alternative understandings can emerge from within practice, both for themselves and their trainers.

This generative approach is sustained by the trainers who are committed to disseminate teachers' practices, hence helping to systematise the knowledge that is gained over time. Teachers are given the opportunity to connect to bodies of knowledge developed by other teachers, and receptive spaces are created for this knowledge to be experimented with, questioned and sustained in future mentorship sessions. This climate of openness and trust could only be made possible because the training is spread along a number of weeks. This gives the trainers, and the teachers themselves, the chance to act as critical friends by sharing professional knowledge and engaging in dialogue to inform different ways of thinking and acting.

Narratives have also shown that an effective professional development experience builds on a relaxed, non-threatening environment which makes social interaction possible:

> *The group is very small compared to other courses I attended and this was a sigh of relief as it gave us a better opportunity to discuss and share ideas better. (C. Z. Secondary School Teacher, Session 1)*

> *Being seated in an informal manner, with everyone facing each other, made it quite easy for us to get involved. (D. F. Primary School teacher, Session 2)*

Another approach implemented in this training process with the intention of generating further learning is the developing of teacher networks. As Bidwell and Yasumoto (1997 as cited by Uekawa, Aladjem and Zhang 2006, p.2) maintain, the intense interaction with colleagues makes teachers more prone to collegial influence and persuasion. Communication is facilitated in activities in which teachers work together and collective beliefs and trust among group members are reinforced (Friedkin 1998; Lin 2001 as cited by Uekawa, Aladjem and Zhang 2006, p.2).

The research data demonstrates that effective collaborations indeed help to improve practice and increase professional accomplishments. In the journal entries, teachers report that thanks to the interactions nurtured within the training, they were able to improve the quality and effectiveness of their teaching practices. Unfortunately, such collaborative encounters are not always possible within the school, as one teacher reports:

> *We had time to work and talk with other teachers. I must say that at school we hardly ever have time to collaborate with our own colleagues. (E. S. Primary School Teacher, Session 5)*

Another example of effective collaboration is found in the longitudinal case study which forms part of this data set. This data set highlights how a teacher undergoing Let Me Learn training succeeded to impart her knowledge to the rest of the school teaching community. While attending the training sessions, she took the responsibility of informing her colleagues of new ways of engaging with her student with learning difficulties; she also held meetings with the leadership team during which she discussed new practices and proposed actions which were not necessarily congruent with the usual directives reserved for students in similar situations. The school environment was totally supportive and conducive to the new practices that this teacher was proposing. The knowledge gained by this individual teacher succeeded to be extended to the rest of the professional team. A common language was created and the whole group of teachers started to employ common strategies with the mentioned student.

This latter example has enabled us to make a number of observations. We have realised that flexible grouping of teachers is very important because, while it is beneficial for educators from different schools and levels to come together and expose themselves to different experiences, it is equally important to form groups with a commonality of purpose, as this often provides an impetus for the community in question to take action. As Yasumoto, Uekawa and Bidwell (2001 as cited by Uekawa, Aladjem and Zhang 2006, p.2) point out; teachers' interactions can improve the quality and effectiveness of certain teaching practices, which in turn can affect student achievement. This signifies also that the stronger the social relationships among the teachers in a school and the more committed they are to collective goals, the greater is the gain in the school's mean achievement.

Furthermore, the organisational factors particular to each school can either facilitate, or impede, progress toward a professional community. Promoting collegiality among teachers is not enough if this is not sustained by the schools within which teachers work (Uekawa, Aladjem and Zhang 2006, p.2). The leadership style of the school and the approach taken at school level change are two of the several issues that influence the degree to which the professional community is achieved. Throughout our experience we have come into contact with a considerable number of schools, most (if not all) of which are burdened with time constraints that work against the possibility for teachers to attend training, to meet and to collaborate. Yet the difficulties primarily lie with the school culture, rather than with organisational and material issues. As Scribner et al. (1999, p.154) argue, some school cultures are incongruent with a professional community because the set of shared norms and values, the focus on student learning, the reflective dialogue, the deprivatisation of practice and collaboration are lacking. By contrast, others manage to become communities of learning because they recognise the importance of teachers' continuing development as being essential to the maintenance and the raising of standards of pupil progress and achievement (Day et al. 2003, p.246).

The advantages of mentoring

We additionally believe that a system of mentoring and co-teaching which forms a substantial part of the professional development structure is helping to generate collegial relations among teachers. Besides the fact that mentoring contributes to the effectiveness of the programme, as has been mentioned previously, the generative approach that the trainers take to mentoring takes into account the contextually specific knowledge and insights of teachers whose practical actions and values are integral to the formation of their own professional knowledge, identities and competences.

This epistemological base for professional learning is not premised on the traditional hierarchy between mentor and trainee. Although it is acknowledged that the mentor has the responsibility to train and support the trainee, s/he does not assume the role of an expert. New learning opportunities are recognised which do not necessarily include an identified body of professional knowledge, or competences, prescribed by the mentor. All partners are actively involved in the formation and reformation of the knowledge base of the profession. Professional knowledge emerges from reflective dialogue between mentors/trainers and trainees (Whitehead and Fitzgerald 2006, p.40).

This undoubtedly requires that the relationship between the trainers/mentors and trainees is characterised by mutuality and co-development; a relationship premised on trust and respect for each other, open-mindedness and a desire to listen to alternative sides and consider alternative possibilities. Hence, we try to ensure that the professional development practices within the LMLpLp are inclusive and democratic. Teachers repeatedly refer to this democratic relationship in their narratives:

> *I did not think it was going to be that friendly. The trainers made me feel relaxed. (D. M. Primary School Teacher, Session 1)*

The trainer co-plans the lesson s/he would be about to observe with the trainees, enabling them to become genuine stakeholders in their own professional development. Such a process empowers both trainers and trainees to consider themselves as creators of professional knowledge, enhances their learning and contributes to the learning culture of the school.

In order to be generative in nature, mentoring is equally important for the schools concerned to offer their support. When schools recognise the potential of this approach in supporting the further development of teachers, they create opportunities for the trainees to meet their mentors on a regular basis. On the other hand, the reality in other schools is such that most of the curricular decisions taken serve to constrain the practices of mentors (and experienced teachers) and limit their scope to generate and share their professional knowledge with other teachers.

Experience in the professional development field has taught us that there are often positive outcomes to be gained when teachers undertaking training are teamed with more experienced teachers in their school. This is made feasible in those schools that include teachers who have in the past undergone training in the Let Me Learn Professional Learning Process. As Whitehead and Fitzgerald argue (2006, 38), novice teachers can gain more access to 'practical classroom knowledge' and there is a bigger likelihood of teacher-centred knowledge to be created. Such a model contrasts with the more static model of knowledge created by researchers, applied in a linear way by teachers and, in turn, disseminated to trainees.

This socialisation process of co-teaching has been effective in transmitting tacit knowledge and skills from teachers/trainers to other teachers. The narratives witness multiple examples wherein the trainees themselves create new learning experiences because the structure of this CPD process is flexible enough to permit teachers to make important choices regarding their work. Teachers find this empowerment liberating, especially if they work in contexts which hardly allow them the opportunity to take decisions and be participant in their own teaching experience. As one frustrated teacher explains, the restrictions that she is increasingly experiencing in her work are inhibiting her from conducting her work in a professional manner:

> *Unfortunately, I don't feel I have the right environment as regards to space and resources. Moreover, I feel there is lack of support from those who keep disregarding our professionalism by imposing their new ideas without seeking our input. I feel that I used to be a better teacher when I had time for discussions and flexibility to conduct my lessons. Now we are made to rush through everything so as to achieve the set targets. This pressure is hindering me from working to my best potential. (C. S. Primary School Teacher, Session 3)*

Conclusion

In order to sum up this discussion, we shall now briefly outline a number of factors, explored above that are related to the effectiveness of professional development processes in generating further professional learning. As the critical review of present PD provision in Malta demonstrates, most of the approaches to professional development do not deliberately draw on teachers' tacit knowledge and experience. The social dimensions of learning and the possibilities for social regeneration and capacity building are not sufficiently exploited. The way the PD is structured does not allow for any relationships of collegiality and trust to be developed with the trainers and the rest of the teachers; moreover, training is often disconnected from real teaching experience as teachers are not given the opportunity to experiment and return with feedback, or receive support. The objectives and knowledge imparted do not originate from the teachers themselves and more often than not these reflect policy directives which are not necessarily congruent with the challenges teachers are experiencing at present.

In contrast, the way LMLpLp is structured and conceived affords teachers the space to critically deconstruct their practice and think differently about their engagement in education with a view to providing a socially empowering education. The learning a process is built around activities that help the teachers to experience challenging situations in teams and the time to reflect about them. Role- plays are held featuring situations of possible conflict and teachers are thus given the opportunity to externalise their frustrations, problematise them and define the process. Teaching successes are also replayed in front of an audience and through mentoring and co-teaching it is ensured that valid practices are made public and repeated. Furthermore, the training sessions permit strong empowering social relations to develop with the ensuing benefit that these relations can well and truly generate further wisdom to the profession.

Nevertheless, we recognise that the training programme, on its own, is not enough to induce transformation. As Shulman (2004, p.515) maintains, authentic and enduring learning works best when the process of activity, reflection and collaboration are supported, legitimated and nurtured in a community or culture that values such experiences and creates many opportunities for them to occur and to be accomplished with success and pleasure. Hence, teachers must be provided with facilitating structures to work with one another and the entire school community should be committed to a collective set of goals. Only in this way can a professional development process be said to be contributing to the generation of capital within the teaching community.

References

Anderson, L. W. (2004). Increasing teacher effectiveness. 2nd ed. Paris: UNESCO. Bezzina, C. (2002a). Preparing a model of professional development schools in Malta. *Curriculum and Teaching* 17, no. 2: pp.73-84.

Bezzina, C. (2002b). Rethinking teachers' professional development in Malta: Agenda for the twenty-first century. *Journal of In-service Education* 28: pp.57-78.

Bezzina, C, Bezzina N.R., and Stanyer, R. (2004). Exploring beginning teachers' perceptions of their preparation and professional development in Malta. *Mediterranean Journal of Educational Studies* 9, no. 2: pp.39-70.

Bullock, R, and Trombley S. (1999). *The new Fontana dictionary of modern thought*. 3rd ed. Hammersmith: Harper Collins.

Burt, R.S. (2000). Structural holes versus network closure as social capital. Pre-print for a chapter in *Social capital: Theory and research*, ed. Lin N., Cook K.S. and Burt, R. S. New York: Aldine Transaction.

Carney S. 2003. Learning from school-based teacher training: Possibilities and constraints for experienced teachers. *Scandinavian Journal for Educational Research* 47: pp.413-29.

Day, Ch. Pacheco, J., Flores, M.A., Hadfield, M. and Morgado, J.C. 2003. The changing face of teaching in England and Portugal: A study of work experiences of secondary school teachers. *European Journal of Teacher Education* 26: pp.239-51.

Dogancay-Aktuna, S. 2006. Expanding the socio-cultural knowledge base of TESOL teacher education. *Language, Culture and Curriculum* 19: pp.278-95.

Lieberman, A. and Pointer Mace, D.H. (2008). Teacher learning: The key to educational reform. *Journal of Teacher Education* 59: pp.226-34.

Lin, N., Cook, K.S. and Burt, R.S., eds. (2001). *Social capital: Theory and research*. New York: Aldine Transaction.

Loughran, J.J. (2003). Effective reflective practice: In search of meaning in learning about teaching. *Journal of Teacher Education* 53, no. 1: pp.33-43.

Ministry of Education, Youth and Employment. (2007). *Agreement between the Government and the Malta Union of Teachers*. Floriana: Ministry of Education, Youth and Employment.

Parrott, M. and Riding, P. (2002). Building an international on-line teacher community to support continuing teacher development. *Paper presented at the International Conference of Computers in Education*, Dec 3-6, Auckland, New Zealand.

Putnam, R.D. (1993). The prosperous community: Social capital and public life. *American Prospect* 4 no. 13: pp.35-42.

Putnam, R.D. (1995). Bowling alone: America's declining social capital. *Journal of Democracy* 6, no. 1: p.65-78.

Putnam, R. D. (2000). *Bowling alone: The collapse and revival of American community*. New York: Simon and Schuster.

Scribner, J.P., Karen Sunday Cockrell, Cockrell, D.H. and Valentine, J.W. (1999). Creating professional communities in schools through organisational learning: An evaluation of a school improvement process. *Education Administration Quarterly* 35, no. 1: pp.130-60.

Shulman, L.S. (2004a). Professional development: Learning from experience. In *The wisdom of practice: Essays on teaching, learning and learning to teach*, ed. Wilson, S.M. pp. 501-20. San Francisco: Jossey-Bass.

Shulman, L.S. (2004b). Teaching alone, learning together: Needed agendas for the new reforms. In *The wisdom of practice: Essays on teaching, learning and learning to teach*, ed. Wilson, S. M., pp.310-33. San Francisco: Jossey-Bass.

Uekawa, K., Aladjem, D., and Zhang, Y. (2006). The Impact of Comprehensive School Reform on Teachers' Social Capital and Students' Achievement. *Paper presented at the annual meeting of the American Sociological Association,* Aug 11, in Montreal, Quebec, Canada.

Whitehead, J. and Fitzgerald, B. (2006). Professional learning through a generative approach to mentoring: lessons from a Training School partnership and their wider implications. *Journal of Education for Teaching,* 32, no. 1: 37, pp. 37-52.

• CHAPTER 7 •

The Let Me Learn Professional Learning Process as Part of the CPD of Teachers in Malta

Michelle Attard Tonna

Introduction

This paper aims to explore the scene of Continuing Professional Development in Malta and whether, considering the variety of training opportunities, and the changes taking place in the organisation of INSET courses, teachers in Malta are sufficiently supported to address the change agenda they are experiencing within their schools and classrooms. It also briefly investigates the nature of one particular professional learning experience – the Let Me Learn Professional Learning Process, and the way this process is developing professional communities and a learning process which is often different from what is being offered at a mainstream level.

The Continuing Professional Development of teachers in Malta

The development of CPD in Malta has an interesting history. Teachers in Malta tend to engage mostly in the INSET type of CPD since this leads to a formal recognition of the improvement and development of knowledge and skills. A collective agreement between the MUT and the Maltese Government, the most recent being signed in 2010, currently regulates the provision of the ongoing professional development of teachers (Abela Mercieca, 2010). This agreement binds teachers in state and church schools to engage in INSET on a regular basis. The number of hours teachers are expected to satisfy on an annual basis is twelve, together with another six hours spread across three staff development meetings which are held throughout the scholastic year. Training, in the form of INSET courses, is usually held during the three days prior to the start of the scholastic year in September or immediately following the closure of schools for the summer recess; however, these hours can also be spread across other periods of the scholastic year as is deemed fit by the training providers. Teachers in independent schools are not bound by this agreement but may elect to attend in-service training organised by the Directorates.

There are also a number of CPD opportunities offered by the Directorates throughout the scholastic year, together with occasional scholarships and bursaries especially directed to teachers and focusing on particular pedagogical practices, which teachers can pursue. Yet, although teachers are free to engage in other professional development opportunities once they satisfy their own INSET obligations, and a number of them do, the way CPD is structured by the Directorates, usually in the form of in-service training, does not allow for a lot of flexibility. Although the INSET courses organised provide teachers with varied opportunities to extend their skills and knowledge base in specific areas (Bezzina, 2002), generally such courses are held during the same period of time teachers are undertaking their own compulsory INSET. Moreover, if professional learning opportunities like seminars and conferences are held during school hours, it is not always possible for teachers to be released from their teaching duties and to attend.

On a more positive note, there are other various entities which offer multiple varieties of professional development opportunities for teachers in Malta. Teachers can engage in professional learning by undertaking postgraduate courses, organised either by the University of Malta or by other higher education institutions which offer distance education opportunities. Options for further academic qualifications have been significantly widened in recent years, particularly due to an increase in the number of agencies for foreign universities, as well as academies and tuition centres for higher education. A significant amount of funding opportunities offered by the government in these last years also enables many teachers to engage in further research and read for postgraduate degrees (National Commission for Higher Education Malta, 2011; Ministry of Education and Employment, 2012b).

Most of the INSET programmes organised in Malta tend to fall under a top-down structure and an overall national training strategy is still adhered to. However, in the last five years, more horizontal arrangements of INSET are slowly but increasingly becoming more popular, where schools and colleges periodically organise 'school-based' or 'in-house' INSET targeting school-related issues. A number of college principals have also organised in-service activities directed at the whole college staff and external educators often contribute to this type of INSET. Another arrangement which has also been introduced in the primary schools is that of organising INSET which is staggered throughout the scholastic year (though not exceeding the twelve-hour duration) for primary teachers, focused on particular areas such as differentiated instruction, core competences and literacy support. These moves towards more localised prioritisation can support professionals and administrators in addressing the particular needs of the school and staff (Hardy and Ronnerman, 2011). These arrangements may also contribute to making in-service more relevant and to enable teachers to participate in their own school-based INSET.

Current challenges which local teachers need to address

With the introduction of the New Curriculum Framework (NCF) launched in the beginning of the scholastic year 2012/13, and the introduction of benchmark tests for the transition from primary to secondary schools during scholastic year 2010/2011, it is argued that teachers now need to develop new skills and strategies to work with mixed-ability classes, and to remain abreast of the many reforms which are taking place concurrently.

The National Curriculum Framework, in essence, promotes these key ideas which require teachers to apply differentiated instruction in their classrooms:

- "The support of all learners to achieve and succeed, whatever their backgrounds, needs and aptitudes
- A clear focus in colleges and schools on meeting the needs of all learners through increased curricular autonomy
- The creation of active, inclusive learning communities which put learning and learners at the heart of all that they do and are accountable to their stakeholders
- Learning which is active, personalised, relevant and purposeful."

(Ministry of Education, Employment and the Family, 2011a, p.8)

The NCF also promotes:

- "A seamless progression through the early, primary and secondary years in the skills and competences required for lifelong learning and
- Assessment and evaluation which use information and feedback formatively to inform planning for improvement"

(Ministry of Education, Employment and the Family, 2011a, p.8)

Both ideas imply that teachers need to have specific skills and strategies in formally evaluating their students' progress in a more holistic and consistent manner than has been happening up till now. Indeed, as Professor Grace Grima, ex-Director-

General for Quality and Standards in Education, herself states, the NCF requires that teachers' professional development becomes part of the regular calendar rather than one-off events every semester (Bonello, 2011).

Yet from an independent research project commissioned by the Malta Union of Teachers, the two reforms (of the several) which educators feel most uncertain about are mixed-ability teaching and new assessment practices. A number of entities, like the Interdiocesan Commission for the Environment, the MUT and the Partit Laburista also feel that teachers are not receiving substantial and specific training to prepare them for the changes taking place. In-service training in differentiated instruction and in assessment is not being offered on a national level, and the process for the introduction of the NCF and other key reforms are heavily criticised on the basis of insufficient consultation with teachers and lack of time to allow schools and teachers to assimilate the changes.

Another point for concern in the way the latest reforms are being integrated regards the contradictory element between what the policies state and what is actually happening. Although, through the Colleges System, efforts are being made for schools to become more autonomous, this is not always being reflected in the organisation and provision of continuing professional development programmes for the teachers concerned. Teachers are now being asked to participate in some of the INSET courses and staff development sessions, by presenting an idea or talking about their experiences in class or in professional learning, yet they are still uninvolved in the decision-making processes regarding their training. As a result, they may be subjected to forms of INSET and CPD experiences which do not necessarily respond to their particular needs.

In view of these issues which arise as regards to local CPD, the next section of this paper will now explore how professional development programmes can be designed in ways which render them effective and to leave a positive impact in the classroom.

Designing local effective CPD programmes

A number of authors confirm that devising relevant learning programmes can often prove difficult (Redman, 2005; Kreber, 2006; Passy and Waite, 2008; Dooly, 2009; Scheerens, 2010), and a number of factors need to be considered in its design. According to Thurston, et al. (2008), a good CPD programme for teachers must aim to enhance competence and impact upon classroom practice, it should also be effective immediately and in the future so as to offer long-term empowerment, and the training itself must generate further learning experiences (Thurston, et al., 2008).

In the previous section, the way the last spell of reforms is being implemented in Malta and the criticism received implies that teachers are not being sufficiently supported, and the ad hoc training provided does not form part of a national, long-term plan of professional learning for Maltese teachers. According to Eraut (1994), CPD needs to be sustained and intensive, involving experimentation, reflection, problem-solving and follow-up (Eraut, 1994). In agreement, Zmuda, et al. (2004) argue that for purposeful, systematic staff development, CPD must be an integral part of a deliberately developed continuous improvement effort. Aseltine, et al. (2006) state that one of the reasons why CPD needs to be sustained over time is because authentic growth and development will not always occur neatly within the typical calendar for professional development and evaluation. Some activities may be relevant for a number of teachers but not for others. It also needs to be varied precisely because the nature of teacher learning alters during a teacher's career. So, if teachers are provided with varied opportunities of learning, like reflective, collaborative and classroom-focused inquiry opportunities, they can develop a well-informed approach of their own learning journey or trajectory (McNally and Menter, 2009). A sustained programme of CPD is also necessary because, as Berliner (1994) explains, teachers pass through different learning stages as they move from novice to expert. As experience is gained in teaching, teachers get better at what they do and get closer to expertise. Day (2008) similarly maintains that teachers at different career stages (with different years of teaching experiences and different school leadership responsibilities), have different development needs and these differences need to be evident in the different opportunities provided to them. Teachers' resilience and dispositions towards CPD vary during different phases of their careers; so strategies for professional learning and development need to be targeted to support teachers and sustain their commitment, resilience and effectiveness over the whole of their careers (Day, 2008).

A programme of sustained quality opportunities for CPD would demand a long-term national (or regional/local) vision of the kind of CPD activities that are expected to be introduced in the next few years, backed by research which clearly justifies the reasons behind, and purposes for such training. According to Kaufman and Stein (2009), teachers need to be given the opportunity to consolidate their learning and develop expertise in the various areas of their instruction, and if reform-inspired CPD is to be introduced, this must first be accompanied by a careful study of the policy environment and how these shifts will influence the work of teachers (Kaufman and Stein, 2009).

On a local level, this is rarely the case as when CPD is organised to respond to some reform or policy initiative, it takes the form of one-off events to a specific group of teachers, often at the time when the reform is already being implemented, and with no research to justify the needs for such training or to evaluate its effectiveness. As a case in point, important policy documents launched in the past ten years have brought about profound changes in the Maltese educational structure like the introduction of the Colleges System (Ministry of Education, Youth and Employment, 2005), a policy for early childhood education and care (Sollars, et al., 2006), a policy for the attainment of core competences in primary education (Directorate for Quality and Standards in Education, 2009), a strategy for higher education (Sciberras, et al., 2009), the New Curriculum Framework (Ministry of Education, Employment and the Family, 2011a) and a strategy for science education (Ministry of Education, Employment and the Family, 2011b). Some of these policies, such as the one for the attainment of core competencies, and the strategy for science education, have been accompanied by the provision of CPD opportunities in the corresponding areas, and the respective teachers were obliged to attend. However, one can note that training started when the changes were already taking place and the teachers concerned could note a 'crisis management' approach to the way this training was organised, being more intended to ward off teachers' criticism of the reforms rather than to develop the necessary skills. Moreover, those teachers not forming part of the state sector are not being bound by the same obligations for their professional development, albeit they are equally influenced by the reforms taking place. This can result in a fragmentised approach and it would be difficult to keep track of teachers' particular training needs if a national approach is not adhered to.

At this point it is hence suggested that a more consistent, nation-wide and sustained strategy be applied. This can be coordinated by the 'Council for the Teaching Profession' in Malta, a national body established in 2008 and responsible for regulating the practice of the teaching profession in terms of assessing the appropriateness of each person who chooses to practise the teaching profession, examine applications for a warrant and examine applications for a Qualification Allowance (Ministry of Education and Employment, 2012a). In particular, it is also responsible to keep under review and assess education and training standards. Although a step forward has been made locally in this regard, in terms of such a body being established, it is deemed necessary that such a legislative and self-regulatory structure establish a nation-wide framework for professional development, including the accreditation of professional development programmes. To this date, these are locally missing.

Along similar lines, the introduction of school audits and performance management portfolios that teachers are expected to update throughout their careers can also serve as an initiative to provide teachers with more learning opportunities in particular areas of their teaching. As stated in the Maltese Education Act, the role of the Quality Assurance Department within the Directorate for Quality and Standards in education is to evaluate and support the internal and external audits of schools and educational programmes and services, and to evaluate and assess the operation and the results of schools and of any person teaching or working therein (Malta, 2006). Closer links are necessary between this department and that responsible for teacher professional learning in Malta (currently under the responsibility of the Curriculum Management Department within the same Directorate) so that training needs assessed through auditing are adequately addressed in national, college- or school-based continuing professional development programmes.

It is also important, as Guskey (2000) maintains, that professional development programmes be evaluated. This does not simply depend on collecting the feedback from the participants who attend by asking them if they enjoyed the experience. One needs to consider the impact of professional development efforts on the participants' professional knowledge or practice, which are considered as more important indicators of success. It is necessary to consider the impact of professional development programmes on students. Providers of CPD must be better informed about the effects of professional development at various levels, the conditions and processes that lead to success, as well as information about possible unanticipated outcomes (Guskey, 2000).

CPD which targets Maltese teachers' needs

As is explained earlier, a national training strategy directs many of the professional development opportunities provided by the Directorates, and many INSET courses are organised on an annual basis with large groups of teachers in mind. These courses usually aim to address a curricular, pedagogical or methodological need being experienced by teachers of the primary sector in general or those teaching a specific subject in the primary or secondary schools across Malta.

Whilst large-scale in-service courses have the benefit of being more cost- effective, as Duncombe and Armour (2004) explain, this type of training can be decontextualised and has few opportunities for follow-up activities and understanding. Teachers may perceive such courses as irrelevant, not addressing the specific needs of many of the participants and the knowledge gained may be difficult to transfer into individual school contexts (Duncombe and Armour, 2004).

This scenario is often experienced by Maltese teachers who engage in professional development opportunities that include no prior needs assessment, no follow-up opportunities, and often no links with their relevant teaching context, as researched in a local study on the provision of INSET in Malta (Attard Tonna, 2008). 'Crash courses' are still popular in the local scene, within which teachers are exposed to significant amounts of decontextualised knowledge with an understanding that they will somehow internalise this knowledge during their practice. This approach is at odds with the thematic stance identified in Parts 1 and 2. According to Eraut (1994), teachers need to learn how to apply knowledge in specific contexts. Knowledge use has to be integrated with ongoing institutional life because teachers using knowledge in the school context require specialised social and political skills which are different from those needed to use knowledge skills in an academic context (Eraut, 1994). Hence, ideally the skills which teachers should nurture are those which enable them to apply knowledge in the contexts they are working in, and to work with ideas that have sufficient merit and practicality to be worth pursuing. This resonates with the need for situatedness in professional learning.

If teachers are going to invest their time in professional development activities, and schools and administrators are going to invest money and resources, it is crucial that CPD experiences be designed and presented in a manner which favours the interests and addresses the needs of all involved. Schools' and teachers' needs are too diverse to pinpoint an exact formula for effective CPD. However, there is some agreement in international research about the main features which can yield successful results (Duncombe and Armour, 2004). Job-embedded approaches, for instance, incorporate professional development activities into the daily work of teachers and, according to Danielson (2009), this arrangement has achieved far better results than stand-alone workshops and courses.

While the merits of a national strategy are often justified and indeed essential, and whilst different forms of professional learning are necessary at some point or another, there is space for local professional development opportunities to become more sensitive to teachers' contextual needs and to focus on the learner (that is, the teacher participant) rather than on decontextualised skills and strategies. As Day (1999) maintains, a learner-focused perspective which considers the specific needs of the participants is much more important than a training-focused perspective in the successful planning and management of the CPD of teachers.

CPD which addresses the theory-practice divide

Research demonstrates that teachers sometimes dismiss the 'theoretical' aspects of their training and tend to prefer programmes which are conceived as 'practical' (Allen, 2009; Huttner, et al., 2009; Loughran, 2009; Lunenberg and Korthagen, 2009; Lampert, 2010). Hence, in analysing the criteria which lead to effective CPD design, it is important to explore the theory-practice divide.

Experience is often regarded as a source of practical knowledge for teachers and as central to teachers' expertise, although, in its own way, it can also be a source of valid theory. Experience is what one gains from operating in the real world, in practice, and encompasses both the environment and one's own inner reality while relating to this environment (Lunenberg and Korthagen, 2009). The routine and situated knowledge that teachers have, derived from experience, make up the substance of teachers' personal practical knowledge or craft knowledge (Hargreaves and Goodson, 1996). This professional craft knowledge is developed by teachers through the process of reflection and practical problem-solving that they engage in, in order to carry out the demands of their jobs. It is the knowledge that teachers act upon (Cooper and McIntyre, 1995). However, teachers' practical knowledge is not always considered as educationally beneficial or socially worthwhile by other members of the community. There is also the danger that, when teachers' everyday, practical craft knowledge is overzealously promoted, it may actually redirect teachers' work away from broader moral and social projects and commitments (Hargreaves and Goodson, 1996), and also from theoretical concepts which should form part of the professional knowledge base guiding a teacher's practice.

A more evolved concept of practical knowledge than that relating solely to experience may be found in 'practical wisdom'. Lunenberg and Korthagen (2009) define this concept as:

> *"... the sensitivity for, and awareness of, the essentials of a particular practice situation that shape our perception of the situation, and help us find possible courses of action. Practical wisdom is not something that is just stored in our heads, but it is intrinsically connected to specific phenomena occurring in the here-and-now and it only functions well in relation to these phenomena. Practical wisdom makes use of practical knowledge, but goes beyond it, as it helps the practitioner to perceive the essence of a situation." (p.227)*

As Freire and Macedo (1999) put it, one cannot negate practice for the sake of theory, as this would reduce theory to pure verbalism or intellectualism. By the same token, negating theory for the sake of practice, is to run the risk of losing oneself in the disconnectedness of practice. A unity between theory and practice needs to be achieved.

One recurrent challenge which frequently occurs when CPD designers attempt to organise an activity is the balance to be reached between theory and practice. Teachers' dispositions towards theory and practice, and the manner they intermediate, can have a huge impact on the way CPD activities are organised. CPD designers are often faced with low budgets and insufficient resources and the aim of making CPD as attractive and 'sellable' as possible usually ranks very high in the priority list. Teachers tend to grapple with the concept of theory, considering it as distant and detached from the classroom practices they are most interested in. They ask for functional solutions and examples which are directly relevant to their classroom realities, and training activities which bank on this view of 'practice' are inclined to be received very positively. One way of addressing this challenge would be to render the theory which teachers encounter in their CPD activities as more useful by linking it to considerations on their practice (McIntyre, 1995). Theory should generate valid new understandings of realities of classroom teaching and learning - understandings which guide teachers in improving their practice and which could persuade teachers to take the suggestions seriously and to engage in dialogue about them (McIntyre, 2005). According to McIntyre (1995), theory and practice should not be separated.

National research suggests that Maltese teachers generally consider theory to be unattached from school realities. They complain that the ideas which are 'theoretically presented' during INSET courses often prove difficult to implement in their own classroom, leading them to believe that theory is often irrelevant and of no use (Attard Tonna, 2008). There may also be the mistaken impression among teachers that practice signifies solely 'practical, classroom examples' and they tend to ignore the fact that it also consists of research activity, which is directed by theory. As Hargreaves and Goodson (1996) demonstrate, there is no straightforward split between the two concepts and CPD activities which tend to include practice but not theory (or the other way round) run the danger of presenting a very distorted view of how teachers should construct their knowledge. Teachers derive their skills from a mediation between practice and theory. Practical in-service education experiences are considered as valuable, but the teacher's perspective extends also beyond the classroom to embrace the broader social context of education (Hargreaves and Goodson, 1996).

Husen and Postlethwaite (1994) make a very important observation in this regard. Theory acquires relevance through use, and use involves thought and discussion in periods of time set aside for that purpose. On the other hand, practical knowledge is partly tacit in nature, and is not easily articulated or explained. Hence, for CPD activities to develop new and valid practices, designers will have to combine the use of theoretical and practical knowledge in some kind of dialogical relationship, involving close linkage between off-the-job reflection and ongoing classroom experience (Husen and Postlethwaite, 1994). This balance can be achieved in research-based CPD activities, for instance, where teachers are asked to research pedagogical issues of schooling, school culture and instruction. Teachers are here given the opportunity to link theoretical knowledge with perceptions of educational reality and can view schooling as complex and problematic (Maaranen and Krokfors, 2008). In such activities, teachers can develop academic skills and theoretical discourse and are also encouraged to adopt a reflective stance of their practice. Moreover, there are indications which suggest that, when teachers are encouraged to develop their own theoretical base, a concept often referred to in literature as a 'theory of practice', professional understanding is enhanced (Timperley, et al., 2007). This mode of professional conduct differs from traditional ways of affronting theory, research or practice in important ways.

This approach is based on the tenet that all teachers have a personal theory of teaching, whether implicit or explicit. They can thus construct a theory of practice if they examine their own theoretical principles, making them explicit through reflection, collaboration and dialogue, which leads to options for pedagogical action on its basis. Two main benefits can ensue from this process:

- Teachers are giving meaning to their actions and empowering themselves. This places teachers potentially in control of their own professional life and progress, even though institutional and other constraints may contest that control. Teachers become more autonomous agents in their professional activities (Lier, 1996).
- Teachers can conduct their own pedagogic research in support of their own theories. When a teaching profession is engaged in developing a theory of practice, it is not only involved in action research on classroom issues, but will adopt a critical stance and the contextual analysis that are part and parcel of this work. The focus of enquiry is broadened to include the multitude of forces that impinge on classroom practices, including the social context, the institutional structures and the political climate (Freedman and Ball, 2004).

This approach is embedded in situated, dialogic, professional learning conceptualised on socially constructed principles. However, it differs significantly from approaches which inform most CPD programmes in Malta and beyond, and provides an example of some of the challenges which need to be faced for professional development to be transformed into professional learning.

A reflective process

Another important criterion that needs to be considered for effective CPD is the process of reflection, often viewed as supporting and valuing ongoing teacher learning and helping teachers to construct their professional knowledge of practice. Teachers can develop a deeper understanding of the self, including self-knowledge and self-awareness through engaging in reflective processes (Berry, 2009). Chambers, et al. (2003) define reflection as.

> *"..... a critical tool for analysing, evaluating and eliciting consequences for action undertaken in a professional setting by teachers. It implies the production and use of knowledge that is generative and constructivist as distinct from a positivist view of knowledge. It also implies that improvement will take place as a result of actions undertaken." (p.104)*

An analysis of teachers' reflections would also throw light on the context within which teachers are practising. As Ovens and Tinning (2009) suggest, "reflection appears to be mediated by the discursive context the individual is situated within" (Ovens and Tinning, 2009, p.1130).

Reflection is always situated in a social context, is social in nature, and makes use of the conceptual tools present in the context (Ovens and Tinning, 2009) and thus reflective practice can help teachers understand how the context is influencing their teaching. Through reflection, deeper understandings of practice can be developed and the quality of students' learning enhanced (Loughran, 2004). Although teaching involves intuitive judgement, the intuitions can be reflected upon, sharpened, and related more precisely to long-term goals and values (Furlong, et al., 2000). Hence reflective processes impact on the collaborative and dialogic strands for learning and underline the crucial nature of the situatedness of that learning over time.

Rhodes, et al. (2004) argue that good teachers are also by definition reflective practitioners. They continuously strive for improvement in their practice, they challenge and question themselves, and they look for new and improved ways of working so that all their learners are enabled to make the best possible progress (Rhodes, et al., 2004). It is often argued that, as part of their professional development, teachers must also be provided with possibilities for collective reflection where they can articulate and share their beliefs more explicitly (Hargreaves and Goodson, 1996; Maaranen and Krokfors, 2008; Benander, 2009; Hoekstra, et al., 2009). Reflection often acts as a catalyst to professional growth – growth in this sense signifies a deliberate process of learning towards fulfiment of potential, and can be strengthened by collaborating with colleagues (Glazer, et al., 2004).

The process of reflection also helps teachers to externalise and test their perceptions. Over the last years, teachers' perceptions have become one of the most important concepts in teaching and teacher education (Basturkmen, et al., 2004; Brown and Medway, 2007; Lee, 2009; Levin and Nevo, 2009; Ng, et al., 2010; Bray, 2011). It is said that teachers' perceptions influence their judgement and actions in the classroom. They drive the pedagogical decisions about teaching and learning of both novice and experienced teachers, and their practices in turn influence the opportunities that students have to learn (Levin and He, 2008). Through reflection, teachers can better understand teaching because they are making sense of their own knowledge and how this is influencing their practice (Lunenberg and Korthagen, 2009). Thoughts are intertwined with practice; so, to better understand practice, one needs to also understand the thinking that guides practice. Teachers' thinking interacts with teacher actions every day in both significant and small ways, influencing their ability to grow and improve their practice over time, and influencing their responses to new policies, new curricula, and new ideas about practice as they arise (Kennedy, 2008).

As Freedman and Ball (2004) state, teacher thinking is inextricably linked to teacher learning. No one can learn if they are not intellectually engaged with the topic being studied, and teachers can learn a great deal more from their experiences in the classroom if they take time to reflect upon these experiences and the beliefs which guide their thoughts and actions. Teachers develop their own ways of viewing the world, their own system of ideas. This is referred to as the 'ideological self' which signifies the development of the whole person and her or his complex of ideas and concepts, including political ideas (Freedman and Ball, 2004). Reflective practice gives teachers an active voice and enables them to be thinking and acting subjects with an idea system of their own (Carson, 1996). Making these reflections visible fosters more learning (Kennedy, 2008) as it enables the teachers to come to terms with their own thoughts and beliefs and to publicise them.

The Let Me Learn Professional Learning Process

One local continuing professional development process which promotes reflection is the 'Let Me Learn Process'. This INSET programme, offered as a joint initiative between the Directorates for Education and the University of Malta, is structured and conceived in a way that affords teachers the space to critically deconstruct their practice and think differently about their engagement in education, with a view to providing a socially empowering education (Attard Tonna and Calleja, 2010). The process is developed around a number of training sessions, seminars and school visits staggered across a scholastic year, and mentoring sessions to provide follow-up once the training is completed. These experiences can help teachers undergo challenging situations, on their own or in teams, and reflect about them. Reflections are documented in a journal and shared in groups, an exercise through which teachers can become aware of common challenges and dilemmas, and support each other (Attard Tonna and Calleja, 2010).

This kind of critical and reflective examination of teachers' teaching activity, according to Lave (2009), considers teachers and the social world of their activity as inseparable. One cannot understand pedagogical practice without conceiving the learner and how the learner adopts this practice. A choice of pedagogy inevitably communicates a conception of the learning process and the learner (Bruner, 1999). In the same manner, Putnam and Borko (2000) maintain that the pedagogy of professional development experiences cannot be manipulated in arbitrary didactic terms or analysed apart from the social relations that shape legitimate peripheral participation. Analysis needs to incorporate the existing cultures and discourse communities in which teachers work and learn because knowledge and learning will be found through the complex structures of person-acting in-settings One would then need to ask whether these existing cultures support teachers in learning to teach in new ways and whether they improve pedagogical practice (Putnam and Borko, 2000).

The pedagogy of this particular professional development experience is not concerned with discreet skills and techniques, or the accumulation of teaching strategies. In fact, the 'Let Me Learn Process' is not related to some specific skill or subject, and all educators in contact with learners can choose to undergo the training. In line with what Leach and Moon (1999) argue, its pedagogy, or rather its 'pedagogic setting', is informed by a view of the mind, a view of learning and learners, a view of the kind of knowledge that is valuable and above all by the educational outcomes that are desired.

The learning which takes place is set in the context of a professional community which involves teachers working together towards a common understanding of concepts and practices. Stoll and Louis (2007) perceive a professional learning community as such:

> *"In sum, the term 'professional learning community' suggests that focus is not just on individual teachers' learning but on*
> *(1) professional learning;*
> *(2) within the context of a cohesive group;*
> *(3) that focuses on collective knowledge, and*
> *(4) occurs within an ethic of interpersonal caring and permeates the life of teachers, students and school leaders."*
> *(Stoll and Louis, 2007)*

The peer coaching which occurs in the teaching communities of this training, even if informal, can be considered as a professional development trajectory in which teachers work together to support each other's professional growth (Zwart, et al., 2007). It should help teachers acquire the knowledge, skills, attitudes and values they need to improve their service to the students.

As Brookfield (1995) upholds, this kind of behaviour is desirable among teachers. Teachers are to be encouraged to go beyond the collection of feedback (from peers) by altering teaching methods and goals, documenting those changes and any progress towards goals and becoming student-centred, flexible and innovative teachers. It is important for teachers to search for ways to improve their own teaching and learning environments in a deliberate and sustained way, ideally into democratic spaces of knowledge exchange like those of peer interaction (Brookfield, 1995).

It is important to emphasise that different types of collaboration can create different learning opportunities for teachers, and their collaboration in professional communities may not automatically result in learning. Levine and Marcus (2010) indicate that decisions about the structure and focus on teachers' collaborative activities can both facilitate and constrain what teachers can learn together. Teachers may be influenced as to whether they would make their own practices in the classroom public, which aspects of teaching are discussed, whether they would divulge specific aspects of their work, and which kinds of information about students they would make available to each other. Thus, in order to understand what triggers professional learning through peer interaction, one would need to explore how different collaborative structures may promote and facilitate specific kinds of learning, an analysis which goes beyond the scope of this paper.

It would be also interesting to explore whether the teachers who attend this kind of training do try to rationalise any educational theories in their interaction with their peers. Teachers may find discussing theory problematic and are sceptical about educational literature because of its formal and academic register and does not include the colloquial language that teachers use in their everyday lives. Educational research may be perceived as abstract and theoretical, while teachers need pedagogical knowledge to address the context-specific and unique characteristics of every class, pupil, lesson and situation that they deal with. However, Brookfield (1995) also mentions a body of literature that is grounded in teachers' concerns and sympathetic to teachers' voices. Research that uses teachers' own words and constructs to describe the personal theorising that informs their decisions is more appealing to teachers. This kind of research includes personal narratives, autobiographical stories, ethnographic studies of teachers' lives and case studies of teachers in practice (Brookfield, 1995). These informal ways of teacher discussions, in Breault's (2010) views, can be a way of problematising familiar situations and encouraging a focus on practices rather than theory. Furthermore, they have the potential to develop a professional dialogue since they can give teachers a voice in their own education and empowerment.

It may be argued that the talk which goes on during these particular training sessions does not contribute directly to the joint construction of knowledge about teaching. As Cochran-Smith and Lytle (1992) explain, teachers may not be discussing theory, rather they would be exchanging classroom stories, sharing specific ideas, seeking each other's advice and trading opinions about issues and problems in their own schools and the larger educational arena. These exchanges may not be considered as significant in professional circles, in comparison to more serious purposes to which the group may attend. Yet these conversations have an important function as they create and sustain the interpersonal relationships necessary for the joint construction of knowledge which eventually develops within the teacher community. In these conversations the teachers provide rich information about their day-to-day work and the ways they construct their worlds inside and outside the classrooms (Cochran-Smith and Lytle, 1992).

Conclusion

One must acknowledge that this paper is in no way exhaustive in describing the nature of CPD experiences in Malta, and neither in outlining the strategies which render these experiences effective. A number of key ideas are promoted specifically because they relate, in some way, to the cultural and historical context of this paper. The aim of this paper is to situate the professional learning of teachers, specifically CPD, within this cultural and historical context in order to understand the factors which contribute to a relevant and effective professional learning. The Maltese context and the challenges encountered locally in terms of CPD provision are also explored. This leads to an identification of key areas where teacher professional learning in Malta is resulting as problematic, namely:

- Maltese teachers are not empowered to regulate their own learning experiences.
- Professional development opportunities are not situated within the specific social contexts of teachers' practice.
- A continuous mismatch can be observed between what teachers want, and need, to achieve in terms of knowledge and skills, and the opportunities provided to them.
- A framework, incorporating a long-term vision for teacher professional learning which can adequately address the needs of all teachers and simultaneously sustain the changes in the education system taking place, is still missing.

Teacher professional development is perceived as a factor in teacher quality and student outcomes. Yet no model of professional learning will necessarily lead to learning unless it is seen as a resource for further dialogue and action. This involves an interplay between individual, institutional and national policy factors. More integrated policies and practices for optimising both institutional and professional development are needed. Maltese teachers' classroom practices are characterised by constraints and challenges which sometimes may prove difficult to overcome, and thus processes of professional learning need to be sustained, and school and system efforts need to be integrated in the scenario. If links between the stakeholders could be strengthened, including schools and the university, an integrated model consisting of teacher education continuum that promotes partnerships will be supported. So that CPD efforts could be effective, CPD would need to connect to previous teacher learning and to future goals, and to be aligned with policy, national standards and assessments.

The way teacher professional learning is conceptualised and organised needs to be reconceptualised. This requires a shift from the traditional model of CPD provision, a shift which comes with its own pedagogical and financial implications. Learning takes time, is gradual and incremental, and professional development must be seen as a process not an event. Sweeney (2003) claims that one-shot in-services do not provide teachers with the necessary time or scaffolding to learn. CPD needs to become more learner-centred to give teachers the time and support they need to learn. A clear link needs to be drawn to classroom teaching and learning, and training needs to be transformed into continuous, long-term, sustained professional learning. Teachers must receive regular feedback on student learning progress and be provided with continued follow-up and support.

The Let Me Learn Professional Learning Process is partly managing to address some of these challenges with a small group of teachers and schools who choose to embark on this experience. Further research is however called for, as teachers' experiences are likely to differ across schools. It is also necessary to better understand the influence of national, college and school policies on teacher learning, and the way teachers' dispositions towards professional learning are constructed and maintained.

References

Abela Mercieca, N., (2010). More family-friendly measures for teachers. www.timesofmalta.com, Available: http://www.timesofmalta.com/articles/view/20100823/local/more-family-friendly-measures-for- teachers.323594 [Date Accessed: 11/04/2015].

Allen, J., M., (2009). Valuing practice over theory: How beginning teachers re-orient their practice in the transition from the university to the workplace. Teaching and Teacher Education, 25 (5), pp. 647-654.

Aseltine, J.M., Faryniarz, J. and Rigazio-Digilio, A., (2006). Supervision for Learning: A performance-based approach to teacher development and school improvement. Alexandria, VA: Association for Supervision & Curriculum Development.

Attard Tonna, M., (2008). Teacher in-service provision in Malta: Comparative perspectives. Thesis (Master of Arts in Comparative Euro-Mediterranean Education Studies). University of Malta.

Attard Tonna, M. and Calleja, C., (2010). The Let Me Learn professional learning process experience: A new culture for professional learning. Revista de Ciències de l'Educació, Universitas Tarraconensis, 35 (June), pp. 35-54.

Basturkmen, H., Lowen, S. and Ellis, R., (2004). Teachers' stated beliefs about incidental focus on form and their classroom practices. Applied Linguistics, 25 (2), pp. 243-272.

Benander, R., (2009). Experiential learning in the scholarship of teaching and learning. Journal of the Scholarship of Teaching and Learning, 9 (2), pp. 36-41.

Berlinger, D.C., (1994). Expertise: The wonder of exemplary performances. In: J.N. Mangieri and C.C. Block, eds., Creating powerful thinking in teachers and students. Orlando, FL: Holt, Rinehart and Winston. pp. 161-186.

Berry, A., (2009). Professional self-understanding as expertise in teaching about teaching. Teachers and Teaching: Theory and Practice, 15 (2), pp. 305-318.

Bezzina, C., (2002). Preparing a model of professional development schools in Malta. Curriculum and Teaching, 17 (2), pp. 73-84.

Brown, K.E. and Medway, F.J., (2007). School climate and teacher beliefs in a school effectively serving poor South Carolina (USA) African-American students: A case study. Teaching and Teacher Education, 23 (4), pp. 529-540.

Btookfield S., (1995). Becoming a critically reflective teacher. San Francisco, CA: Jossey- Bass.

Bruner, J., (1999). Folk pedagogies. In: J. Leach and B. Moon, eds., Learners and pedagogy. London: Paul Chapman Publishing. pp. 4-20.

Bonello, C., (2011). Interview 'I'm optimistic that early school leavers will decrease'.www.independent.com.mt, Available: http://www.independent.com.mt/news.asp?newsitemid=135808 [Date Accessed: 11/04/2015].

Bray, W.S., (2011). A collective case study of the influence of teachers' beliefs and knowledge on error-handling practices during class-discussion of Mathematics. National Council of Teachers of Mathematics, 42 (1), pp. 2-38.

Breault, R.A., (2010). Distilling wisdom from practice: Finding meaning in PDS stories. Teaching and Teacher Education, 26 (3), pp. 399-407.

Carson, T.R., (1996). Reflective practice and a reconceptualisation of teacher education. In: I.F. Goodson and A. Hargreaves, eds., Teachers' professional lives. London: Falmer Press. pp. 151-162.

Chambers, P., Clarke, B., Colombo, M. and Askland, L., (2003). Significant learning incidents and critical conversations in an international context: Promoting reflexivity with in-service students. Journal of In-Service Education, 29 (1), pp. 101-122.

Cochran-Smith, M. and Lytle, S.L., (1992). Communities of teacher research: Fringe or forefront. American Journal of Education, 100 (3), pp. 298-324.

Cooper, P. and Mcintyre, D., (1995). The crafts of the classroom: Teachers' and students' accounts of the knowledge underpinning effective teaching and learning in classrooms. Research Papers in Education, 10 (2), pp. 181-216.

Danileson, C., (2009). A framework for learning to teach. Alexandria, VA: Association for Supervision and Curriculum Development. Available: http://www.ascd.org/publications/educational_leadership/summer09/vol66/num09/A_Framework for_Learning_to_Teach.aspx [Date Accessed: 11/04/2015].

Day, C., (1999). Developing teachers: The challenge of lifelong learning. Florence, KY: Taylor & Francis.

Day, C., (2008). Committed for life? Variations in teachers' work, lives and effectiveness. Journal of Educational Change, 9 (3), pp. 243-260.

Directorate for Quality and Standards in Education, (2009). National policy and strategy for the attainment of core competences in primary education. Floriana: Ministry of Education, Culture, Youth and Sport.

Dooly, M., (2009). New competencies in a new era? Examining the impact of a teacher training project. ReCALL, 21 (3), pp. 352-369.

Duncombe, R. and Armour, K.M., (2004). Collaborative professional learning: From theory to practice. Journal of In-Service Education, 30 (1), pp. 141-166.

Eraut, M., (1994). Developing professional knowledge and competence. London: The Falmer Press.

Freedman, S.W. and Ball, A.F., (2004). Ideological becoming: Bakhtinian concepts to guide the study of language, literacy and learning. In: A.F. Ball and S.W. Freedman, eds., Bakhtinian perspectives on language, literacy and learning. New York, NY: Cambridge University Press. pp. 3-33.

Freire, P. and Macedo, D.P., (1999). Pedagogy, culture, language, and race: A dialogue. In: J. Leach and B. Moon, eds., Learners and pedagogy. London: Paul Chapman Publishing. pp. 46-58.

Furlong, J., Barton, L., Miles, S., Whiting, C. and Whitty, G., (2000). Teacher education in transition: Re-forming professionalism? Buckingham: Open University Press.

Glazer, C., Abbott, L. and Harris, J., (2004). A teacher-developed process for collaborative professional reflection. Reflective Practice: International and Multidisciplinary Perspectives, 5 (1), pp. 33-46.

Guskey, T.R., (2000). Evaluating professional development. Thousand Oaks, California: Corwin Press.

Hardy, I. and Ronnerman, K., (2011). The value and valuing of continuing professional development: Current dilemmas, future directions and the case for action research. Cambridge Journal of Education, 41 (4), pp. 461-472.

Hargreaves, A. and Goodson, I., (1996). Teachers' professional lives: Aspirations and actualities. In: I.F. Goodson and A. Hargreaves, eds., Teachers' professional lives. London: Falmer Press. pp. 1-27.

Hoekstra, A., Korthagen, F., Brekelmans, M., Beijaard, D. and Imantis, J., (2009). Experienced teachers' informal workplace learning and perceptions of workplace conditions. Journal of Workplace Learning, 21 (4), pp. 276-298.

Huttner, J., Smit, U. and Mehlmauer Larcher, B., (2009). ESP teacher education at the interface of theory and practice: Introducing a model of mediated corpus-based genre analysis. System, 37 (1), pp. 99-109.

Husen, T. and Postlethwaite, T.N., (1994). The international encyclopedia of education. 2nd ed. Oxford, OX: Elsevier Science Ltd.

Kaufman, J.H. and Stein, M.K., (2009). Teacher learning opportunities in a shifting policy environment for instruction. Educational Policy, 20 (10), pp. 1-39.

Kennedy, M.M., (2008). Teachers thinking about their practice. Sage Publications. Available: http://www.sage-ereference.com/education/Article_n3.html [Date Accessed: 11/04/2015].

Kreber, C., (2006). Developing the scholarship of teaching through transformative learning. Journal of Scholarship of Teaching and Learning, 6 (1), pp. 88-109.

Lampert, M., (2010). Learning teaching in, from and for practice: What do we mean? Journal of Teacher Education, 61 (1-2), pp. 21-34.

Lave, J., (2009). The practice of learning. In: K. Illeris, ed., Contemporary theories of learning: Learning theorists ... in their own words. Oxon, OX: Routledge. pp. 200-208.

Leach, J. and Moon, B., eds., (1999). Learners and pedagogy. London: Paul Chapman Publishing.

Lee, I., (2009). Ten mismatches between teachers beliefs and written feedback practice. ELT Journal, 63 (1), pp. 13-22.

Levin, B. and He, Y., (2008). Investigating the content and sources of teacher candidates' personal practical theories (PPTs). Journal of Teacher Education, 59 (1), pp. 55-68.

Levin, T. and Nevo, Y., (2009). Exploring teachers views on learning and teaching in the context of a trans-disciplinary curriculum. Journal of Curriculum Studies, 41 (4), pp. 439-465.

Levin, T.H. and Marcus, A.S., (2010). How the structure and focus of teachers' collaborative activities facilitate and constrain teacher learning. Teaching and Teacher Education, 26 (3), pp. 389-398.

Lier, L.A.W.V., (1996). Interaction in the language curriculum: Awareness, autonomy and authenticity. London: Longman.

Loughran, J., (2004). Preface to international handbook. In: J.J. Loughran, M.L. Hamilton, V. Laboskey and T. Russell, eds., International handbook of self-study of teaching and teacher education practices. Dordrecht: Kluwer. pp. 1-3.

Loughran, J., (2009). Is teaching a discipline? Implications for teaching and teacher education. Teachers and Teaching: Theory and Practice, 15 (2), pp. 189-203.

Lunenberg, M. and Korthagen, F., (2009). Experience, theory, and practical wisdom in teaching and teacher education. Teachers and Teaching: Theory and Practice, 15 (2), pp. 225-240.

Maaranen, K. and Krokfors, L., (2008). Researching pupils, schools and oneself: Teachers as integrators of theory and practice in initial teacher education. Journal of Education for Teaching: International Research and Pedagogy, 34 (3), pp. 207-222.

Malta, 2006. An act to amend the Education Act, Cap.327 (Act No. XII of 2006). Valletta: The House of Representatives, 583-674.

Mcintyre, D., (1995). Initial teacher education as practical theorising: A response to Paul Hirst. British Journal of Educational Studies, 43 (4), pp. 365-383.

Mcintyre, D., (2005). Bridging the gap between research and practice. Cambridge Journal of Education, 35 (3), pp. 357-382.

MCnally, J. and Menter, I., (2009). Teacher learning and development in the UK. Teaching and Teacher Education, 25 (7), pp. 941-943.

Ministry of Education and Employment, (2012a). Council for the Teaching Profession. Ministry of Education and Employment. Available: https://www.meef.gov.mt/Page.aspx?pid=201&depid=13 [Date Accessed: 11/04/2015].

Ministry of Education and Employment, (2012b). Strategic Educational Pathways Scholarship. Ministry of Education and Employment. Available: https://www.meef.gov.mt/Page.aspx?pid=266&depid=2&pageid=13 [Date Accessed: 08/05/2015].

Ministry of Education, Employment and the Family, (2011a). Towards a quality education for all: The National Curriculum Framework 2011: Consultation Document 1 Executive Summary. Floriana: Ministry of Education, Employment and the Family.

Ministry of Education, Employment and the Family, (2011b). A vision for science education in Malta: Consultation Document 2011. Floriana: Ministry of Education, Employment and the Family.

Ministry of Education, Youth and Employment, (2005). For all children to succeed: A new network organisation for quality education in Malta. Floriana: Ministry of Education, Youth and Employment.

National Commision for Higher Eduation Malta, (2011). Malta Government Scholarships Postgraduate Scheme. NCHE Malta. Available: https://www.nche.gov.mt/page.aspx?pageid=102 [Date Accessed: 11/04/2015].

Ng, W., Nicholas, H. and Willliams, A., (2010). School experiences influences on pre- service teachers' evolving beliefs about effective teaching. Teaching and Teacher Education, 26 (2), pp. 278-289.

Ovens, A. and Tinning, R., (2009). Reflection as situated practice: A memory work study of lived experience in teacher education. Teaching and Teacher Education, 25 (8), pp. 1125-1131.

Passy, R. and Waite, S., (2008). Excellence and Enjoyment continuing professional development materials in England: Both a bonus and onus for schools. Journal of In-Service Education, 34 (3), pp. 311-325.

Putnam, R.T. and Borko, H., (2000). What do new views of knowledge and thinking have to say about research on teacher learning? Educational Researcher, 29 (1), pp. 4-15.

Redman, C., (2005). Planning professional development: Meeting the needs of teacher participants. In: S. Rodrigues, ed., International perspectives on teacher professional development. New York, NY: Nova Science Publishers. pp. 189-209.

Rhodes, C., Stokes, M. and Hampton, G., (2004). A practical guide in mentoring, coaching and peer-networking: Teacher professional development in schools and colleges. London: RoutledgeFalmer.

Scheerens, J., ed., (2010). Teachers' professional development: Europe in international comparison. Luxembourg: European Union.

Sciberras, J., Borg, A., Miller, K. and Tabone, M., (2009). Further and higher education strategy 2020: Recommendations of the National Commission for Higher Education. Valletta: National Commission for Higher Education.

Sollars, V., Attard, M., Borg, C. and Craus, B., (2006). Early childhood education and care: A national policy 2006. Floriana: Ministry of Education, Youth and Employment.

Stoll, L. and Louis, K.S., (2007). Professional learning communities: Elaborating new approaches. In: L. Stoll and K.S. Louis, eds., Professional learning communities: Divergence, depth and dilemmas. Berkshire: Open University Press. pp. 1-12.

Sweenhey, D., (2003). Learning along the way: Professional development by and for teachers. Portland, Maine: Stenhouse Publishers.

The Malta Independent, (2012). Quality education for all. www.independent.com.mt, Available:
http://www.independent.com.mt/news.asp?newsitemid=139175 [Date Accessed:08/05/2015].

Thurston, A., Christie, D., Howe, C.J., Tolmie, A. and Topping OPPING, K.J., (2008). Effects of continuing professional development on group work practices in Scottish primary schools. Journal of In-Service Education, 34 (3), pp. 263-282.

Times of Malta, (2011a). Government mismanaging reform of primary/secondary schools transition - Bartolo. www.timesofmalta.com, Available: http://www.timesofmalta.com/articles/view/20110129/local/government-mismanaging-reform-of-primary-secondary-schools-transition-bartolo [Date Accessed: 08/05/2015].

Times of Malta, (2011b). MUT survey: Colleges reform not filtering down to students. www.timesofmalta.com, Available:

http://www.timesofmalta.com/articles/view/20111108/local/mut-survey-colleges-reform-now-filtering-down-to-students.392897 [Date Accessed: 08/05/2015].

Times of Malta, (2011c). MUT voices disappointment over draft national curriculum. www.timesofmalta.com, Available:

http://www.timesofmalta.com/articles/view/20111206/local/mut-voices-disappointment-over-draft-national-curriculum.397181 [Date Accessed: 08/05/2015].

Times of Malta, (2011d). School reforms don't add up for teachers. www.timesofmalta.com, Available:

http://www.timesofmalta.com/articles/view/20111109/local/School-reforms-don-t- add-up-for-teachers.392927 [Date Accessed: 08/05/2015].

Times of Malta, (2012). Draft curriculum 'avoids hot issues'. www.timesofmalta.com, Available:

http://www.timesofmalta.com/articles/view/20120203/local/Draft-curriculum-avoids-hot-issues-.405112 [Date Accessed: 08/05/2015].

Timperley, H., Wilson ILSON, A., Barrar, H. and Fung, I., (2007). Teacher professional learning and development: Best Evidence Synthesis Iteration (BES). Wellington, New Zealand: Ministry of Education.

Zmuda, A., Kuklis, R. and Kline LINE, E., (2004). Transforming schools: Creating a culture of continuous improvement. Alexandria, VA: Association for Supervision & Curriculum Development.

Zwart, R.C., Wubbles, T., Bergen, T.C.M. and Bolhuis, S., (2007). Experienced teacher learning within the context of reciprocal peer coaching. Teachers and Teaching: Theory and Practice, 13 (2), pp. 165-187.

• CHAPTER 8 •

Teachers and Kids as Reflective Practitioners of their Learning

Robert B. Kottkamp

The context and the process

Testing and Student Failure

Testing rivets the attention and drives the behaviour of educators. Testing is a single, narrow means of assessment and accountability. Yet with the implementation of No Child Left Behind, testing has become the main issue for teachers, administrators, parents, and children. No role escapes its powerful effects.

Joe, a fifth grader in a New Jersey public school, like countless other children, has had a bad day. He has just completed an on-demand writing prompt taken from a prior version of the New Jersey Elementary School Proficiency Assessment.[1] His score placed him near the bottom – he failed. The on-demand prompt for the state test and Joe's essay response follow in Box 1.

Two readers, each using a five-point holistic-scoring rubric, scored Joe's essay at a combined three out of ten possible points. He was assessed as having "Limited Command" of writing. The rubric identifies four main criteria: content and organisation, usage, sentence construction, and mechanics. When the readers review the essays, they look primarily for a student's ability to create a well-structured and grammatically correct essay. In this task, organisation receives more attention than content.

This chapter was first printed as a chapter in Karen Osterman & Robert B. Kottkamp (2004) Reflective Practice for Educators: Professional Development to Improve Student Learning. Corwin Press, Inc. Reprinted with Permission.

Box 1 On-Demand Prompt for Fifth-Grade State Writing Examination
You have been stranded on a deserted wilderness island. Before your ship sinks, you are able to recover some items that might help you survive. What would you choose to recover? Why would you choose those items? What would you do with them?

Joe's Essay Response
If I were stranded on a deserted island I would need a knife, and axe, some sort of gluey stuff, & rope to repiar my ship. I would need a knife to cut rope and other stuff. An axe to wood. Also gluey stuff to glue wood. Then finally rope to tie stuff together like the sail, that's what I would need to repair my boat.

Like many other children, Joe doesn't do well on standardised (increasingly high-stakes) tests. When he performs poorly, Joe doesn't feel good about his score or himself, and his teacher doesn't feel rewarded or highly competent. Joe hasn't had many ideas of how to improve his performance on tests; his teachers haven't had much success helping him.

Test performance is a problem not only for Joe but also for teachers, schools, districts, and parents. While his success should be a concern under any circumstances, teachers and principals are under increasing pressure to improve test scores of kids just like Joe. To address this problem, districts, schools, principals, and teachers adopt different strategies – some successful, some not; some address underlying problems; others solve symptoms with quick fixes more political and symbolic than substantive in nature.

Some states have specific mandates. New York State, for example, mandated that students with unacceptable prior performances thought to predict low future test scores must be given Academic Intervention Services (AIS) to improve their performance on state tests. The state, however, provides little guidance about the content and structure of AIS and, like other remedial programme efforts in the past, there is doubt as to the efficacy of these supplementary programmes. Doctoral students in the leadership programme at Hofstra University, for example, studied the AIS programmes in their districts. The findings showed no significant relationship between participation in AIS programmes and improvement in test scores. AIS programmes provided minimal learning time, were often staffed by inexperienced or substitute teachers (low cost), and used the same teaching methods and often the same curricular materials as regular classroom instruction. Further, the criteria used to assign children to these programmes were weak, predicting with only 30% to 40%

accuracy actual test scores. Overall, the doctoral students concluded that a little more of the same instruction made no difference. Quick-fix, unfunded, compliance programmes had political and symbolic import for districts; they had negligible effects on student learning as measured by test performance.

In Joe's case, there was a different approach with very different outcomes. In an effort to support children like Joe, his principal persuaded her superintendent and school board to experiment with an innovative professional development effort, the Let Me Learn Process® (LML). Unlike the traditional approaches that we described in Chapter 1, this development process offers intensive, personalised, and long-term support. Unlike other programmes, this initiative is not a pre-packaged solution but a developmental process aimed at helping both teachers and kids to develop a deeper understanding of themselves as learners and to use this new understanding to help them identify ways to improve their practice. In essence, this professional development process is a means to engage teachers and students in reflective practice. The focus is on the process of learning, the roots of the problem, rather than on the test score, a symptom. By enabling teachers and students to examine their beliefs and assumptions about learning and the link between these beliefs and their practice, the process seeks to create meaningful change through double-loop learning.

After only twelve weeks of student development, Joe and his classmates wrote on the same prompt a second time, Joe's second essay follows in Box 2.

Joe's second essay is noticeably different. Comparing his two attempts, the number of words he used more than doubled. There are two paragraphs rather than one. He made fewer spelling and punctuation errors and wrote fewer sentence fragments in the second. His sentences varied more in form and length, and while not a criterion, he used more imagination in the second. His second essay was not stellar, yet it was sufficiently improved to move his performance from three to five points on the ten-point scale, an increase from "Limited Command" to the middle category, "Partial Command".

Joe was not the only one in his school to show improvement. Of the fifth graders, 55% improved their total scores by one point or more on the ten-point scale. Students who scored at the low end on the first writing prompt showed greater improvement than students who originally scored at the high end. In other words, students originally performing at the lowest levels showed the most gain – a desirable result. What happened to account for Joe and his classmates' improved writing performance?

Between Joe's first and second tests, Joe, his classmates, and his teacher along with five other colleagues and their students in Grades 3 through 5 were engaged in the Let Me Learn Process. The first phase of the professional development consisted of

Box 2

Yesterday, I got stranded on a deserted island. My ship destroyed, I must look for food and supplies for my ship. I thought about cutting down trees for wood. Also I could use vine to tie it together and fix my sail. Before I leave I should stock up on food. I'll start at sunrise.

Today is the day I'll try to leave. I'v got all my supplies the night before. I started my work I decided to use the mud and hay I found to patch the holes. By sundown I set sail. I got back home, to my land safely. When I was sailing back home I saw a mysterious ship with blue flames around it the ship, you could see right through. That ship I will visit it soon again, such a ghostly ship. That will be another story.

teachers working with their colleagues and a certified LML consultant on site in their school district to develop an understanding of the process and preparing to introduce it to students in their classrooms. While there is no standard format for delivering LML professional development[2] in this school, the first phase totalled twenty-five hours. It began with 2.5 workdays in August followed by three hours a month from September to November. The facilitator began each session by asking the teachers what they got from the prior session and where they needed more help and then tailored the day's work on the spot to the teachers' self-diagnosed current development level. Implementation, the second phase, occurred from February through May. The consultant spent a total of fifty hours with the six teachers in individual classrooms working with them and their students, providing group coaching; timely, relevant, and one-on-one mentoring; and classroom modelling.

The Let Me Learn Process

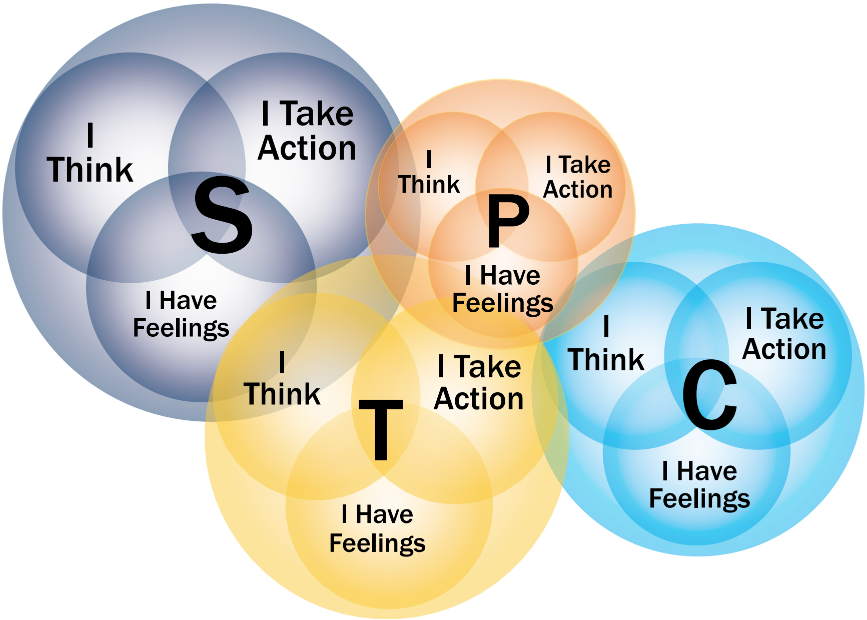
Let Me Learn (Johnston, 1996, 1998, 2000) is an advanced learning system. It provides learners (child, teacher, parent, or administrator) with the means to understand and articulate who they are as learners and offers strategies to focus and guide their learning with intention. LML provides a vocabulary for communicating internalised and externalised learning actions (thoughts, feelings, actions) among learners. It enables learners to gain awareness of, and to make explicit, their tacit learning processes.

The conceptual framework for Let Me Learn is the Interactive Learning Model (ILM). This learning model depicts the brain as a triune system consisting of three mental processes: cognition (thinking), affectation (feeling), and conation (doing). Cognition includes mental acuity, memory, range of experiences, and ability to work with abstractions; conation refers to natural skill, pace, autonomy, use of personal tools, and degree of engaged energy; and affectation encompasses feelings, values, and sense of self (Johnston, 1996). This notion of the triune brain, or trilogy of the mind (Johnston, 1996), traces its origin to the ancient Greeks and is an important foundation for current research on the brain and learning (Keefe, 1992).

Philip (1936) observed variations in the way that adults and school children use these three processes as they approach learning tasks. Drawing on this work, Johnston (1996, 1998) empirically derived four patterned operations, each synchronous, or consisting of interactions of the three mental processes. These four patterned operations are Sequence and Organisation, Specificity and Precision, Technical Performance and Reasoning, and Confluence and Risk Taking. Each patterned operation is distinct from the others, each interacts with the others, and each builds the wholeness of the learning process. Through the interaction of these patterns and the operation of mental processes, we make sense of the world and begin to learn (Johnston, 2003a). The ILM's depiction of the simultaneous interactions or synchronicity of the patterned operations (Sequence, Precision, Technical Reasoning, and Confluence) is found in figure 8.1.

From the perspective of reflective practice, these mental processes and interactive patterned operations function very much like the assumptions comprising our

Figure 8.1 Synchronous Interaction of Three Mental Processes and Four Patterned Operations



theory-in-use. They are unknown to individuals directly. Yet they organise and drive each individual's particular, unique approaches to learning, and these actions affect the ability to achieve goals – in classrooms, workplaces, leisure pursuits, and family relationships. Like the theory-in-use, these mental processes are tacit, below the threshold of conscious awareness. Consequently, learners are unable to recognise or name them and need assistance to extrapolate and name these patterned operations.

LML provides a process and a vocabulary to enable learners to gain awareness of, and to make explicit, their tacit, unique, neurologically grounded bases for learning. Using the language of reflective practice, LML enables learners to understand and articulate the mental models or theories-in-use, which guide thoughts and actions about learning. In this case, however, the theory-in-use has neurobiological origins. With this new understanding, learners can then identify and intentionally select strategies that enable them to achieve their goals more effectively. As teachers develop a deeper understanding of their own learning, they become more sensitive and responsive to the learning needs of their students (Bonich, Schlau. & Kottkamp, 2003). As students become more aware of their own learning needs and processes, they are able to direct their own learning and experience autonomy and efficacy. Using the language of LML, they approach learning with meta-awareness; they become intentional learners. Essentially, the LML process, by engaging the learner in reflective practice, enables the learner to experience double-loop learning about learning itself. In more outcome-oriented terms, LML enables teachers and students to improve their performance.

Becoming reflective learners through let me learn

Gathering Data About One's Self as a Learner

The professional development process begins with teachers taking the Learning Combination Inventory (LCI), an instrument developed by Johnston and Dainton (1997a). This inventory gathers self-reported data about how the individual learns, specifically about the extent to which the learner uses each of the four patterned operations.

Taking the LCI is akin to an interview probing a learner's personal experience. It is not a test; there are only valid-for-the-person responses, not correct ones. The interview consists of twenty-eight statements, including the following:

- I like to build and make things.
- I am a very organised person.
- I call out my ideas before being called on.

- I don't like having to do my work in just one way, especially when I have a better idea I would like to try.
- I ask more questions than most people because I enjoy knowing things.

The respondent answers these questions on a five-point continuum from *Never* to *Always*. Additionally, there are three open-response writing prompts: "What makes assignments frustrating for you?" "If you could choose, what would you do to show what you have learned?" "What hobby or sport do you do well? How would you teach someone else to do it?"[3]

The LCI yields four scores, each corresponding to one of the four patterned operations (Sequence, Precision, Technical Reasoning, Confluence) described previously. As we see in Figure 8.2, the numbers are marked on four continua ranging from 7 to 35, one continuum for each patterned operation. A certified LML facilitator then validates the LCI scores using internal indicators, including comparison of the closed questions with the three open responses (Johnston, 2000, pp.39-57).[4]

Specifically the validated scores on the LCI indicate the extent to which the person uses each of the processes: Sequence, Precision, Technical Reasoning, and Confluence. There are three ranges: Use First, Use As Needed, and Avoid. This information provides a framework for understanding the individual's learning behaviour and experience in learning situations.

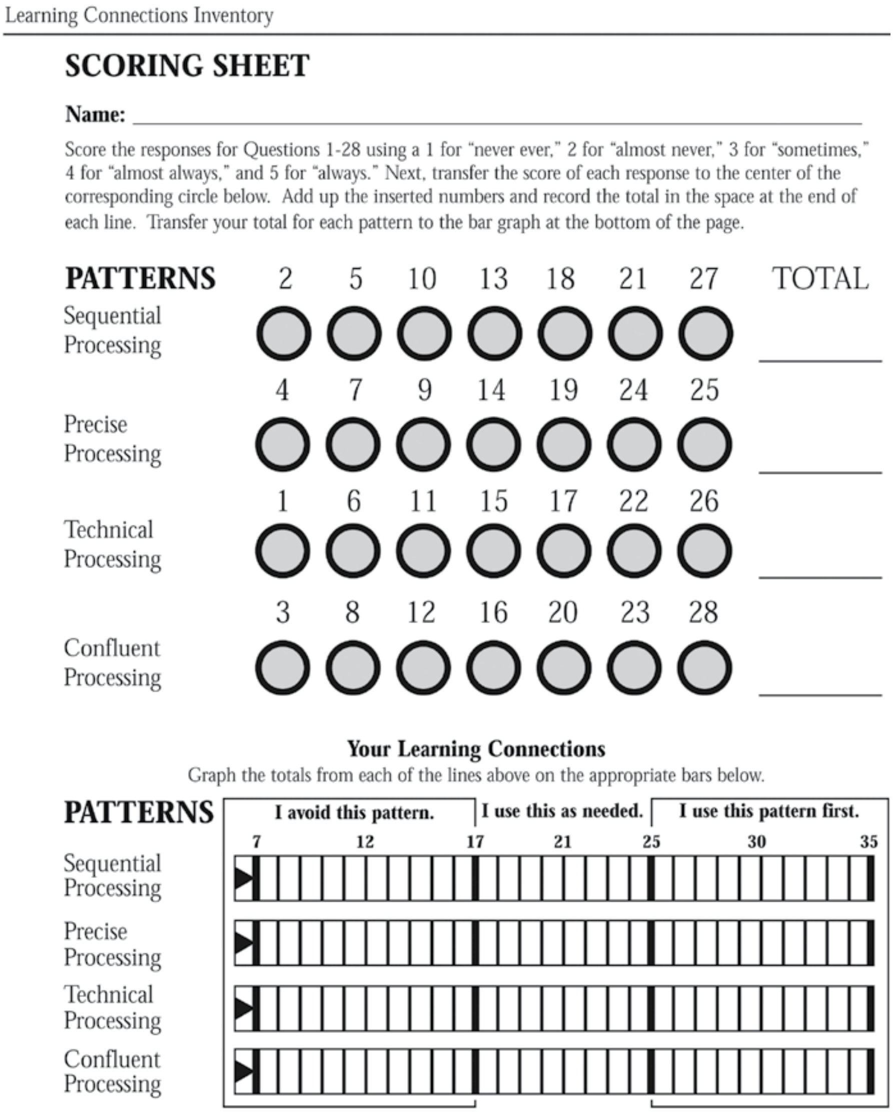
Debriefing the LCI: Understanding Patterned Operations and the Self as Learner

With their LCI scores in hand and working closely with each other and the facilitator, the teachers then begin to develop an understanding of this information. What do these scores mean and what are their implications for me as a learner and as a teacher?

To develop an understanding of this learning process, we illustrate using the LCI scores for Ms. J., Joe's teacher. Figure 8.2 shows the scoring grid with Ms. J.'s LCI scores. Scores from 7 to 16 are in the Avoid range; scores from 17 to 24 are in the Use as Needed range; and scores from 25 to 35 are in the Use First range. Higher numbers show stronger use of a pattern and lower numbers a weaker use. Even within a range, the strength of a pattern varies with its placement on the continuum.

As you can see from Figure 8. , Ms. J. has three patterned operations in the Use as Needed range, Sequence (20), Precision (24) and Technical Reasoning (20), and one pattern, Confluence (30), in the Use First range. This means that Ms. J. tends to begin any task with Confluence and support it with her high-end Use as Needed pattern of Precision. The Sequence and Technical Reasoning processes are also available for her to use when they are needed, but she will not typically begin her learning with these.

Figure 8.2 The Learning Combination Inventory Scoring Grid



Learning Connections Inventory

SCORING SHEET

Name: ____________________

Score the responses for Questions 1-28 using a 1 for "never ever," 2 for "almost never," 3 for "sometimes," 4 for "almost always," and 5 for "always." Next, transfer the score of each response to the center of the corresponding circle below. Add up the inserted numbers and record the total in the space at the end of each line. Transfer your total for each pattern to the bar graph at the bottom of the page.

PATTERNS	2	5	10	13	18	21	27	TOTAL
Sequential Processing	○	○	○	○	○	○	○	______
	4	7	9	14	19	24	25	
Precise Processing	○	○	○	○	○	○	○	______
	1	6	11	15	17	22	26	
Technical Processing	○	○	○	○	○	○	○	______
	3	8	12	16	20	23	28	
Confluent Processing	○	○	○	○	○	○	○	______

Your Learning Connections

Graph the totals from each of the lines above on the appropriate bars below.

At this point, concepts such as Confluence and Sequence still have little meaning for Ms. J. or the other teachers; so the next step is to help them develop a personal understanding of these patterned operations. What are these patterned operations about? What do they mean?

While individuals have and use all four patterns, they use some patterns more readily than others. Persons with a Use First in Sequence, for example, approach tasks sequentially. Cognitively, as Figure 8.3 indicates, they organise information, mentally analyse data, and break tasks down into steps. If you were watching them begin a task, you would see them performing sequencing activities (conation): they make lists, organise, and plan. Characteristics of the situation also affect how they feel (affectation) when they are involved in the task. They thrive on consistency and dependability and need things to be tidy and organised. Conversely, if they feel rushed to complete tasks when the directions are not clear or keep changing midstream, they feel very frustrated.

Each patterned operation is distinctive. People with Use First Precision ask lots of questions and are driven to know more. They challenge; they document their research and findings in great detail and strive to be right. When they are correct and recognised, they feel good; when they can't get enough information or don't get it right, they are frustrated.

Those with Use First in Technical Reasoning look for personal relevance in tasks and want only as much information as needed to accomplish the task. They like to work with their hands and solve problems. They take satisfaction from knowing how things work and being self-sufficient. They have no need to share what they know and are particularly frustrated when they must complete a task that, for them, has no real-world relevance. They like physical movement, many times want to work alone, and often feel very constrained and frustrated in the order-oriented context of schooling.

Individuals with Use First in Confluence like to approach tasks differently. They brainstorm and think outside the box of custom and make what others may see as strange connections. They take risks in learning and have little fear of failure. They also tend to start projects – without asking for directions – but don't always follow through to completion. They are frustrated by demands for conformity and feel misunderstood or unappreciated when their ideas are considered too off the wall or strange.

Consult Figure 8.3 for more detail on the conative, cognitive, and affective processes functioning within each patterned orientation in the Use First range. It also lists frequently heard comments associated with each learning pattern.

Those who Avoid certain patterns also think, feel, and do in very predictable ways as shown in Figure 4. When confronted with a situation that requires of them a pattern that they avoid, they experience discomfort. At a cognitive level, they reject

Figure 8.3 When I Have a Use First Pattern

	How I think	How I do things	How I feel	What I might say
Sequential	❧ I organize information ❧ I mentally categorize data ❧ I break tasks down into steps	❧ I make lists ❧ I organize ❧ I plan first, *then* act	❧ I thrive on consistency and dependability ❧ I need things to be tidy and organized ❧ I feel frustrated when the game plan keeps changing ❧ I feel frustrated when I'm rushed	❧ Could I see an example? ❧ I need more time to double-check my work ❧ Could we review those directions? ❧ A place for everything and everything in its place ❧ What are my priorities?
Precise	❧ I research information ❧ I ask *lots* of questions ❧ I always want to know more	❧ I challenge statements and ideas that I doubt ❧ I prove I am right ❧ I document my research and findings ❧ I write things down ❧ I write long e-mail messages and leave long voice mail messages	❧ I thrive on knowledge ❧ I feel good when I am correct ❧ I feel frustrated when incorrect information is accepted as valid ❧ I feel frustrated when people do not share information with me	❧ I need more information ❧ Let me write up the answer to that ❧ Wanna play trivia? ❧ I'm currently reading three different books ❧ Did you get my e-mail on that? ❧ Did you know that…. ❧ Actually…
Technical	❧ I seek concrete relevance – what does this mean in the real world? ❧ I only want as much information as I need – nothing extraneous	❧ I get my hands on ❧ I tinker ❧ I solve the problem ❧ I *do*	❧ I enjoy knowing how things work ❧ I feel good that I am self sufficient ❧ I feel frustrated when the task has no real world relevance ❧ I enjoy knowing things, but I do not feel the need to share that knowledge	❧ I can do it myself ❧ Let me show you how… ❧ I don't want to read a book about it, I want to *do* it ❧ How will I ever use this in the real world? ❧ How can I *fix* this? ❧ I could use a little space…
Confluent	❧ I read between the lines ❧ I think outside the box ❧ I brainstorm ❧ I make obscure connections between things that are seemingly unrelated	❧ I take risks ❧ I am not afraid to fail ❧ I talk about things – a lot ❧ I might start things and not finish them ❧ I will start a task first – *then* ask for directions	❧ I enjoy improvisation ❧ I feel comfortable with failure ❧ I do not enjoy having my ideas criticized ❧ I feel frustrated by people who are not open to new ideas ❧ I enjoy a challenge ❧ I feel frustrated by repeating a task over and over	❧ What do you mean, "that's the way we've always done it"?! ❧ The rules don't apply to me ❧ Let me tell you about…. ❧ I have an idea…… ❧ I have another idea…….

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the task itself as meaningless or undoable; they have difficulty engaging in the actions that are necessary for success, and they are unhappy with the learning task, frequently experiencing a sense of incompetence and frustration. People who Avoid Sequence, for example, have difficulty understanding or following directions and see no sense in repetition. They have difficulty putting things in order, ignore anything looking like a list (table of contents, indexes), and feel scattered.

Those who Avoid Precision don't like extensive reading or writing; they resent assignments requiring information and recall. They like to deal in generalities and seldom have specific answers; they read by skimming and take few notes. When confronted with details, they feel overwhelmed.

Learners avoidant of Technical Reasoning hate to make things and prefer doing tasks requiring talking or writing. They rely on directions rather than figuring things out for themselves. Feeling of ineptitude, even fear, arises when they confront working with mechanical things or using tools. They rely on technical specialists to fix things or simply throw out what is broken and buy a new one.

People with Avoid Confluence have difficulty with open-ended unstructured tasks. They don't like improvising and imagining conditions that are not defined or given parameters. They pine for focus and definition. They don't want to think about taking social or intellectual risks. In unstructured or ambiguous situations, they feel unsettled and chaotic.

During the debriefing sessions, for example, as she and the other teachers review the characteristics associated with Use First (Figure 8.3), Ms. J. sees herself depicted. Scanning the thinking, feeling, and doing behaviours associated with Confluence, her strongest pattern, she recognises herself. She thinks outside the box, seeks non-traditional ways of doing things, reads between the lines, loves to brainstorm, and sees connections others simply cannot. She takes risks with learning, is not defeated if something new does not work out, talks a lot about her work, jumps in immediately and balances a lot of things simultaneously. She affirms the feelings too. Teachers who refuse to change drive her nuts. She is always seeking a challenge and feeling energetic. Colleagues who dismiss her many "wild" ideas before she can even explain them frustrate her. She actually says the things in the "What I might say" column. "Wow", she thinks. "This inventory really describes me well". Then she looks at the Precision row and also affirms many of the things there as well: asking and wanting to know; writing a lot and challenging things not correct; liking to have knowledge; and feeling frustrated when people withhold information. "Wow! More right on target descriptors." Then she looks at the Technical Reasoning and Sequence rows. She acknowledges that, while she can make lists and outlines, organise things, wield a screwdriver, and attack practical problems, these are not what she typically does.

She also scans Figure 8.4 describing the behaviours characterising those who avoid a particular pattern but does not find a great deal there she resonates with. She has no pattern in the Avoid range, so this also makes sense to her.

Having considered her LCI scores and the data in Figures 8.3 and 8.4, she thinks that they not only describe her as she sees herself but also match how her colleagues think of her. She has the reputation of being a bright, knowledgeable, energetic, innovative teacher, who is often suggesting ways to do things better and is the first to volunteer for new programmes and curricula. She is known as a doer. People come to her for help with understanding the larger context. Her principal assigns kids to her who would drive many other teachers crazy. She does this because she knows that Ms. J. quickly tries other learning approaches with kids if the original way of doing something does not result in success. Again, she thinks, "Wow, this LCI really describes me very well!"

Other colleagues in her professional development group have the same experience and find that their LCI scores correspond well with their own behaviours and feelings. They also discover that their descriptions vary considerably from each other, and Ms. J. doesn't find anyone much like her. However, as a group, teachers tend to have Sequence and Precision as their highest patterned operations and Technical Reasoning as their lowest (Johnston, 1997).

Analysing their own scores, they begin to develop an understanding of themselves as learners. As the workshop continues, they also engage in different activities that demonstrate in an experiential way their attraction to, or avoidance of, certain types of tasks. In one of the activities, for example, they each receive straws, pipe cleaners, and marshmallows and directions to represent with these materials where they learn best. While they do the task, they keep track of their thinking and feeling. With the task complete, they take turns describing what they made, how they felt, and what they thought.

A teacher with Use First Sequence and Avoid Technical Reasoning used pipe cleaners to construct a simple, two-dimensional rectangle, representing a desk. She learns best in a classroom where expectations are clear. She had very negative feelings about the activity, felt inept and inadequate having to make an object, and was extremely frustrated with the way that the task was presented. She wanted to know exactly what the facilitator wanted from her and found the directions too vague. The whole thing reminded her of the hands-on science kits the district had recently distributed. She's very uncomfortable with the thought of using them and unsure about how to proceed, so they're still untouched in the closet.

In contrast, a teacher with Use First Technical loved the project. She represented her favourite place to learn through a fully three-dimensional representation of herself in her wood shop complete with tools. She felt great about doing the project because

Figure 8.4 When I Avoid a Pattern

	How I think	How I do things	How I feel	What I might say
Sequential	❧ These directions make no sense! ❧ I did this before. Why repeat it? ❧ Why can't I just jump in?	❧ Avoid direction; avoid practice ❧ Can't get the pieces in order ❧ Ignore table of contents, indexes, and syllabi ❧ Leave the task incomplete	❧ Jumbled ❧ Scattered ❧ Out of synch ❧ Untethered/Unfettered ❧ Unanchored	❧ Do I have to do it again? ❧ Why do I have to follow directions? ❧ Does it matter what we do first? ❧ Has anybody seen…?
Precise	❧ Do I have to read all of this? ❧ How am I going to remember all of this? ❧ Who cares about all this 'stuff'?	❧ Don't have specific answers ❧ Avoid debate ❧ Skim instead of read ❧ Take few notes	❧ Overwhelmed when confronted with details ❧ Fearful of looking stupid ❧ Angry at not having the 'one right answer'!	❧ Don't expect me to know names and dates! ❧ Stop asking me so many questions! ❧ Does it matter? ❧ I'm not stupid!
Technical	❧ Why should I care how this works? ❧ Somebody has to help me figure this out! ❧ Why do I have to make something; why can't I just talk or write about it?	❧ Avoid using tools or instruments. ❧ Talk about it instead of doing it. ❧ Rely on the directions to lead me to the solution.	❧ Inept ❧ Fearful of breaking the object, tool, or instrument. ❧ Uncomfortable with tools; very comfortable with my words and thoughts	❧ If it is broken, throw it away! ❧ I'm an educated person; I should be able to do this! ❧ I don't care *how* it runs; I just want it *to run*!
Confluent	❧ Where is this headed? ❧ Where is the focus? ❧ What do you mean, imagine?	❧ Don't take social risks ❧ Complete one task at a time ❧ Avoid improvising ❧ Seek parameters	❧ Unsettled ❧ Chaotic ❧ No more change or surprises, please!	❧ Let's stay focused! ❧ Where did that idea come from? ❧ Now what? ❧ This is out of control!

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she learns best from hands-on activities. She commented on how unusual it is to do hands-on activities in professional development sessions and how it would be good to have more like this one. It reminded her also of those science kits which she loves to do with her kids.

Ms. J. depicted herself in a theatre. Recall that her Confluence is at the Use First level. She learns a great deal engaging in amateur theatrical productions. Sometimes she acts, but more often she helps with the sets, coming up with different ideas based on a mix of research and her broad understanding of the meaning of the play, which she represents metaphorically in set design. She expresses joy that this professional development approach allows her to use different and unique approaches.

Led by the facilitator, these teachers discuss how different their places of learning are as well as their feelings about the activity and thoughts they had while doing it. Through these interactions they again affirm that their LCI scores made sense in what they did and how they felt and thought about it. The concepts of LML begin to take on personal meaning. They see themselves as learners, unique learners, not at all like everyone else.

Understanding Interactions Among Learners

The teachers also begin to see connections between their own learning patterns and their experience in the classroom. As they share observations, they notice that their colleagues with Use First in Sequence have orderly classrooms, hand in everything on time exactly the way it was asked for, and are more reluctant to try new things, preferring to stay with the tried and true. They discover that a third of them avoid Technical Reasoning but few avoid other operations.

They also begin to see that their reactions towards children differ depending on their patterns. Pushing further, those avoidant of Technical Reasoning are the teachers who express relief that Ms. J. is willing to take some of the "squirrelly" kids who wiggle a lot, don't sit in their chairs in normal ways, always have their hands busy, and always start doing before the directions are complete.

Over the course of the professional development sessions, these teachers engage in many more activities. One entails giving the LCI to a family member or close friend. Most choose a spouse. After completing one LCI, many ask for LCIs for additional family members. They discuss together what they are learning. They develop insights on interpersonal dynamics. One teacher with Use First Precision discovered that her husband avoids Precision and learns with Use First Technical. Her insistent questions bother him a lot; she also discovered that his high level of Technical Reasoning explains some of why he needs space and time to be alone. Another learned that because of her Use First Sequence she desires her home to be orderly and neat. This helps to explain her frustration with her son's messy room. He uses Precision and Confluence first but avoids Sequence.

Continuing over time, these teachers get a clearer understanding of how their own arrays of learning patterns provide deeper understanding of not only how they learn but also how they teach, what kinds of assignments they make, and how they give feedback and grade papers. They also grasp new understandings of how they interact with others, both in the school and elsewhere (Rusch, Haws, & Krastek, 2002). They begin to understand how emotions about their own learning, their work, and their close relationships are tied to their learning patterns (Bonich et al., 2003; Kottkamp, 2002). Some explain how understanding themselves better as learners and beginning to understand others in these ways reduce frustration and friction. After six months' work with LML, one third-grade inclusion teacher explained as follows:

> *I have learned that, when you know that a student's learning pattern is, it helps you feel good about the student. What I mean is sometimes I feel guilty because there are students you just don't like because they get on your nerves. Once I understood that it's the way they are because that is how they learn, then I learned to relax and really not be put off by the student. Instead I've Learned how to help that student put together a way that makes learning work for them. That may include working with someone similar to them in learning patterns or it may mean sitting down and talking through our differences. All I know is I like the feeling of being more patient and more accepting.*

With new insight about the interaction between teacher and student learning patterns, they also begin to change their practice. A fifth-grade teacher, who had worked with LML for six months, for example, described her work with a difficult student:

> *I want to talk about Matt. He's a very cognitive student but he was very frustrated with writing. His writing scores were very poor, and he usually shut[s] down at a writing assignment. He loved to express himself through art; but even the quality of the art wasn't very good. He was comfortable talking in front of the group and sharing his ideas, even when they were way out there. Sometimes his ideas had nothing to do with what we were talking about, but he was always excited about his idea, so I thought his scores would be highly Confluent. When he took the LCI (S 19, P 15, T 34, and C 26), his Technical score surprised me, but it did help me understand him better. His written answers were also interesting: What frustrates me most? "I don't like writing a lot." "I would make myself a project", to show how he learned, and he would*

"give a diorama or 3-D project that had to do with what we learned," would be how he would teach others.

He has been diagnosed LD and diagnosed ADD. He also received occupational therapy every week. I used to think Matt couldn't remember details and the lack of details was part of his "learning disability". Now I understand if the Precision is related to something that is a part of his real-world interest, he can stretch his Precision. For example, we were doing something in science. And I talked about atomic numbers and his hand went up. He said, "I know about atomic numbers. Like the atomic number for gold is 79". His response caught me by surprise. I wasn't sure he was right, but I looked it up and sure enough he was. I was surprised he knew this fact because most fifth graders don't know it. He had seen a programme about it on television and he thought that was interesting.

Every marking period, the boys and girls have to give a book report to their small group. My kids work on it at home and then bring it in. They bring in props, but it is usually a minor part of the project. Matt spent three whole choice-time periods, which is a half an hour each, working on this project. It was driving me crazy (my scores were S 25, P 27, T 21 and C 19), but I thought, let him do it. I thought he was spending too much time building this creation but it really helped him understand the story; so I let him do it. The written work was horrible, and we need to work on that, but I don't know that without this project, he would have been able to do as well as he did.

She then showed a video she made of his presentation.

"This is the story of the boy who fooled the dragon," Matt began, "and here's the set-up I made of the story," which proved to be a complex many-charactered plot where the hero, a young boy, destroyed the evil king, and lived happily ever after. A key prop in the story was a castle that he built.

Matt's teacher talked about his approach to his work:

As difficult as it was, he wouldn't have been able to tell the story without this thing which he created. That piece of it was so important for him. For someone like him, 19 Sequence and Precise 15, it helped him recount detail as I have not heard him do before.

She was also clear about the implications for her own teaching:

On the one hand, I know I need to be more patient and let him build those things. I can't stay locked in my idea of what learning is. Watching Matt learn to use who he is as a learner, has required me to rethink how to allow him to develop. Six months ago, I would have insisted that his book report be only in one way – my way.

Now she had a different way.

As teachers begin to understand themselves as learners and see how they interact with other teacher learners and child learners, they become more sensitive and responsive to the learning and personal needs of others (Bonich et al., 2003). Children have a similar experience. They, too, learn about LML in a group situation and, since this descriptive information is shared openly, the kids become aware of the patterned operations of all their colleagues. They use that information to organise groups for cooperative learning – groups are more effective when all of the pattern strengths are represented (Marcellino, 2001; Probasco, 1997). The information also affects the quality of their interpersonal relationships. One endearing snippet of a videotape made about Let Me Learn features two third-graders and classmates Zach and Corey. Zach leads his learning with Precision, while Corey leads hers with Confluence. Zach looks at Corey and says, "I used to think you were crazy; now I understand you are just Confluent!" Corey looks at Zach with a smile and whispers, "Thank you". Knowledge of each other as learners has put them on a different interpersonal footing as well, a much healthier one.

By learning about themselves as learners and by getting to know their students in a different way, the teachers are beginning to change their ideas about themselves and their work. In the vocabulary of reflective practice, they have gathered and analysed data and begun to develop a very different perspective on themselves and their own work. They have already begun to reconceptualise. The learning process is deeply personal and they have found the experience different, exciting, and motivating. In the classroom implementation phase of professional development, teachers introduce the LML process to their students and begin to develop a deeper understanding of their students as learners. They also continue to gain insight into their own work.

Implementing Let Me Learn With Kids

When it comes time for Ms. J. and her colleagues to implement Let Me Learn with their students, much of the information they deliver and many of the activities they use are parallel to what the teachers have already done. They simply adjust activities to the level of younger learners. They administer the LCI, share the information with students, and help them to develop a personal understanding, just as they did. One of experiential learning activities involves giving students a list of the kinds of statements found in the "What I might say" column of Figure 8.3. The instructions are for students to cut out the statements that best describe them and paste them on a piece of construction paper. Joe, whose learning LCI scores are Sequence-23, Precision-27, Technical Reasoning-34, Confluence-24, created a "Joe the Learner" poster (see Box 3).

Joe's poster is all about Technical Reasoning. His scores show why. Although his Sequence and Confluence are in the Use as Needed range and Precision is Use First, his 34 in Technical Reasoning, at the top of the range, simply overpowers the other patterns. His performance in the on-demand writing prompt grows increasingly understandable.

Like their teachers, the kids create art projects that reflect their learning patterns. Those with Use First Sequence tend to have very symmetrical artistic depictions. Those with Use First Precision often label various parts of pictures with words, such as door, window, chimney, and driveway when depicting a house. Kids with Use First Technical Reasoning often draw pictures with a great deal of mechanical/technical detail, such as cars or tractors or airplanes. Kids with Use First Confluence tend to make projects unlike those with other pattern arrays. They use more types of media and incorporate materials like ribbon, straw, or textured grass.

Like their teachers, children don't take long to see the connections between their LCI scores and their experience as learners. In a journal writing activity,

Box 3 Joe the learner

- I can do it myself!
- I want hands-on activities, which interest me instead of taking notes, doing book work or writing about it.
- How can I *fix* this?
- I learn better if I can do what I am learning about.
- I need to run around outside and get things to make sense in my head!
- I could use a little space ...
- Let me build things!

students describe instances when they are using each of their patterned operations or combinations of them. The following examples come from fourth-graders in rural Vermont:

> *Peter: I was in sequential when I made power notes in outline form while I read about earthquakes and when I listed my words for spelling; I am using my precision when I want to know stuff – like when I am learning facts about animals. I used my technical pattern when I drew cars and when I made an ice pack bandage with a rubber band, plastic bag and a frozen paper towel. I was in my confluence when I created a game during recess. It is called "Hide and Seek Freeze Tag."*
>
> *Iris: I used my sequential pattern when I was problem-solving and made a chart for my guess and check strategy for math. I also used it when I organised my workbook in columns to be neat. Well, several have said [they're using Precision] when they look up facts, so I will add "I use precision when I am correct in spelling all the time." I built a cube out of paper using my technical process in math to show a number. I also built a dog-food feeder that is my height so I could feed my dog with less hassles. I am pretty high in confluence and have been writing songs. I used my confluence to solve a math problem my own way.*

As with the adults, through information, experience, and discussion, students develop understanding of themselves as young learners and begin to see and affirm the relationship between LML concepts and the concrete, personal experience of doing, thinking, and feeling in ways that the concepts describe.

Analysing learning tasks

The purpose of reflective practice is to facilitate improvement in performance. The LCI provides teachers and students with information about their learning orientation. Like theories-in-use, the learner's approach to learning tasks, while influential, is not deterministic. As learners become aware, it is possible for them to select and use strategies with intention to change the way they approach learning tasks. The goal of reflective practice is to facilitate change. The specific goal of the LML process is to enable the learner to learn with intention.

To this point in the development process, learners have been developing a functional understanding of themselves as learners. They understand that their patterns influence how they approach tasks. Tasks differ, however. While some tasks require Sequence, others require Confluence. As a simple example, if the task is to alphabetise a series of names, the primary patterned operations needed to include the organisation of Sequence and the detail and drive for correctness of Precision. These strategies will accomplish the task. In contrast, the desire of Confluence to do things differently is not congruent with this task and will not lead to success.

The successful learner uses task-appropriate strategies. Congruence between the patterned operations the learner brings to the task and those required by the given task determine the level of success. To respond appropriately, with intention, the learner must analyse tasks to determine what the requirements are. So, once the learner has a functional understanding of self, the next developmental step is learning to analyse tasks for patterned operation requirements.

Actually, the segue from learning about one's self as a learner to task analysis already under way during the first stage of development. When teachers discussed the relationship between their LCI scores and their use of hands-on science kits, they were implicitly engaged in rudimentary task analysis. Kits and other experiential learning materials require the availability of Technical Reasoning (to at least the Use as Needed level) for the teachers to use them as intended and to feel positively about the experience. Teachers who Avoid Technical Reasoning, and especially those who also Use Sequence First, are not likely to use hands-on strategies successfully and tend to turn experiential and exploratory curricula into step-by-step didactic lessons. When the fourth-graders discussed previously identified patterned operations associated with various school and non-school tasks, they engaged in implicit task analysis.

In the task analysis phase of LML professional development, teachers address explicitly the primary question: "What does that particular task require of me if I am to perform it well?" Initially, the teachers deal with various learning tasks, including writing essays to particular prompts, working with science kits, and organising and running a field day. As they begin to understand their own cognitive and affective reactions to different tasks, they begin to develop understanding of their students' reactions and begin to see the relationship between their students' learning patterns and their work as teachers.

Success in teaching, as in any other task, is determined by the congruence or dissonance between the teacher's approach and the student's needs. LML frames this issue by examining congruence between teacher and student learning patterns. To illustrate this principle in an experiential way, but before their students have completed the LCI, teachers draw on their own experience to respond to the following task:

Select a specific student from your current class who best represents each of the following descriptors:

- The one who drives me *nuts*
- The ideal student
- The Know-It-All
- The organiser
- The "Where did that idea come from?"
- The one I can't seem to reach (Johnston, 2000, pp. 71-73)

As the teachers report their findings, patterns emerge. The "ideal student" is very much like the teacher. The "one who drives me nuts", the problematic child, is one who learns quite differently from the teacher. But the "ideal student" for one teacher may also be the "one who drives me nuts" for another and vice versa.

Later, when LCI scores are available for the kids, the teachers compare their scores with their students and find their original observations affirmed. The "ideal student" always has an LCI array very close to that of the teacher; the "one who drives me nuts" always has one very different from the teacher's. As the inquiry and discussion goes on, teachers begin to apply the lexicon of LML terms to the patterns they are describing and to what they have only experienced emotionally, often viscerally in the past:

- My "ideal student" has LCI scores much like mine. Aha! How I like to learn is how I like to teach! Kids who learn the way I learn and the way I teach do well in my class and are perceived by me as good students!
- The "one who drives me nuts" has an LCI score array very different from mine. Aha! Kids who learn differently from the way I do can drive me nuts! They are probably not learning well in my class because the way I teach is not how they learn!
- Everyone's "Know-It-All" has a Use First Precision score. Aha! Kids with high Precision know a lot of facts and like to make them known! This can get my goat, especially if my Precision score is not as high as the kid's.
- Everyone's "Organiser" has a Use First Sequence score. Aha! High Sequence is visible in organisation and neatness! Whether I feel positive or less so about this depends on my Sequence score!
- Everyone's "Where did that come from" has a Use First Confluence score. Aha! Kids who often bring up things that seem off-track from the logical progression of the lesson or discussion are kids with high Confluence! My positive or negative feeling about going off-track is related to my Confluence score!
- The one doodling in the back of the room, the "one I can't seem to reach", is often a kid who has a Use First Technical Reasoning score. Aha! High Technical Reasoning is associated with not freely giving a lot of information to teachers, not writing much.

The longer-term assignment is to pay particular attention to these six students, observe them carefully, and write descriptions of what they do and say. As teachers gather additional information, their understanding becomes clearer, and they develop a compelling rationale for changing their teaching practice.

In later sessions, with data from the observations at hand, the facilitator helps teachers to explore what they are finding. Then, the whole group begins to see the following: Aha! LML provides language, description, analysis, insight, and meaning to the feelings we have had about these kids from the beginning of the year. Aha! We teachers in here together have different LCI arrays; the particular kids we have difficulty or success with are not the same kids or kinds of kids in LML terms. The interaction of our patterned operation matrices and those of the kids is hugely related to the success or lack of success we experience with the kids and our emotional reactions to them. Thus, the complexity of task analysis related to the task of teaching particular kids is approached indirectly through gathering and analysing data about experiences teachers are already having and often find problematic. The complexity comes together not in the form of another tough thing to do that takes up a lot of time or "another rock in my bag", but rather in the form of Aha, a problem understood! Of liberation from things not understood that drive good people crazy!

Students learn to do LML learning task analysis, too. One of the most useful LML tools is Cue Words Word Wall, developed by an elementary teacher who used LML with her classes since its inception. This tool, shown in Figure 8.5, simply lists the verbs, nouns, and adjectives commonly found in directions for, or statements of, learning tasks (e.g. writing prompts; homework assignments; end of chapter questions; project, term paper, and dissertation instructions) arranged in four clusters corresponding to the dominant patterned operation required to complete the task successfully. Teachers put up a chart that covers a large portion of the wall, hence the term *Word Wall*, as a reference for kids as they go about their daily schoolwork.

Recall that in preparing their essays for the writing prompt, students must respond to three questions: Before the ship sinks, *what would you choose to recover? Why would you choose those items? What would you do with them?* Using the Word Wall, students examine the first sentence and then use the chart's contents to identify the strategies that are called for. To answer the first question – what would you choose to recover, for example students would need to make a *list*, a sequential process. The second question asks students for a rationale in choosing to save the list of items. Using the Word Wall, students determine that his part of the task requires them to *describe, explain, give reasons* and *document* all Precision verbs. The third question asks the students to *detail, describe, and identify specific* uses for items saved; it requires more Precision but may also draw on Technical Reasoning to *illustrate, demonstrate*, and *problem* *solve*, all related to practical problem-solving. Predominant in all three questions is the need to plan, organise, and order (Sequence) and provide detail (Precision). Task analysis is complete, and it is clear to the students (and teachers) that the task as set out requires of the student a good amount of Sequence and Precision and a dab of Technical Reasoning. As we can see, Joe's LCI array of S-23, P-27, T-34, C-22 is not ideally suited for this task. While he has a Use First level of Precision, his extremely high Use First Technical Reasoning, which is not congruent with the task, completely overpowers his Precision if he remains in an unreflective state.

But the story is not complete yet. Joe now knows that his learning pattern array is not congruent with the on-demand prompt writing task. So what is he to do? This is the same question the teachers raised earlier when they engaged in task analysis: "OK, we see that the task and the learner are incongruent in terms of patterned operations. So what do we do?" To answer these questions brings us to the highest and most sophisticated level of development: meta-analysis and intentional learning.

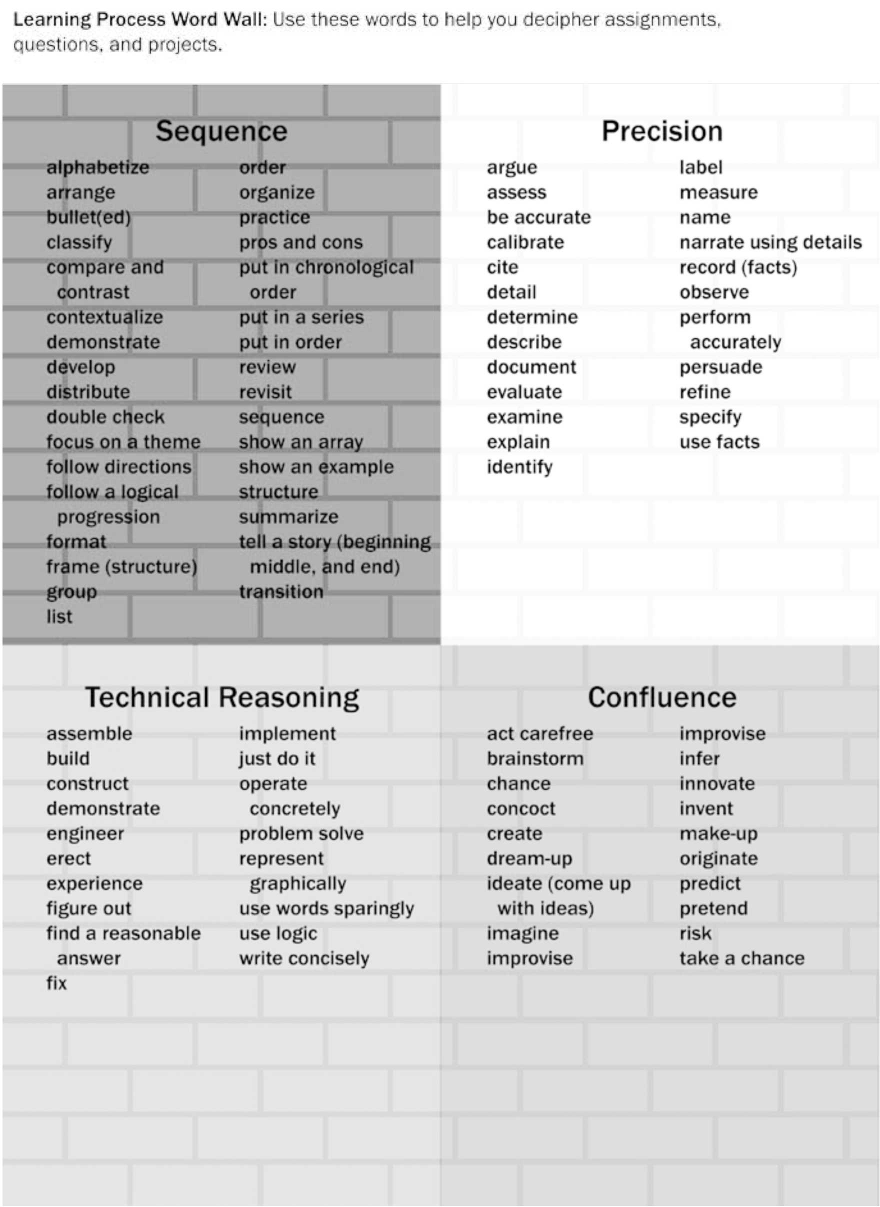
The whole process of learning task analysis or decoding is a powerful lifelong strategy for reflective learners, and the Word Wall is just as applicable to task assigned by a foreman in a factory or at a construction site, by a project manager in a software company, or by a platoon leader in the military. Task analysis is not just a test preparation strategy; at the same time, it can be very useful to both teacher and students preparing to perform a task, such as the on-demand writing prompt that stumped Joe. Through involvement with LML, Joe, along with classmates and teachers, now has an understanding of his pattern matrix. They have learned to analyse tasks, and now the objective is to help them expand their repertoire of strategies so that they can be more effective on tasks that are difficult, given their specific patterns.

Meta-awareness: becoming intentional learners and teachers

Possessing knowledge of self as a learner, understanding the requirements embedded in learning tasks, and understanding how to analyse tasks have motivated teachers and students to use this new knowledge and understanding to improve their practice. They are ready to move to the final level of development. They are ready to experiment with new strategies.

For teachers this means engaging in intentional teaching. To teach intentionally means to teach with full awareness of children as learners and with a conscious effort to support them in using their unique, very personal learning-patterned operations matrices. Intentional teachers value the learner first and encourage kids to take responsibility for their own learning. Intentional teaching fosters trust and supports

Figure 8.5 Cue Words Word Wall



Learning Process Word Wall: Use these words to help you decipher assignments, questions, and projects.

Sequence

- alphabetize
- arrange
- bullet(ed)
- classify
- compare and contrast
- contextualize
- demonstrate
- develop
- distribute
- double check
- focus on a theme
- follow directions
- follow a logical progression
- format
- frame (structure)
- group
- list
- order
- organize
- practice
- pros and cons
- put in chronological order
- put in a series
- put in order
- review
- revisit
- sequence
- show an array
- show an example
- structure
- summarize
- tell a story (beginning middle, and end)
- transition

Precision

- argue
- assess
- be accurate
- calibrate
- cite
- detail
- determine
- describe
- document
- evaluate
- examine
- explain
- identify
- label
- measure
- name
- narrate using details
- record (facts)
- observe
- perform accurately
- persuade
- refine
- specify
- use facts

Technical Reasoning

- assemble
- build
- construct
- demonstrate
- engineer
- erect
- experience
- figure out
- find a reasonable answer
- fix
- implement
- just do it
- operate concretely
- problem solve
- represent graphically
- use words sparingly
- use logic
- write concisely

Confluence

- act carefree
- brainstorm
- chance
- concoct
- create
- dream-up
- ideate (come up with ideas)
- imagine
- improvise
- improvise
- infer
- innovate
- invent
- make-up
- originate
- predict
- pretend
- risk
- take a chance

learners to move beyond their comfort zones in using learning processes and tools they would not have attempted to use prior to forming an LML learner-teacher partnership (Johnston, 2000).

Intentional learning is the learner response to intentional teaching; it is characterised by the desire to grow in understanding and responsible ownership of the learning experience, rather than pleasing the teacher and merely scavenging for answers. Intentional learners make the learning process work for them by recognising how they use their own learning processes to explore, understand, and grow in their ability to learn effectively. They accomplish this by developing workable, personal learning strategies, negotiating with the learning environment (most important, the teacher), and developing respect for various learning modes (Johnston, 2000). Intentional learning is reflective learning. Joe, for example, needs to become an intentional learner to improve his performance significantly on the vast majority of learning tasks school sets before him. While Joe and his classmates now know that this specific writing prompt requires Sequence and Precision, what they learn more generally as they continue task analysis on a daily basis is that almost all school tasks require Sequence and Precision. Students with low in Precision are particularly disadvantaged because tasks increasingly demand those precision-related strategies as they progress into secondary and postsecondary education (Pearle, 2002).

As a result, students with certain patterns are less likely to succeed. A study of high school freshmen, for example, showed that students in the college-prep track had higher than average Sequence and Precision scores than those in the general track (See Table 8.1). The general track students, in contrast, had higher than average scores in Technical Reasoning and Confluence. Students with specific learning disorders had the highest scores in Technical Reasoning and the lowest in Precision with 81% using Technical Reasoning first and 50% avoiding Precision (Johnston, 2003b). Similarly, at the elementary level, among those classified for special education are a disproportionately high percentage of students with high scores in Technical Reasoning. The likelihood of classification increases as the Sequence and Precision scores move into the Avoid range. Other learning patterns also place students in jeopardy in the classroom. Students who have low scores in Sequence may succeed academically but are frequently the target of disciplinary action. The combination of Avoid Precision and Use Technical Reasoning First is particularly dangerous because the student avoids reading and writing (Grandin, 2002; Johnston, 2003b; Spadoni, 2002).

Table 8.1 Mean LCI scores and Percentages for Those Who Use Technical Reasoning First and Avoid Precision Among Tracked Freshmen in One New Jersey High School

Mean LCI Scores					Percentages of Students Who ….	
Tracks	Sequence	Precision	Technical Reasoning	Confluence	Use First Technical Reasoning	Avoid Precision
College Preparatory	28	22	20	20	32	14
General Education	24	20	24	23	52	29
Specific Learning Disability	24	18	29	22	81	50

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Intentional teaching and learning become the goal for the final development stage in learning the LML process. But neither teachers nor children simply leap into this new level of learning accomplishment. Rather, there is additional understanding to gain and additional skills and tools to make one's own before the goal of internationality in teaching and learning is achievable. Understanding of, and practice with, the process of meta-processing and meta-awareness are what propel student and teacher learners into intentionality.

Meta-processing is the internal self-talk of learning that occurs whenever a learner is confronted with a learning task. It is a conversation among the mental processes of cognition, affectation, and conation. It uses cognition to recall all of the memorable learning experience – good and bad. It uses conation to begin the task. It is also our gut or affective reaction, reminding us of prior feelings of failure, success, boredom, or excitement from involvement in learning. Using meta-processing strategies, learners are able to articulate what before they experienced but could not express. Through their experience in LML, they gain insight into these implicit beliefs, values, and assumptions about learning. They are expressing their theories-in-use.

The meta-processing strategies enable learners – children or adults – to gather information about their learning experience and to share information with others to gather valuable feedback:

- Mulling, for example, involves raising internal, self-talk questions in the middle of an assigned task, questions about feelings, prior experience, expectations, and needed resources.

- Connecting is a conscious effort to connect with the task requirements, to draw on experience and knowledge of self and others.
- Rehearsing is exactly that – the self-talk of trying out your response to get feedback and counsel before completion, but, at this step, it is done privately and the only audience (and critic) is the self.
- Expressing is the public performance, the authentic assessment, and, within the framework of LML, this is a public activity that welcomes feedback and encourages more reflection by the student on his or her own performance. Why did I use those words? What was I thinking when I answered the question this way?
- Revisiting, the final step, involves returning to the same or similar learning task to try it again, using the insight gained through this reflective process.

The culmination is Learning. By completing each of these phases, the student of whatever age has demonstrated the ability to grow, change, and develop and to do so with personal responsibility and intention (Johnston, 2000).

While these meta-processing strategies all support individual learning, they also change the nature of learning in several ways. First, they redefine learning as a collaborative effort rather than an individualistic and competitive process. Learners assume personal responsibility for their own work and develop skill in drawing on their own personal resources. They also learn to rely on others to support their learning. They learn to value critical feedback because they see its positive effects on their own work. The quality of conversation about work is not about brilliance or incompetence but on ways to enhance performance. Since learning is described as a developmental process involving multiple iterations – from creating a first draft and rehearsing to giving a final presentation and then revisiting the performance to conduct a self-assessment, identifying strengths and weaknesses – the emphasis is on effort and progress rather than ability (Kessler & Johnston, 2003). This task focus, while extremely important as a motivational strategy, is seldom found in learning environments (Maehr & Midgley, 1996). In each LML activity, learners are engaging in reflective practice, gathering information about their performance, assessing their performance relative to their intentions and their goals, and revising strategies to improve their practice in the next situation.

By raising these thought processes to conscious awareness, learners are able to translate this internal talk into external, explicit communication with other learners and teachers using LML vocabulary. Bringing the processes from inside the mind into the real time action of learning allows learners to communicate about where they are stalled, what they are pondering or wondering, what phase of learning they are in.

One particularly touching illustration involves Susan, a special education student, diagnosed with disabilities in reading (dyslexia), writing (dysgraphia), and speaking (aphasia). LCI showed her Technical Reasoning and Confluence patterns are high, while her Sequence and Precision patterns are very low. The students were involved in a project for an entire year, with the Word Wall clearly visible. All of a sudden, Susan jumped up, saying, "I *know*! We can write down this, this, and this!" And she said, "Oh my God, look at what I just did!" She then ran over to Word Wall, went right to Sequence, and put her hand on the word *list*. "That's what I'm doing!" Seeing a student with such severe disabilities doing that, the teacher reported, was one of the most powerful experiences she ever had as a teacher (Silverberg, 2002, pp. 120-121). One can presume that the experience was equally powerful for the student.

Communication of the internal to the outside world makes it possible for learners to provide teachers and other learners with the information enabling them to engage in effective teaching, coaching, mentoring, and support (Johnston, 2000). For example, having a means to make internal talk public enables Ms. J to coach Joe more effectively about writing to on-demand prompts. Because their patterned matrices are quite different, they experience writing to a given prompt very differently; but externalising their unique internal experiences using a common vocabulary enables them to communicate effectively about writing improvement strategies.

When learners are able to use meta-processing with intention, they arrive at the highest state of self-awareness, meta-awareness. Meta-awareness consists of the learners' knowledge of self as a learner. At this level, learners have knowledge and understanding of their learning processes, the interaction of those processes, their potential to achieve and to miscue on a given learning task (Johnston, 2003a). When students achieve this level, they can use their learning power with intention and deliberateness:

> *They have become conscious of their transformation from being a passive student to an engaged learner. They know how to think through, rehearse, implement, and reflect upon their highly personalised learning strategies. They know how to get around the roadblocks, how not to become overwhelmed or underwhelmed by an assignment. They can literally work their way through the learning task. The learner who achieves this level of personalised proficiency as a learner is truly a model of educational accountability. (Johnston, 2000, p.7)*

In the classroom, Ms. J. as facilitator will guide Joe and his classmates in using the seven phases of meta-processing, and they will become a normative part of the learning experience, a part of conversations about learning, assignments, testing, and other school tasks that take place between teacher and students and among peers, one-to-one or in small groups. As in numerous other classrooms, with practice Joe and his classmates will likely reach the level of meta-awareness.

Teachers and professors using LML for themselves and with their students develop activities, lesson plans, and assignments to support learners in coming to know themselves as learners, to analyse tasks, and to develop meta-awareness. They also develop specific tools to facilitate those processes. An elementary teacher, for example, developed the Cue Words Word Wall. Another very powerful tool is the Power/Strategy Card.

The Power/Strategy Card is both an outcome of meta-processing and meta-awareness and a means for helping the learner maintain those processes of intentional learning during engagement in learning tasks. A Power/Strategy Card is metaphorically a meta-processing/meta-awareness crib sheet. It is a totally personal reminder of key Strategies for a specific learner with a unique patterned matrix to improve performance on a particular kind of learning task.

The Power/Strategy Card contains three elements: the learner's LCI/patterned operations scores, the positive/negative attributes of each patterned operations scores, the positive/negative attributes of each patterned operation in its specific range for accomplishing the specific task, and specific strategies to increase overall performance for each patterned operation. Once students achieve a sufficient level of meta-processing and meta-awareness to produce this information, they may develop different cards for different generic or specific learning tasks.

Joe, as we now know, uses Technical Reasoning and Precision first, but Technical Reasoning dominates. His Confluence and Sequence scores are lower: he uses them as needed, but unless he has a conscious awareness of task requirements and realises that these skills are needed, he may not. When Joe has developed his skills in meta-processing and has achieved a minimal level of meta-awareness, he will understand his own learning needs, be able to analyse task requirements, and develop an appropriate strategy, in essence, counselling himself to change his own learning practice. At this level of development, Joe would have sufficient information and insight to be able to develop his own Power/Strategy Cards.

In Figure 8.6, we illustrate this tool with a Power/Strategy Card that a student with a patterned matrix like Joe's might create to help him improve his performance on the type of essay included in the state testing programme. It responds to the task's particular embedded requirements and Joe's unique array of patterned operations. Note that Joe's Power/Strategy Card basically has strategies to tether (tone down) his Technical Reasoning and to extend (ratchet up) his Sequence and Precision. Other learners with different patterned operations matrices would have cards containing different general and specific strategies.

With experience, students as early as third grade are able to achieve surprising levels of meta-awareness and intentionality. Alex, a fifth-grade special education student in Joe's school, provides a startling example of a child who has progressed quite far in his development toward meta-awareness and intentionality. According to Alex's teacher, when he was participating in a hearing to determine his placement for the following year, he offered the following recommendation:

You've got to put me with a teacher next year who knows Let Me Learn. See, I need a teacher who understands me because I'm not very organised, and I need to forge that [Sequence]. So, if I am with a teacher who is sequential and understands that I'm not, then I can learn how to use my strategies better. (Johnston, 2003b, slides 45, 46).

His teacher reported, "I almost fell off my chair. He just opened up and said this, and then I said to myself, 'Wow! The kids get it. They really get it!' "

Out of the mouth of an "elementary", "problem" learner come amazing things! In the child's few words are many indicators of meta-awareness. He understands himself as a learner. He knows his patterned learning matrix and its meaning for school tasks, and he demonstrates competence in is use of LML vocabulary and concepts, accurately describing his learning and that of teachers and prescribing appropriately for himself. At a more general level, he also shows intentionality. He has an active rather than a passive stance and is willing to negotiate with the learning environment to overcome obstacles. He is taking responsibility and accountability for his own learning and has a clear intention to learn well.

Any child brought to a special education hearing has had learning difficulty and undoubtedly has felt a great deal of frustration with school and learning tasks. Yet here Alex speaks as a very responsible kid working to meet personal needs and the goals school sets out for him; his attitude and intentions are sterling. LML and its use by at least one teacher have liberated him from much that before must have bound and taunted him. He is now an empowered and accountable learner. If he does experience the kinds of teachers he prescribes for himself in future, he is very likely to beat the odds of classified or otherwise labelled kids by developing a healthy self-concept and achieving as a learner.

There are data indicating that, when teachers and students begin to engage in the Let Me Learn Process, referrals to child study teams for the purpose of classification decline markedly. In a follow-up survey of twenty-three New Jersey and Ohio teachers who had worked with LML for a year, teachers reported that referrals of students were down more than 50% between the pre-LML year (1997) and 1998, the year of implementation (Johnston, 2003, personal communication). In 2001, an early childhood centre in New Jersey also reduced the number of referrals by 40% (Grandin, 2002). Data like these, which contrast markedly with nationwide trends, have important implications.

Figure 8.6 Joe's Personal Power/Strategy Card for On-Demand Writing Prompts

My Personal Strategy Card	Sequence	Precision	Technical Reasoning	Confluence
Joe's Scores →	23 Use as Needed	27 Use First	34 Use First!	22 Use as Needed
Ways in which I would "naturally" use each of these patterns	I would not normally organize, make lists, plan, break an assignment into steps.	I can be fairly good at gathering information and asking questions, but don't like to write much.	This is ***MY*** pattern! I always get my hands on things, jump in and ***DO*** things that make sense to me. I only tell people information when I want to. I like to work alone. I don't do things I don't like.	I don't normally read between lines or see big pictures or do things very differently from others or brainstorm a lot.
	What is required of the pattern?	***What is required of the pattern?***	***What is required of the pattern?***	***What is required of the pattern?***
What does the task or assignment require of each of these patterns?	Make a plan, organize my essay, list what I would take, follow directions carefully, and double-check my work.	Describe with details, explain my reasons, present facts, be specific, and write many more words than I like to.	**Nothing at all!!**	Maybe be a little inventive, but not too much.
	My personal strategy for using this pattern	***My personal strategy for using this pattern***	***My personal strategy for using this pattern***	***My personal strategy for using this pattern***
What I will say to myself. **How will I use my patterns to accomplish the task?**	**Extend a Lot!** Make a plan for the essay! Include an opening and closing. Make an outline of important points! Read the instructions carefully and note the points! Double-check my work when I think I am done!!	**Extend** Use more details and more words. Answer the questions directly. Pay attention to details of spelling, capitalization, punctuation, tenses, verb-subject agreement. Use logic in developing the essay. Communicate main ideas clearly.	**Tether!!** Write more words and details than normal. Give it all my energy even if I don't think it's important. Find a problem in it and enjoy solving it. Find more information than I think I need. Start with the sequence and precision issues. Don't start writing until I plan!!	**Tether!!** Use creative, imaginative ideas only if asked for. Brainstorm about details.

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Let me learn as reflective practice

We contend that engaging in the Let Me Learn Process, including use of its concepts, vocabulary, activities, and tools, is a deep and broad exercise of reflective practice for both teachers and child learners. Through LML, teachers and students develop a conscious understanding of their own learning behaviour. They become aware of the neurologically based patterns that influence their beliefs, assumptions, feelings, and actions when they confront learning tasks. They develop an experiential understanding of the triune mind, its processes and patterned operations, and, with this knowledge, they begin to reconceptualise learning itself. Teachers become aware of their learning behaviour and understand how their patterned operation matrices influence their action. Teachers also develop a new understanding of their students. Seeing commonalities and differences among them, they are able to empathise. They begin to respond to their students in different ways and diversify their teaching strategies.

Students who experience LML also develop a very conscious understanding of their own learning behaviour. They have real information about their work as learners and begin to interact differently with teachers, with peers and with the learning situation. They become empowered and personally accountable learners. They understand what's happening; they see their strengths and their weaknesses. More important, they now have information that empowers them. They have a language to communicate about their own learning, and they have developed a repertoire of strategies to help them to be more successful on a variety of tasks. They know how to help themselves learn. They are no longer dependent on the teacher. They are no longer powerless in a system that they can't understand. With this new paradigm, they change their behaviour. While they may still not like tests, they know what they need to do to be successful on them.

As a result of their involvement in LML, teachers and students change individually, but the level of change extends beyond that to change the very nature of the relationship between teachers and students in the learning process. As a constructivist professional development model, the LML Process has enabled teachers and students to break the hierarchical boundaries that typically divide them and to create in the classroom what Silverberg (2002) described as relational spaces, where teachers and students work as partners in learning.

The LML Process has been introduced in twelve states and several other countries: United Kingdom (England and Northern Ireland), Italy, Australia, Israel, and Malta, where it is a required part of the teacher certification process. [5] The largest venue is public elementary schools. The process is also used in early childhood centres, secondary schools, technical schools, community and four-year colleges and universities, businesses and corporations. In some schools, parents and families have also been introduced to LML, a strategy that has created parent, teacher, and child partnerships able to work together productively to support student learning. At Hofstra University, we regularly introduce LML in advanced leadership programmes and find it valuable not only as a means to change leaders' perspectives on learning but also as a strategy to support graduate learning.

Regardless of the locale or the level, responses are similar to those described here. The participants – adults and children – find the process relevant, helpful and for some a literally life-changing experience that leads them to approach their work in very different ways. It leads to change in perception and to change in practice. Elsewhere, we speak critically of pre-packaged solutions which may be very well developed and useful but fail to engage teachers in a deep analysis of their own thinking and their own practice. The LML Process clearly illustrates an alternate approach. Unlike programmes that proved single-loop solutions, LML enables teachers and students to explore and change their own thinking and feeling as a means to developing individually constructed strategies to improve performance. LML engages teachers – and students – in a double-loop process of change.

LML has a unique, rich, and scientifically developed conceptual framework that is relevant to all learners in all settings. We believe that it is additionally powerful because it is introduced in a way that facilitates reflective practice, and we present it here as an important illustration of how professional development can be designed to achieve meaningful change.

Throughout the chapter, we made only passing references explaining LML as reflective practice. We now move to framing many of the experiences, activities and experiences within the experiential learning cycle of reflective practice.

Teachers are initially engaged in the learning process as they focus on a key problem: that certain kids in their classes aren't learning and, like Joe, are failing the test. As the teachers begin discussion, they personalise the problem: they are not being successful with certain children. Learning to use the LML Process involves the learner in rich and multiple loops of observation and analysis, the second stage of the experiential learning cycle. The LML process begins almost immediately with data gathering. Through the use of the LCI, teachers gather information about themselves, as learners. In collaborative and supportive settings, they share this information, and, through activities and discussion, they learn about their colleagues. As they share experiences, they also learn more about themselves as spouses, parents, friends, teachers, and colleagues.

As they analyse this information, they develop an understanding of their beliefs and assumptions about learning. While the patterned operations and the mental processes of cognition, conation and affectation synchronously nested in each of them have neurobiological roots, they are similar to the theory-in-use in several ways:

- They are largely tacit and reside below the level of conscious awareness.
- They drive the learner's learning behaviour.
- They may produce desired or undesired outcomes.
- Unless they are explicitly known and controlled by the individual, they guide behaviour in ways that may be dysfunctional.

While the patterned operations are fixed, the learner who reaches and is able to maintain the reflective state of intentional learning and the teacher who achieves the state of intentional teaching are able consciously to override the unreflective state of their neurologically anchored patterned operations by consciously/reflectively tethering those that are too strong for the given learning task and extending or forging those that the task calls for in a higher range.

The LCI plays a particularly valuable role in the LML process because it facilitates the identification of these important underlying theories-in-use about learning. It is a powerful tool to tap and measure the strength of the patterns directly. In other areas of inquiry, while there are different indirect ways to identify theories-in-use, there are no such valuable single tools available for finding and naming theories-in-use directly.

Teachers also gather information about students through observation and through the LCI. Students gather information about their learning theories and about their own behaviour as learners through systematic data (the LCI), direct observation (experiential activities), and reflective assessment (journaling, meta-processing). Observational opportunities are broad and deep, and they take place continuously throughout the process, supplementing and enriching the ongoing analysis.

The analysis, as we have mentioned, focuses on teachers and children as learners, understanding the connections among the LML concepts, behaviours as learners, and the outcomes of these actions. Using tools like the Word Wall, students and teachers also gather information about the requirements of various learning tasks and again assess their own learning behaviour. This knowledge is an important prelude to developing more successful action strategies. Both students and teachers grow in understanding of how to align strategies with the requirements needed for successful accomplishment of various tasks. In short, everything and anything related to learning that is observed becomes a potential opportunity for analysis, and every analysis generates the potential for additional observation and data collection.

Reaching the stage of reconceptualisation signals that double-loop learning is in process, that the learner is reconstructing assumptions. It signals minded activity rather than simple behaviour adjustment to a problematic situation. Teacher and child learners who reach the stage of reconceptualisation are empowered and literally take off in new directions. It is in this stage that they begin active use of meta-awareness, that they become intentional learners and intentional teachers. In their internal talk they start to articulate different assumptions: "If I use intentional teaching and learning, I can make it work!" They also begin to act on the belief that the learner is in charge of his or her own learning. Teachers become more open to learner requests; children begin to initiate suggestions. It means that teacher and child learners liberate themselves from some of the traditions of schooling that actually inhibit rather than support learning. The child learner voice of Alex in his hearing is the counterpart of the teacher perspective. Like the teachers, Alex too is saying, "I understand myself as a learner. I can make this work for me, especially if I have a teacher who understands me and is willing to work it out with me" – amazing empowerment from a kid who has many reasons to be less optimistic.

The final stage of the experiential learning cycle of reflective practice is experimentation. With new understanding, teachers and students begin to experiment with new teaching and new learning strategies. Teachers begin to structure cooperative learning groups based on the LCI scores of their child learners. Teachers honestly begin to perceive and experience themselves more as learners. (Initially, every teacher proclaims being a learner or lifelong learner, but after engagement in LML will sometimes say that was not really true.) They say it explicitly to their students and demonstrate it. Teachers begin to embed LML concepts into lesson planning and experiment with multiple ways to fulfil assignments. They are open to kids' ideas about what works for them (and they discover it is not just more work for them).

Kids analyse tasks before beginning their work, try out Power/Strategy Cards, and develop their skill in meta-processing. They share their experience, facilitating their own learning as well as that of their peers and teachers. Experimentation with LML often leads to success; when it works with one kind of learning task, they are eager to apply these strategies to other tasks. Success encourages additional observation and analysis, reconceptualisation and experimentation. Through practice, many of these children become skilled as learners. Where the experiments do not work out, the process has taught teachers and kids alike to work in collaborative communities and to consult others for help. In some classrooms, and increasingly in schools, the idea of a learning organisation has become an exciting reality.

We believe that the idea of children becoming reflective practitioners of their own learning is one with amazing and as yet untapped potential. The potential is not only for the near view of success in school or exceedingly myopic issue of high-stakes test performance. It is the much more exciting and hopeful vision of kids as intrinsically motivated, truly empowered, joyful, and effective learners. It is also a vision for teachers to derive deep satisfaction from teaching and to realise the goal that initially drew them to the profession, the desire to nurture children, helping them to discover for themselves the keys to unlock their capacity and will to learn.

Notes

1. All references to Joe's case in this chapter were taken from an experiment in a single school district to determine whether participation in the Let Me Learn Process would be associated with increases in writing scores. A prompt drawn from the NJESPA was used as a pre-and post-test. Essays were scored using the regular state rubric by teachers from another district.
2. LML professional development is tailored to meet the unique needs of schools and districts. Ideally, the sessions are scheduled during the school year. This enables teachers to collect and analyse information about students and their own interactions with them prior to and during implementation. Highly compressed development, as in a five-day summer workshop with little follow-up, results in a much diminished sense of efficacy among teachers and lower implementation.
3. The LCI comes in three reading/experience levels. It has been assessed as both valid and reliable at all three levels when administered and validated by a certified facilitator or teacher (Johnston & Dainton, 1997b).
4. Deeper validation occurs over time as the individual compares his or her LCI scores with many forms of behavioural data from present and past personal experience (work products, artwork, emotional responses to learning tasks, group behaviour, photos from childhood, activities, etc.).
5. Let Me Learn, Inc. is not-for-profit organisation, organised exclusively for educational purposes under Section 501 (c) (3) of the Internal Revenue Code. For information about LML, the LCI, LML materials, or research and development opportunities, contact Let Me Learn, Inc., at info@letmelearn.org

References

Bonich, M., Schlau. J., & Kottkamp, R. (2003, April). *Integrating the Interactive Learning Model with reflective practice for adult learners: Cases of empowered learning and change in self and others*. Paper presented at the Annual Meeting of the American Educational Research Association, Chicago.

Grandin, R. (2002). *Report of progress, State of New Jersey Goals 2000 grant.* Washington Township, NJ: Washington Township Public Schools.

Johnston, C.A. (1996). *Unlocking the will to learn*. Thousand Oaks, CA: Corwin.

Johnston, C.A. (1997). *LCI patterns by majors*. UNpublished institutional research report. ROWAN University, Glassboro, NJ.

Johnston, C.A. (1998). *Let me learn*. Thousand Oaks, CA: Corwin.

Johnston, C.A. (2000). *A personal guide to implementing the LML Process K–12.* Pittsgrove, NJ: Let Me Learn.

Johnston, C.A. (2003a. July). *The constructs and the knowledge base of Let Me Learn Process*. Presentation at the Sixth Annual Let Me Learn Summer Institute, Philadelphia.

Johnston, C.A. (2003b. July). *Drop dead data*. Keynote address delivered at the Sixth Annual Let Me Learn SSummer Institute, Philadelphia.

Johnston, C.A., & Dainton, G. (1997a). *The learning connections inventory*. Pittsgrove, NJ: Let Me Learn.

Johnston, C.A., & Dainton, G. (1997b). *The learning connections inventory users manual.* Pittsgrove, NJ: Let Me Learn.

Kessler, P.R., & Johnston, C.A. (2003, September). *The effects of innovative teaching on student growth in knowledge of economics and the intentional use of their learning processes*. Paper presented at the Development in Economics and Business Education Conference, Edinburgh, Scotland.

Kottkamp, R.B. (2002 July). *Problematic person project: Integrating reflective practice and Let Me Learn*. Poster session presentation at the Fifth Annual Let Me Learn Summer Institute, Philadelphia.

Maehr, M.L., & Midgley, C. (1996). *Transforming school cultures*. Boulder, CO: Westview.

Marcellino, P.A. (2001). *Learning to become a team: A case study of action research in a graduate business management course*. Unpublished doctoral dissertation, Hofstra University, Hempstead, NY.

Pearle, K.M. (2002). *Metacognition as vehicle for organizational change: How "thinking about thinking" and intentional learning break the mold of "heroic" teaching in higher education*. Unpublished doctoral dissertation. Rowan University, Glassboro, NJ.

Rusch, E., Haws, E., & Krastek, R. (2002, November). *A key to unity in diverse learning communities: Learning about learning within a cohort.* Roundtable presentation at the Annual Convention of the University Council for Educational Administration, Pittsburgh, PA.

Silverberg, R.P. (2002). *From marginalization to relational space: A descriptive phenomenological study of teachers who changed their assumptions and beliefs about problematic students*. Unpublished doctoral dissertation, Hofstra University, Hempstead, NY.

Spadoni, L. (2002, June). More than a cute face. Presentation at the Annual Conference of the National Association of Education for Younger Children, Albuquerque, NM.

• CHAPTER 9 •

Leading in the Relational Space

Ruth Powers Silverberg

Increasing awareness of the need to educate all students at higher levels and changing conceptions of learning and teaching have combined, requiring a new kind of school leadership – leadership that is "constructivist, transformational, facilitative, instructional, distributive, or moral" (Goldring & Greenfield, 2002, p.1). Principals and superintendents are ultimately accountable for the success of their schools and districts, and widening achievement gaps among students from different backgrounds provide ample evidence of educational failure. This places new demands on those who prepare school leaders and has led to the design and implementation of new approaches to this complex task.

School leaders must have the ability, the will, and the courage to conceive and facilitate the changes that will help our schools prepare all children to navigate a continuously changing informational environment. Creating schools where all students achieve this goal requires the same focus as the broader goal of public schooling in the United States – preparation for engaged citizenship in a democracy. This goal focus, which must become primary in U.S. public schooling, is the nurturing of each person's belief that every voice matters. For the ultimate goals of public schooling to be achieved, schools must be places where all may practise the use of the full voice, places where diverse ways of knowing are not only tolerated but also viewed as indispensable. This principle of nurturing voice provides the basis for both constructivist teaching and learning (Brooks & Brooks, 1993) and education for democracy (Dewey, 1916;

This paper was first published in the Journal of School Leadership, v13 n6 p.688-706 Nov 2003. Reprinted with permission.

Glickman, 1993). Learning at the highest levels and participation in democracy both necessitate every individual to bring all of their knowledge, assumptions, and beliefs to these processes. This can only occur when our understanding of learning is reframed.

Leaders who would support constructivist learning and teaching and education for democracy must understand the critical importance of learning as a relational activity that occurs between and among people. This activity depends on relational spaces, places where all who would participate in negotiating meaning from experience are invited to bring their unique perspectives and know their thoughts, and feelings can be shared openly. Schools that are relational spaces call for leadership that places open and trusting relations at the centre of the structures and processes of schooling. Constructivist learning, in classrooms and among teachers, leaders, and families, can only occur in a relational space. Participation in a relational space where all perspectives are included and all voices are honoured is also necessary for the creation of possible solutions to the social, economic, and political problems of our rapidly changing democratic society.

Developing relational spaces in schools requires constructivist leadership, "the reciprocal processes that enable participants in an educational community to construct meanings that lead toward a shared purpose of schooling" (Lambert, 2002, p. 36). Those who will lead constructivist communities toward shared purposes of schooling must first be fully and intentionally present, placing their ideas, beliefs, and assumptions in public view. Then they can invite others to do the same. Many members of school communities, including leaders, are not present as defined here; they have learned to "check the real me at the door, as the job so often demands we do (or we suppose that it does)" (Barth, 2001, p. 160). Their learning voices have been silenced in prior experience and they have lost their willingness and ability to hear. It is not surprising that many school communities continue to fail in constructing purposes and practices of schooling that might respond to all children's needs.

This article describes the experience of a professor and two cohorts of students in an Educational leadership Programme (ELP) at an urban university. Narrative and formal structures are integrated to tell a story that contributes to understanding the ambiguous endeavour of preparing school leaders. Stories help us communicate our tacit assumptions, hopes and vision as well as events, integrating insider and outsider perspectives (Cooper, 2002). In the absence of clear definitions of effective school leadership, understanding of the role of preparation programmes and reliable assessment tools, the most promising process we have for building leadership preparation is the sharing of our unique stories.

The experience described here occurred over four semesters in a programme already committed to constructivist leadership. The programme included several features designed to contribute to the development of such leaders, including a cohort learning community structure, problem-based instructional processes, and use of journals and electronic discussion board to nurture reflection and sharing. This professor's purpose was to contribute to these practices by adding the dimension of cohort members' understanding of their own and each other's unique ways of thinking, feeling and doing. In this relational space, the cohorts shared their assumptions, beliefs, and experiences and together began to make new meaning of schooling, learning and leadership.

Learning in the educational leadership programme

The mission of the ELP is to "prepare committed and critically reflective educational leaders" (ELP Mission Statement). Moving a teacher from a highly bureaucratic system through a transition to a "critically reflective educational leader" is complex and requires students to reconstruct their knowledge of schooling and leadership. Such a transition parallels the larger reconstruction of meaning we hope to nurture in our schools. Students entering our leadership programme are frequently unprepared for the openness and risk-taking necessary for this transition largely due to norms of isolation in the culture of teaching that have led teachers to hide accomplishments and keep their ideas to themselves (Colin & Kottkamp, 1993; Lortie, 1975). These are necessary, however, if learning communities in schools and classrooms are to be places where real learning and change can occur.

In the ELP described here, knowledge is viewed as a social construction subject to change and influenced by those who participate in its creation. This implies an approach in which learning and teaching at all levels are viewed as interactive processes. Learners actively make sense of the world in unique ways using prior experiences, their own and those of others past and present, and their own cerebral "hardwriting", here also called ways of knowing (Brooks & Brooks, 1993; Bruner, Goodnow, & Austin, 1956; Dewey, 1938). For learning that is meaningful, memorable, and transferable to occur, the learner must construct his or her own meaning in what Vygotsky called the "zone of proximal development, the dynamic zone of sensitivity in which learning and cognitive development occur" (cited in Berk & Winsler, 1995, p. 26). In the zone, the teacher/facilitator meets the learner/student in the presence of a problem-soling experience, recognising the mediating effects of the learner's ways of processing and prior experience. Both facilitator and learner are active participants in the learning experience, and the meaning emerges as a product of their processing together. In this epistemological framework, knowledge cannot be "delivered" to students in K–12 or higher education classrooms by teachers or professors, or to teachers by administrators. Teaching, learning, and leading are continuous sense-making by members of the community.

The dynamic and sensitive aspects of the zone of proximal development (ZPD) need relations among teachers and learners that allow learners to safely share their experiences and ways of processing. Commitment to constructivist principles of learning compels us to strive to meet the students in the ELP at the level of their current assumptions, beliefs, experience and knowledge, and actively engage our own assumptions, beliefs and knowledge with them in learning. We do not have the luxury of certainty about how to make schools better for all children nor do we believe delivery of such information would result in the leadership development we are trying to accomplish. We, therefore, join the cohorts in the ZPD and wrestle with the issues confronting urban schools together.

For individuals to make sense together, making full use of their own and each other's ideas, experiences, and perceptions, they must feel the trust that allows disclosure and critical examination and re-examination of meaning in full view of self and others. When learning is conceptualised as a relational activity that occurs in a relational space between people, trust takes on central importance. For a relational space allowing constructivist learning to develop, the teaching/learning environment must "meet people where they currently live in their heads and hearts; challenge and support self-disclosure, risk-taking, and reflection; and sustain trusting relationships throughout the development and learning process" (Szabo & Lambert, 2002, p. 209). A major barrier to development of relational space is our lack of trust in our own and each other's ability to see and hear through our differences and come together with shared purpose. We who seek to create spaces of constructivist learning in the higher education classroom, therefore, must work to help our students trust their own and each other's ability to create meaning together, openly bring their experiences to the conversation, and risk telling their own truths.

A study of elementary-level teachers who reported a change in their ability to respond to students perceived as problematic (Silverberg, 2002) indicated that relations necessary for learning were impeded by their inability to make sense of certain students' thoughts, feelings, and actions. Constructivist learning was impossible. When teacher and student continuously experienced frustration in their attempts to hear and respond to each other, both retreated. The teacher withdrew instructional and emotional attention, and the students withdrew engagement with instruction. This pattern was revealed retrospectively when the study's participants found a framework for understanding both their own and their students' ways of thinking, feeling and doing. After developing this understanding, they were able to recognise and honour all students' ways of processing experience. Consequently, the teachers and students developed the shared understanding and trust that created the relational space necessary for co-construction of knowledge. The success of this framework, the Let Me Learn Process (LMLP), in contributing to the development of relational space, led to the conjecture that the LMLP might provide additional support for students' entry into a relational space with colleagues and professors in the ELP. While previous cohorts displayed trust, openness and valuing of one another's perspectives, there has been a continuing sense that this trust could be taken to a deeper level, increasing learning. For this reason, the LMLP was introduced to two cohorts in the fall of 2001.

A framework for building relational space

The LMLP was integrated with coursework in the ELP to foster creation of the relational space essential to development of constructivist learning communities because of its effectiveness as a tool for increasing understanding, connection, and learning (Johnston, 1998; Silverberg, 2002). During the three courses in which students used the LMLP, evidence emerged of their opening themselves to one another and learning in a new way. Collection of data, consisting of anecdotal notes, written work products, and e-mails facilitated use of an action research approach to discovering if and how the use of LMLP might improve teaching practice and the programme's effectiveness in preparing constructivist leaders (Bogdan & Biklen, 1998).

The LMLP is based on the Interactive Learning Model (ILM), a theoretical model that conceptualises all learning as an integrated process of cognition (thinking), conation (doing), and affectation (feeling) (Johnston, 1996). The process includes the use of the "Learning Connections Inventory" (LCI) (Johnston & Dainton, 1997), a nationally and internationally validated self-report inventory instrument, to collect data about an individual's learning patterns. The results of the LCI indicate the extent to which the learner uses each of four processes – sequential, precise, technical and confluent. These processes can be described as follows:

> *Sequential: the process of organising, planning; seeking order and consistency.*
> *Precise: the process of using information and words; detail-oriented, seeking confirmation of what is "correct" or "right".*
> *Technical: the process of using information of hands-on, active, autonomous problem-solving; seeks real-world relevance, and the time and space to figure things out.*

Confluent: the process of generating ideas, reading between the lines, and making connections; seeking to do it "my own way"; thrives on change.

All learners use all four processes but in varying degrees. LCI scores indicate whether the individual uses a process in the range of "use first", "use as needed" or "avoids". Most people use one or two processes in each of the three ranges. Some use three or more processes "first" or "as needed". The process "used first" is the approach a person most comfortably uses for a given task; the process "avoided" is one the learner will use only when absolutely necessary and usually with some degrees of stress; and processes used as needed are employed with relative ease when required by the task. For example, a principal who uses sequence first, precision and technical as needed, and avoids confluence will likely approach teacher supervision by (1) using sequence to develop a consistent procedure for observations probably with a timetable; 2) using precision and technical as needed to gather information and take the action of getting the observations done; and 3) have difficulty accessing confluence if the plan must be changed midstream due to unforeseen events. Each person's LCI scores provide a heuristic tool for metacognition and understanding of others by providing a schema and examples of learner responses to the items since the LCI's first use in 1994 (Johnston, 1996; see Table 9.1).

Once learners have taken the LCI, discovered their unique learning patterns and shared this information with other members of the group, the framework and terminology can be used to frame all experiences. In the ELP, the framework is used to help cohort members analyse the tasks of school leadership, for example, the sequential (organised, consistent) aspect of developing clear safety procedures. Students increase awareness of their tendency to use or avoid each of the four different processes, so they know when to apply explicit strategies to engage or "tether" processes appropriate. A student who understands her high use of the technical process and low use of the precise process knows she must be careful not to take action before collecting sufficient information. A student with the reverse patterns knows she must hold her precision in check to avoid spending undue time collecting more data than necessary before taking action. Understanding thoughts, feelings and actions through the framework of the LMLP, and being able to use a shared vocabulary to share concerns, provides cohort members with a value-neutral way to conceptualise their experiences. The assumptions of the LMLP that all patterns have value and all processes can be used with intention once our unique patterns are understood provide a basis for mutual appreciation, which in turn creates the possibility of constructivist learning in a relational space.

Table 9.1 Learning Combination (LCI) Learning Pattern Characteristics

	How I Think	How I Do Things	How I Feel
Sequential	• I organise information • I mentally analyse data • I break down tasks into steps	• I make lists • I organise • I plan first, then act	• I thrive on consistency and dependability • I need things to be tidy and organised
Precise	• I research information • I ask lots of questions • I always want to know more	• I challenge statements and ideas that I doubt • I prove I am right	• I thrive on knowledge • I feel good when I am correct
Technical	• I seek concrete relevance – what does this mean in the real world? • I only want as much information as I need – nothing extraneous	• I get my hands on • I tinker • I solve the problem • I do	• I enjoy knowing how things work • I feel good that I am self-sufficient • I need real world relevance • I do not feel the need to share my knowledge
Confluent	• I read between the lines • I think outside the box • I brainstorm • I make obscure connections	• I take risks • I am not afraid to fail • I talk about things–a lot • I might start things and not finish them	• I enjoy energy • I feel comfortable with failure • I feel frustrated by people who are not open to new ideas

Preparing leaders for relational space

Leadership that facilitates and supports the development of relational space is very likely a prerequisite to creating schools where all achieve at their highest potential and prepare for active participation in the communities. Developing constructivist leaders, who are committed to creating relational spaces, requires that preparation programmes facilitate reconstruction of notions of learning, teaching and schooling. Traditional behaviourist and management approaches dominated the socialisation contexts of current leadership candidates. Thus, they arrive with assumptions incongruent with the constructivist approaches we hope to nurture (Lambert, 2002). Most of our students have not experienced constructivist learning and teaching as K–16 students or as teachers. Their principals "supervised" them, directing and managing their discovery of "correct" teaching practice.

Moving beyond the enculturated assumptions internalised through this experience requires transformative learning, changes in "frames of reference (meaning perspectives, habits of mind, mindsets)" (Mezirow & Associates, 2000, p.7). Transformative learning does not simply expand existing frames of reference or add new frames of reference, it changes perspective on past, present, and future experiences. Transformative learning is central to all adult learning, but it is particularly critical for the preparation of leaders who we are asking to change the system that created them. (Argyris & Schon, 1974; Mezirow & Associates, 2000; Osterman & Kottkamp, 1993). We are unlikely to see schools change from the delivery model demonstrated ineffective with increasing numbers of students unless we create leadership preparation programmes where students examine, critique, and ultimately reconstruct the meaning perspectives developed at a largely unconscious level during 13-plus years of traditional schooling and additional years of teaching.

Deep change is most likely to occur when learner/practitioners can freely and openly share current practices and assumptions, rendering them explicit and thus subject to critical examination (Brookfield, 1999; Mezirow & Associates, 2000; Senge, 1990; Szabo & Lambert, 2002). This applies to both changes we facilitate in our students in the ELP and the changes we hope they will facilitate in their leadership practice. Members of constructivist learning communities in schools bring their unique experiences and ways of knowing to the co-construction of new approaches to learning, teaching, and leading. They work together in a relational space where all contributions are valued, intentionally and explicitly, including all affected by the understandings and actions of the community.

The effective school is characterised by developing learning communities where collaboration and learning are emphasised in classrooms and among the adults who support student learning (Barth, 1988; Goodlad, 1987; Lieberman, 1988). For potential leaders to build and support relational spaces where constructivist learning communities thrive, they must enter the field with the constructivist assumptions that students, teachers, leaders and community members bring their experience, knowledge, beliefs and assumptions to their learning, and learning is, therefore, influenced by culture, race, and economic status; learning is enhanced by shared inquiry; and all learners bring valuable perspectives to the construction of meaning (Szabo & Lambert, 2002). These assumptions can only be internalised through preparation for leadership in the context of the same assumptions. The approach needs two layers: in the surface layer, students explicitly apply constructivist concepts of learning and leading to real problems of practice. At a deeper level, they must learn to facilitate processes in which they connect and engage with others in the construction of meaning. Expecting our students to internalise these processes as abstractions is incongruent with constructivist learning. We must teach constructivist practice by providing experiences with constructivist learning in a relational space. Through this two-layered approach, future leaders make sense of leadership practice together while becoming facilitators of the reconstruction of meaning necessary for real school improvement.

Shared learning in the relational space

The openness and trust necessary for the creation of a relational space are not simply a matter of will and do not spontaneously appear after a period of physical proximity. Norms of schooling and teaching have prompted many leadership candidates to value privacy and isolation, competition, and certain ways of knowing over others. These individuals may espouse belief in the importance of openness and trust. Their experience, however, has taught them it is much safer to figure out the rules of the current game, play, and keep to themself.

These norms, plus the very human difficulty understanding the infinite and unique ways of learning and knowing of others in the community, create a barrier to presence in the relational space necessary for constructivist learning and leading. The diverse backgrounds, experiences, and ways of processing of our colleagues, students, and their families, present us with differences in learning and knowing for which we have no internalised schema. In order to resolve the discomfort of our inability to understand, we develop assumptions and attributions, often unconsciously, to help us find the understanding we seek (Bandura, 1986; Clark & Peterson, 1986; Kagan, 1992; Kottkams & Silverberg, 1998; Leach, 1977; Medway, 1979; Nisbett & Ross, 1980). These assumptions and attributions and our own ways of learning and knowing influence our perceptions and lead to the development of "mental models, the images, assumptions, and stories which we carry in our minds of ourselves, other people, institutions, and every aspect of the world. Like a pane of glass framing and subtly distorting our vision, mental models determine what we see". (Senge, Kleiner, Roberts, Ross, & Smith, 1994, p. 235) The "pane of glass" not only distorts our vision, it also distorts our hearing. Our inability of see and hear each other makes co-construction of shared meaning impossible.

This barrier can be replaced by understanding our own and each other's ways of processing the world. This understanding remains an abstract and often unreachable goal without a framework and vocabulary shared by all who would enter the space where learning and school improvement can be constructed. Leadership preparation students are learners as well as teachers of children. They come to the ELP without a framework to enable them to understand their own learning and the processing of others who are different. They are, therefore, likely to hear and see their own and others' contributions through the distorted lens of their untested mental models. They may withhold sharing ways of thinking previously silenced, and they may marginalise the knowledge, experience and ideas of others they do not understand. Until the learning community has a way to understand one another's different ways of processing experience, reconstruction of meaning that might develop leaders committed to constructivist relational learning is unlikely to occur.

The LMLP was introduced to two student cohorts, referred to here as Cohort 1 and Cohort 2, to provide cohort members with a tool for understanding that is necessary for development of relational space. The cohorts were composed of urban middle and high school teachers, assigned to the two groups according to their proximity to the schools where classes met. Cohort 1 had 14 students, 8 men and 6 women; and Cohort 2 had 26 students, 8 men and 18 women. The students ranged in age from 28 to 54 and originated from five countries. Their learning patterns are detailed in Table 9.2.

Four faculty members and four district leaders taught the 12 programme courses individually and in pairs. Cohorts 1 and 2 experienced course concepts and materials integrated with the LMLP during more than half of their five-semester programmes. Group dynamics were very different between the two cohorts due to both size differences and the large number of students from one high school in Cohort 2. Both cohorts worked together in small groups, but Cohort 1 also had many whole group discussions because of its small size.

The framework and vocabulary of the LMLP were introduced to provide a heuristic tool for understanding and valuing their own and each other's ways of learning and knowing, and thus encourage them to speak and hear their own learner voices and the voices of others. Students in the leadership cohorts listened to a brief presentation explaining the ILM and completed the LCI during the first weeks of the programme. They shared artefacts of their own schooling and teaching experiences and shared professional and personal stories validating their learning combinations, discovered in analysis of the LCI (Johnston, 2000). Throughout these discussions, students shared past value judgements of their own and others' behaviour. One student, for example, said she had tried very hard not to ask so many questions in the early grades because she had been told she was "annoying". She finally had one teacher who told her to ask as much as she liked because her desire to know things was a positive trait. She admitted that she still worried, even in the higher-education classroom, about being "annoying". Having the opportunity to make this concern public allowed her to find out that others in the group had similar experiences. Her sharing and discovery that this trait was evidence of high precision also led her to giver herself permission to ask questions whenever she felt the need.

Because a central feature of the ILM is its efficacy as a shared framework, and the first step in creation of relational space in a classroom or school learning community is the full presence of the teacher/leader/facilitator, I shared my learning combination and related experiences as well. I explained how my metacognition of my strong lead with the precise and confluent processes helps me understand my love of words, date, and ideas. I also disclosed my difficulty in completing hands-on tasks (low technical), and my need for notes or overheads to keep my thoughts organised (sequence used as needed). In effect, I publicly stepped into the relational space and invited the students to join me. One student approached me after this introduction and told me she was excited to have a professor so willing to be "real".

Students shared experiences they realised were influenced by their learning combinations. The focus of these discussions was learning patterns, evidence of the validity or uncertainty of LCI results, and learning experiences in school and out. After these discussions, students had a new understanding of their past and current responses to tasks and the responses of their colleagues based on ways of learning. They also had a vocabulary with which to communicate about their thoughts, feelings, and actions. As students shared and throughout our discussions, I refrained pejorative classifications; students who referred to themselves or others as "anal" or "uptight", were encouraged to think and talk about these individuals as probably highly precise. Individuals conceptualised as "withdrawn" were reframed as possible evidence of confluence. The foundational assumption of the LMLP is that all processes are essential to excellent outcomes, with the outstanding product (whether it be a presentation, a lesson, or a paper) having organisation (sequence), precision (detail), relevance (technical), and something original (confluence). In this context, group members came to not only tolerate but also to value perspectives different from their own as they increase their awareness of the benefit derived from the input of a cohort-mate whose "use first" process is one they avoid.

Table 9.2 Learning Patterns of Cohort Members

	Sequential Process	Precise Process	Technical Process	Confluent Process
		Cohort 1		
Use first	6	10	6	9
Avoids	0	0	1	0
		Cohort 2		
Use First	11	12	7	8
Avoids	4	0	5	1
Professor	Uses as needed	Uses first	Avoids	Uses first

A sample activity

Members participated in activities integrating their new framework for understanding with reflective leadership throughout the courses. In one activity, students were grouped according to the learning process they use most without their knowledge of the grouping method (i.e. those who lead with sequence were grouped together, those who lead with precision were together, and so forth). They were asked to create a list of 10 "group guidelines" based on things most likely to bother them during group work. When they had finished, we debriefed the process first. There was general agreement that the groups easily reached consensus about what they found bothersome and the rules they would therefore recommend. After the groups had shared their lists of guidelines with the rest of the cohort and the lists were posted in front of the room, students realised their lists were directly related to the learning process common to the group members. For example, the group leading with sequence wanted consistent procedures and clear expectations, as a result of finding "switching in midstream" annoying. The group leading with precision asked for group members to stay on topic and were bothered by people who spoke without foundation for their ideas. Those who led with technical asked to be able to work alone sometimes, and those leading with confluence asked for flexibility.

Groups were then re-formed with each having at least one member with a lead in sequence, one with a lead in precision, one in technical reasoning, and one in confluence. Members were asked to make an "I" statement to their group about what they had learned about who they are and what this meant they would need from a group. Those who lead with confluence made statements like "I will need to try out lots of ideas on the group, even though they may sound unrelated to the topic, "expressing their metacognitive awareness of their capacity and need to generate ideas. In a final de-briefing, members said that through the activity, they had developed deeper understanding of the ways their learning patterns influence their needs. They also began to demonstrate understanding of others' "problem" behaviour as outcomes of their ways of learning.

Since integration of the framework and vocabulary of LMLP into our class discussions, students have changed the language they use to describe the behaviour of colleagues or supervisors. They now frequently refer to the four processes, with those previously labelled "obsessive" now called "highly precise", and those thought of as "scattered" called "low in sequence." More important for the development of a learning community in which all experience the trust necessary to enter the relational space where meaning can be created, students have begun to see one another and themselves in terms of different but equally valid and valuable learning combinations. Frequent integration of the vocabulary into the course content, for example, the importance of using confluence to generate "outside the box" ideas when trying to support an underperforming teacher or student, has furthered the valuing of different approaches to the tasks of leadership, teaching, and learning.

In Their Own Words

Cohort members frequently described the value of having a framework and vocabulary for understanding themselves in their journal reflections. One member said she had come to understand how her high use of the sequential process often led her to try to control situations she had hoped would be more collaborative. Another publicly shared her awareness of her low confluence when the class was developing action research projects, saying, "I need help from you, idea people; remember, I'm the one with no confluence." (Group members reminded her that nobody has no confluence, she may just have greater difficulty "finding" hers.)

When the cohorts began working together in the first semester, many were reluctant to share in class discussions. Some members responded to others' sharing by indicating nonverbally, through glances at friends or down at work brought to class, that their ideas did not deserve serious consideration. By the end of four semesters, most members were working together and utilising their differences. One member of Cohort 1 requested that feedback groups for their action research projects be formed on the basis of differing learning combinations because she wanted input from people who brought a different approach to her work. A work group in Cohort 2 commented frequently that they worked well together because they understood each other's perfectionism (high precision) and need for order (high sequence).

At the end of the fourth semester, I posted the following prompt on the electronic discussion board.

Principles of constructivism:

> *Knowledge and beliefs are formed within the learner.*
> *Learners personally imbue experiences with meaning.*
> *Learning activities should cause learners to gain access to their experiences, knowledge, and beliefs.*
> *Culture, race, and economic status affect student learning individually and collectively.*
> *Learning is a social activity that is enhanced by shared inquiry.*
> *Reflection and metacognition are essential aspects of constructing knowledge and meaning.*
> *Learners play a critical role in assessing their own learning.*
> *The outcomes of the learning process are varied and often unpredictable.*

Constructivist leadership is "the reciprocal processes that enable participants in an educational community to construct meaning that lead towards a shared purpose of schooling" (Lambert, 2002, p. 36). The questions:

1. Are we a constructivist learning community? What makes you think so (that we are or aren't)?
2. What are the features of our experience together that have fostered our growth as a learning community?
3. What are the features of our experience together that have impeded our growth as a learning community?

The 19 students who responded said that we fit the description of a constructivist learning community, referring specifically to new understandings developed through shared perspectives. One response read, "This whole learning experience has been based on 'us', growing, relating, and most importantly, EVOLVING" (Mary, Cohort 2; emphasis in original).

Another student, from Cohort 1, said:

> *We are invited to ponder, to question, to provoke each other, and to question what we read ... we have shared our educational ideas as they have been informed by our personal experiences. We have enjoyed a unique experience in hearing about the effects of ethnicity, family, culture and affluence on our own educational histories. By doing so, we have gained new perspective on the effect of these influences on the educational lives of our students. We are being forced to rethink and redesign our ideas. Our ideas seem to be in a perpetual state of revision. I believe that his flexibility is important to the educational leader.*

The three themes of trust, belief in their own ability to make valued contributions, and belief in the value of others' perspectives emerged from the students' answers. The following responses expressed the theme of trust.

> *The environment we have established has helped foster our growth as a learning community ... we became family-like, and very comfortable with one another ... It is very easy for each of us to open up and share our thoughts, beliefs, and feelings without fearing criticism. (Susan, Cohort 2)*

> *We are all very comfortable expressing our ideas. Several members of the group have truly evolved, now asserting ideas in a public forum – something unthinkable of just a few months ago. (Arlene, Cohort 1)*

> *The feature of the programme that has fostered our growth as a learning community has been the open and honest feedback that we have received from each other. The feedback acted as a catalyst to re-examine our prior beliefs and knowledge. In re-examining our beliefs and knowledge base we have created opportunities to learn and make insights. (Paul, Cohort 2)*

Increased belief in the value of her potential contribution to the field of school leadership came across in the following student reflection.

> *When I started this course of study, I didn't know whether I would be leadership material, but through the course of this year and a half … I've come to realise what a great leader I would be. (Gina, Cohort 2)*

Many expressed a growing belief in the value of all voices and the benefit derived from hearing the perspectives of others who are different.

> *We have a group of professionals that are all willing and looking to making themselves the best they can be. Based upon that, we have all benefited from each other's search for improvement. My classmates have come to the table with something to offer and we are all unique due to our backgrounds and experiences. This has also enhanced our community by offering perspectives that otherwise we would not have had if we had been put together differently. (Brian, Cohort 1)*

> *These insights [we have learned in re-examining our prior beliefs and knowledge base] would not have been possible if it was not for the exchange of ideas and willingness to see a different perspective. (Emily, Cohort 1)*

One student's response contained explicit reference to the model of constructivist practice provided during our work together.

> *What if we headed our own school? … The professor would, of course, be the principal. Not just because she's the professor but because we look at her as a know-how person and respectfully speaking, easy to talk to and at our level. That's what a leadership quality should be: One who sees you as a team member not a subordinate, one who knows you'd do the job expected of you, period … When she's around, I feel that we're visiting a friend's home and acting as adults discussing issues. (Tom, Cohort 1)*

These responses confirmed my observations. Many of the cohort members have emerged from the silence of the first classes and are now active participants in our attempts to make new meaning of learning and schooling. While some cases have been more dramatic, all members have visibly grown in their ability and willingness to speak and listen. One student expressed how self-understanding, developed in a relational space with her colleagues, led her to see the critical value of self-understanding and link it directly to students.

> *I also learned that self-reflection lead to improvement for ourselves as well as all who work with us, including staff members, colleagues and most importantly our students.*

Together the students shared their experiences and brought their assumptions, values, and beliefs to the construction of new ways of thinking about themselves, others, schooling, and leadership.

Conclusion

The experiences of these two cohorts have been a function of who they are, the experiences, assumptions, and beliefs they brought, course materials and a host of other factors. My belief in constructivism and the prerequisite nature of the relational space strongly influences my internal and external talk with and about students and all aspects of my teaching. This certainly influenced the growth and learning described here. The notable lack of reference to the LMLP in responses to the three questions posed, in spite of its explicit use, may be a function of members' consciousness of the relational space they have come to know but not the process from which it emerged. The students' descriptions and work, evident openness and trust, and responses to the above questions verify the existence of the relational space I hoped to create through use of the framework for understanding one another's ways of learning.

Class meetings begin with a sharing of problems of practice, providing an opportunity to come back into the relational space we have developed, make sense of the week's events, and rekindle the trust we will need for that session's work. These open discussions have shown students' willingness to disclose concerns, fears, and frustrations, and to confront each other's assumptions. On several occasions, a student has begun the class by thanking a member for helping him or her see an alternative perspective on an issue of concern. When one member, currently an assistant principal, described his increasingly rigid response to a teacher with who he was having difficulty, another member asked probing questions leading to his discovery of his agenda of control. The following week, he publicly thanked her and reported a change in his attitude and behaviour.

Many of us in the field of leadership preparation seek to establish relational spaces for shared meaning-making but are unable to do so with intention. My experience using the LMLP has been that it allows me to do so consistently. I am currently the only faculty member in my department with a knowledge and experience base in the LMLP. Frequent dialogues with faculty colleagues in the ELP about using the LMLP framework to promote greater learning indicate an interest in finding out more about its applications to leadership preparation. The commitment to creation of constructivist learning communities is there – recognition of the need to create relational spaces where mental models do not create barriers to co-construction of knowledge and meaning is the next step.

Our students will go back to the contexts where the assumptions we have worked to change still dominate. Follow-up discussions and other data collection procedures beyond graduation and in the field will be employed to explore the long-term influence of practices intended to facilitate commitment to constructivist leadership. Perhaps then we would know more about the role of a shared framework for understanding learning in the creation of relational spaces where communities of shared meaning contribute to student achievement and where the possibilities for a fully participating citizenry are realised.

References

Argyris, C., & Schon, D.A. (1974). *Theory in practice: Increasing professional effectiveness.* San Francisco: Jossey-Bass.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory.* Englewood Cliffs, NJ: Prentice-Hall.

Barth, R. (1988). School: A community of leaders. In A. Lieberman (Ed.), *Building a professional culture in schools.* New York: Teachers College Press.

Barth, R. (2001). *Learning by heart.* San Francisco: Jossey-Bass.

Berk, L., & Winsler, A. (1995). *Scaffolding children's learning: Vygotsky and early childhood education*, Vol. 7 of the NAEYC Research into Practice series. Washington, DC: National Association for the Education of Young Children.

Bogdan, R.C., & Biklen, S.K. (1998). *Qualitative research in education: An introduction to theory and methods* (3rd ed.). Needham, MA: Allyn & Bacon.

Brookfield, S. (1999). *Discussion as a way of teaching. Tools and techniques for democratic classrooms.* San Francisco: Jossey-Bass.

Brooks, J.G., & Brooks, M.G. (1993). *In search of understanding: The case for constructivist classrooms.* Alexandria VA: Association for Supervision and Curriculum Development.

Bruner, J.S., Goodnow, J.J., & Austin, G.A. (1956). *A study of thinking.* New York: John Wiley & Sons.

Clark, C.M., & Peterson, P.L. (1986). Teachers' thought processes. In M.C. Wittrock (Ed.), *AERA handbook of research on teaching* (3rd ed., pp. 255-296). New York: Macmillan.

Cohn, M.M., & Kottkamp, R.B. (1993). *Teachers: The missing voice in education*. Albany, NY: State University of New York Press.

Cooper, J.E. (2002). Constructivist leadership: Its evolving narrative. In *The constructivist leader* (2nd ed.) New York: TC Press.

Dewey, J. (1916). *Democracy and education: An introduction to the philosophy of education.* Old Tappan, NJ: Macmillan.

Dewey, J. (1938). *Experience and education*. New York: Macmillan.

Glickman, C.D. (1993). *Renewing America's schools: A guide for school-based action.* San Francisco: Jossey-Bass.

Goldring, E., & Greenfield, W. (2002). Understanding the evolving concept of leadership in education: Roles, expectations, and dilemmas. In J. Murphy (Ed.), *The educational leadership challenge: Redefining leadership for the 21st century.* Chicago: National Society for the Study of Education.

Goodlad, J. (1987). *The ecology of school renewal.* Chicago: National Society for Study of Education.

Johnston, C.A. (1996). *Unlocking the will to learn*. Thousand Oaks, CA: Corwin Press.

Johnston, C.A. (1998). *Let me Learn*. Thousand Oaks, CA: Corwin Press.

Johnston, C.A. (2000). *A personal guide to implementing the Let me Learn Process*. Pittsgrove, NJ: Let Me Learn, Inc.

Johnston, C.A. & Dainon, G. (1997). *The learning combination inventory*. Pittsgrove, NJ: Let Me Learn, Inc.

Kagan, D.M. (1992). Implications of research on teacher belief. *Educational Psychologist, 27,* pp. 65-90.

Kottkamp, R., & Silverberg, R. (1998, April). *Mental models of administrative aspirants.* Paper presented at the annual meeting of the American Educational Research Association, Montreal, Canada.

Lambert, L. (2002). Toward a deepened theory of constructivist leadership. *The constructivist leader* (2nd ed.) New York: TC Press.

Leach, D., (1977). Teachers' perceptions and "problem" pupils. *Educational Review, 9*(3), pp. 188-203.

Lieberman, A. (Ed.). (1988) *Building a professional culture in schools*. New York: Teachers College Press.

Lortie, D. (1975). *Schoolteacher: A sociological study*. Chicago: University of Chicago Press.

Medway, F.J. (1979). Causal attributions for school-related problems: Teacher perceptions and teacher feedback. *Journal of educational psychology, 71*(6), pp. 809-818.

Mezirow, J., & Associates. (2000). *Learning as transformation: Critical perspectives of a theory in progress*. San Francisco: Jossey-Bass.

Nisbett, R., & Ross, L. (1980). *Human inference: Strategies and shortcomings of social judgment*. Englewood Cliff, NJ: Prentice-Hall.

Osterman, K., & Kottkamp, R. (1993). *Reflective practice for educators: Improving schooling through professional development*. Newbury Park, CA: Corwin Press.

Senge, P. (1990). *The fifth discipline: The art and practice of the learning organization*. New York: Doubleday.

Silverberg, R. (2002). *From marginalization to relational space: A descriptive study of teachers who changed their assumptions and beliefs about problematic students.* Unpublished doctoral dissertation, Hofstra University, Hempstead, NY.

Szabo, M., & Lambert, L. (2002). The preparation of new constructivist leaders. *The constructivist leader* (2nd ed.) New York: TC Press.

• CHAPTER 10 •

Revisiting and Redesigning a Faculty-Developed Team Instructional Model

Patricia Ann Marcellino

At the 2009 Annual Conference of the National Council of Professors of Educational Administration (NCPEA), Dr Fenwick English (2009), a Distinguished Professor and former superintendent and principal, advised academicians and administrative practitioners in his keynote speech to widen the scope of their scholarship by including perspectives from other disciplines in their research. Dr English claimed that currently there is stagnation in the field of education leadership, and debate among scholars is almost non-existent. The concepts of prediction, control and rational models are emphasised, while research explorations that delve into the complexities of human agency are only minimally considered.

Academically, education and business share a similar knowledge base. Concepts developed by Deming (1994), Drucker (1999); Katzenbach and Smith (2003) and Senge (2006) are cross-disciplinary and accepted in both fields. Senge (2006), a business academic, has written about the complexity of human agency, and he recommends expansion into the development of teams or professional learning communities among school stakeholders. A myriad of team variables has been researched at the university level, primarily within business disciplines (Allie & Beam, 1998; Bacon, Stewart, Stewart-Belle, 1998; Baldwin, Bedell, & Johnson, 1997; Bolton,

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This paper was first published in Promoting Critical Ideas of Leadership, Culture and Diversity – The 2010 Yearbook of the National Council of Professors of Educational Administration, Beverly J. Irby, Editor; Betty J. Alford, Associate Editor; George Perreault, Assistant Editor & Luana Zellner, Assistant Editor. NCPEA publication

1999; Freeman, 1996; Goltz, Hietapelto, Reinsch, & Tyrell, 2008; Klimek, Ritzenhein, and Sullivan, 2008; Lightner, Bober, & Willi, 2007; McKendall, 2000; Nowak, Miller, & Washburn, 1996; O'Neil & Hopkins, 2002), which seems to be transferable to the field of educational leadership.

Pink (2005) claims that students need to learn leadership skills that are based on the concept of "right brained thinking." The right brain focuses on big picture concepts, creativity and holistic application. Houston, Blankstein and Cole (2007) state that teachers need to stretch their students' thinking and "get out of the box!" (p.5). Rather than focusing on a single individual as leader, research studies on leadership now have been widened to include the sharing of leadership among individuals who are working in a team format (Pearce & Conger, 2003; Polzer, 2003). Green (2010) states, "school leadership is becoming more facilitative and distributive in nature, necessitating the sharing of power and responsibility (p. 57)." Citing Gardner (1990), Green notes that the idea of shared responsibility is becoming "the key to effective leadership in schools" (p.57).

According to Kline (1999) and Thompson (2000), teams should be formed when the objective is to problem-solve and develop creative solutions. The Internet allows students to interact in virtual teams (Lipnack & Stamps, 1997). Moreover, academics posit that individual growth will occur more quickly in teams as adults interact, discuss and influence one another to adapt and change (Bolman & Deal, 1997; Senge, 2006). Therefore, if one follows the advice of the prognosticators listed, then university professors who teach leadership need to become aware of other disciplines, harness the power of the Internet, work with groups and teams, emphasise human agency in their research and instructional practices, and highlight the skills of problem-solving, creativity and shared responsibility in their university classes.

Problem

When the team process works, team members feel a sense of satisfaction, energy and camaraderie that is a testament to the extraordinary power of teams. They become "hot groups" as they are propelled beyond the capability of each individual team member (Leavitt & Lipman-Blumen, 1995). But when adult individuals interact in teams, they do not always have positive team experiences (Bolman & Deal, 1997; Katzenbach & Smith, 2003; Kline, 1999; Kling, 2000; Marcellino, 2006; Pacanowsky, 1995; Senge, 2006). An individual versus team tension seems to be at the core of problems concerning an individual's self-identity and identification with the team (Kling, 2000). Sometimes, adults are hesitant to embrace the team unit because of mixed messages that are communicated in society. Teamwork is lauded, yet individuality is rewarded; cooperation is touted, yet competition is emphasised (Katzenbach & Smith, 2003).

Furthermore, even though the use of teams and the development of professional learning communities has proliferated in recent years (Dufour, 2004; Prichard, Bizo, & Stratford, 2006; Saunders, Goldenberg, & Gallimore, 2009; Senge, 2006, Vescio, Ross & Adams, 2008), teams have been researched since the 1930s. Yet there is no unified team development model (Kline, 1999); this is because ambiguity exists in teams (DeMeuse & Liebowitz, 1981). When team tensions exacerbate, they can lead to a myriad of problems, such as, alienation or withdrawal of members, emotionalism, communication breakdowns, misunderstanding among team members, dissatisfaction, and lack of team identification (Marcellino, 2006; Pacanowsky, 2005). Tuckman's (1965) sequential model of team development, which outlined a "storming" phase (i.e. forming, norming, storming, performing) is still the focus of research (Goltz, Hietapelto, Reinsch, & Tyrell, 2007). To offset problems, O'Neil and Hopkins (2002) recommend that teams be limited in size (i.e. no more than 4 or 5 members). Lightner, Bober and Willi (2007) maintain that students working in a technology-enhanced classroom with team-based activities preferred 3-person teams. Bolton (1999) and O'Neil and Hopkins (2002) recommend instructors coach students when they work and learn in teams.

Purpose

The purpose of this study was to conduct an action-research investigation of 30 diverse teams that were formulated in 10 leadership courses composed of 101 administrators, aspiring administrators and teacher leaders who worked in Kindergarten through 12th grade private and public schools in the New York metropolitan area. The study was conducted within a five-year period at a private university located on Long Island, New York. Participants were enrolled in the university's nationally accredited Education Leadership Master of Arts degree program in order to acquire New York State public school certification as a school building leader (i.e. principal, chairperson, assistant principal and department head).

Theoretical Framework

The primary theoretical model applied in this study was derived from the work of business and education theorists, such as Johnston, 1996, 1998; Katzenbach and Smith (2003), Osterman & Kottkamp (2004), and Senge (2006). Their concepts are compatible. Reflection, interaction and relationship-building form the basis of the model. Johnston (1996, 1998) provides an inventory that is useful in constructing diverse teams based on learning pattern theory. Osterman & Kottkamp (2004) and

Senge (2006) emphasise reflective practice. Senge's systems approach is applied in this study, for example, each of the 101 participants came into this study with their own personal mastery (i.e. individual identity and skills) and based on their diverse mental models (i.e. assumptions, beliefs, perceptions and values), they shared their team visions (by devising team contracts with their teammates) and proposed learning as a team. Katzenbach and Smith's (2003) model of team development completed the theoretical framework. Their model explores a team continuum through various evolutionary stages (i.e. working group, pseudo-team, potential team, real team and high performance), which enabled team members to evaluate and assess their teams (p.84).

Methodology

The methodology for this study was exploratory action-research, and Mills' (2003) qualitative action-research model was its focus. The Mills model revolves around reflection. Methods were triangulated to insure credibility and dependability. Action-research is a continuous process as an instructor applies it to each course that is taught. Because the investigation of teams can be unwieldy, the structured guidelines of Miles and Huberman (1994) were followed in the collection and analysis of data. The "words" of the team members were the unit of analysis (Bogdan & Biklen, 1998). Data was collected and analysed from 30 teams. Therefore, this study was based on repeated measures. Methods included field notes, observations of team members' interactions, signed team contracts, peer evaluated technologically integrated presentations, team policy papers, pre-tested questionnaires, periodic updates, summative essays, follow-up discussion questions over the Internet, and selective interviews in-person or over the telephone. These methods were the data sources. Data analysis involved creating categories based on the number of participants who mentioned a theme or pattern, and whether the information was applicable to teams. Surprises, commonalities and contrasts were examined.

Researcher's Perspective

In this study, the instructor was also the action-researcher. According to Mills (2003), instructors who engage in action-research try to improve their own learning and their expertise as instructors. The instructor's intention in engaging in action-research was to (a) broaden her knowledge base regarding the development of teams in the education leadership classroom and to (b) update and improve instructional techniques in her "action plan" or syllabus in order to increase her students' team skills. The instructor began working with MBA teams in the business management classroom, and later transitioned to facilitating education leadership teams. Based on research into team development, her previous experience in the MBA classroom and then her initial transfer to the education leadership classroom, the instructor knew there could be tensions and problems in some teams (Bolman & Deal, 1997; Kline, 1999; Kling, 1999; Marcellino, 2006; Pacanowsky, 1995; Polzer, 2003; Senge, 2006). But, hopefully, there would also be demonstrations of unique team products and evidence of teamwork and relationship-building.

The instructor knew that teams had to be monitored and supported if team learning was to occur (Bolton, 1999; Katzenbach & Smith, 2003; Marcellino, 2006; Pacanowsky, 1995; Senge, 2006). The role of "teacher" would have to be expanded to "team coach" (Bolton, 1999; O'Neil & Hopkins, 2002). According to O'Neil and Hopkins (2002), coaching is defined in the "classroom environment as working with students to increase their self-awareness and capacity for self-discovery, while motivating them to begin a process of continuous learning and development" (p. 402). An instructor is not a member of a team, and is not privy to all that is happening on a team. Therefore, an instructor might have to devise alternative methods to gain access to a team. The instructor's self-developed team model was based on a series of reflective assignments and instructional techniques that would hopefully facilitate self-discovery, open communication, interaction and team learning (Marcellino, 2006).

Participants

Approximately, half of the 101 students (n=52), who participated in this study were characterised or self-identified as minority students, while 49 were characterised as Caucasian. In regard to the minority students, 32 were African-Americans, 8 were Caribbean-Americans, 6 were Hispanic-Americans, 2 were Middle Eastern Americans, 3 were Asian-Americans and 1 was European-American. There were 79 females and 22 males. Of the 101 participants, 65 represented public schools, and 36 represented private schools. Most of the schools they represented were located in New York City (59), while 42 were located in Long Island. Administrators primarily from private schools comprised 19 of the participants, while aspiring administrators and teachers comprised the majority of the participants (82). In the 1st year of the study, there were 24 participants; 13 in the 2nd year; 23 in the 3rd year; 22 in the 4th year; and 19 in the 5th year. Depending on the size of each class, teams ranged from 2 to 5 members. There were 5 teams of 2 members; 11 teams of 3 members; 12 teams of 4 members; 2 teams of 5 members. The number of teams and the number of students in a team were dependent on the total number of students registered for the leadership course. Teams of two to five individuals were formulated to facilitate instructional coaching (O'Neil & Holkins, 2002).

Team Context

This leadership course was a required course in the education leadership program. Five of the courses were taught in a traditional 15-week semester, and 5 courses were taught in a fast-track 8-week weekend venue. All courses took place in a technology-enhanced classroom. Blackboard (8 courses) and then, Moodle (last 2 courses) were used as network platforms. Team members engaged in negotiating and signing team contracts (Aranda, Aranda, & Conlon, 1998; Marcellino, 2008), which outlined a team's purpose and goals, team meetings, and included team members' assumptions about teams. Team members chose topics, which were based on education problems or conditions in their schools. Students in each of the 30 teams conferred and wrote one team policy paper. Technologically, they formally presented an overview of the team's recommended initiatives and solutions to the problems apparent in their schools. These team presentations were peer evaluated and rated by class members and the instructor. At times, outside evaluators were invited in by the students. When the team interventions ended, teams received class members' anonymous written feedback as well as the instructor's evaluation of the presentations. Rubrics were used to evaluate the teams. Topping (1998), maintained that class members can reliably assess the work of their peers. Team papers were primarily evaluated by the instructor.

Team Construction

Teams were constructed utilising a research tested inventory, the Learning Connections Inventory © developed by Johnston and Dainton (1997a, 1997b). Johnston's theoretical learning model (1996, 1998) features four learning pattern preferences: sequence, precision, technical reasoning and confluence (Let Me Learn Website: www.letmelearn.org). Diverse teams were composed of students representing each of the four learning patterns. The instructor introduced students to Johnston's Learning Model and directed them to her website. Engaging in reflective practice and developing a learning contract is also recommended by Johnston (1996; 1998). Students were guided by the instructor to assume initial team roles that were consistent with their use-first or lead learning pattern (Marcellino, 2005).

For example, a sequential learner became the initial organiser; the precise learner became the initial researcher or communicator; the technical learner was asked to be the initial team problem-solver; and the confluent learner was asked to be the initial idea-generator. If there was a fifth team member, the student was asked to assume the role of a facilitator at the first team meeting. If there were two or three-member teams formulated, these initial roles were shared. Students received a copy of each team and class members' learning pattern scores. A team's mean score was derived for each of the four learning patterns, and compared to the mean score of a class in each learning pattern. Student teams were structured around the class mean so as to balance teams, and not give one team an advantage over another team. Previous learning pattern scores regarding students in this education leadership program indicated that students led by sequence, followed by precision and technical processing with confluence (initial creativity) ranking a distant fourth (Marcellino, Eichenholtz, & Sosin, 2007). The instructor's pattern was categorised as use-first confluence, followed by precision, sequence and technical processing.

Results and Findings

The main question asked in this study was: How can an instructor improve a team instructional model and develop the team learning skills of education leadership students? Throughout this study, the instructor sought ways to improve her teaching practice so that there would be team learning and positive team closure on each of the 30 teams. The instructor engaged in an adaptation of Lewin's (1965) cyclical model, which was outlined in Mills (2003), as a process of "rethinking, reflecting, discussing, re-planning, understanding, and learning" (p.16). Based on feedback and discussions with students, the instructor gained a broader perspective regarding the team process. She monitored and compared teams, and expanded several instructional techniques. Most participants reported they were able to widen their team skills, while sharing leadership on their teams. A number of themes emerged, which were as follows: (a) the first year teams serve as benchmarks; (b) teams get the job done and demonstrate the Wisdom of Teams; (c) teams mirror changes in the leadership program; (d) teamwork experiences and technological expertise expand; (e) external and internal factors impacting on teams; (f) team identification and sharing leadership are displayed; and (g) the instructor influences the teams.

Theme 1 The first year teams serve as benchmarks

When the instructor started facilitating education leadership teams, students seemed to need additional support in applying the team model. Even though the cooperative education model was widely applied in school classrooms (Antil, Jenkins, Wayne & Vadasy, 1998), education leadership students surprisingly seemed to have few actual team experiences. In effect, they seemed to lag behind their business management counterparts. The first year of this study continuously served as a benchmark for the instructor. Disappointingly, both positive and negative team characteristics were displayed by several teams in the first year, which set the standard for both a positive and negative range of team interactions and experiences. In the first year, there were two teams that were categorised as high performance teams . They displayed high goal orientation, cohesion and a high degree of commitment (Katzenbach & Smith, 2003). According to Katzenbach and Smith, team members on high performance teams help one another "to achieve both personal and professional goals" (p.65). Unfortunately, there were also students on three teams who alienated team members, withdrew from the team, displayed dissatisfaction with team members, exhibited intense emotionalism and submitted fragmented team projects, which indicated limited team interactions. Students said:

> *-I see two of our members as lemons; the other three made lemonade by doing the work.*
>
> *-Don't judge a book by its cover. I was judged from the outside not from within. I had a lot to contribute; however, it was just never accepted. We never set a working forum, where we would be able to exchange ideas and information.*
>
> *-When a select elitist group takes off on its own, and feels that they must accomplish everything on their own, they do not solicit nor really want input from the other team members. Three people on this team became and acted like an elitist sub-team.*

But as the study evolved, education leadership students demonstrated that they could catch up with their business management counterparts. On questionnaires and in Internet discussions, they indicated past team experiences at their schools and in their university classes. A majority of the teams demonstrated that they could develop innovative team products and perform extraordinarily well. Popular project choices included problem-solving initiatives in the areas of Increasing Parent Involvement; Marketing and Promotion; Professional Development of Faculty; and Integrating

Technology into the Curriculum. Some teams were especially unique and innovative in their choice of a team topic. In the second year, a team member declared:

> *-Dream it. . .think it. . .build it! This basically is what we did. We dreamt of the ideal school, drew upon our colleagues at work to help us with their thoughts and brainstorming ideas in organising it, and then we built it. . .literally - an architectural model of our ideal school!*

Theme 2 Teams get the job done and demonstrate the Wisdom of Teams

As the study evolved, education leadership students did their jobs well. One said, "We were the little engine that could move because we were able to work together and get the job done." In the final assessment, class members applied Katzenbach and Smith's (2003) team continuum model to their education leadership teams and wrote:

> *-I would compare us to the high performance team that Katzenbach and Smith discuss in their book, The Wisdom of Teams. Our team is a highly motivated team that is in pursuit of excellence. I believe that we utilise the talents of every member to his/her full potential.*
>
> *-I would compare us to the Hewlett Packard team in Wisdom of Teams. We are a high performance team. We concentrate our efforts to achieve a specific goal. We have a shared vision.*

Participants and the instructor rated 12 teams as high performance and 8 teams as real teams. There were also outside evaluators that were invited in by students who assessed five of the teams. According to Katzenbach and Smith (2003), a real team consists of "a small number of people with complementary skills who are equally committed to a common purpose, goals, and working approach for which they hold themselves mutually accountable" (p. 92). On these teams, members displayed cohesiveness, and identified with their teams and their team members. Sometimes, teams in the same class became competitive, and this factor enabled these teams to develop into highly rated teams. In spite of tensions or problems, high performance and real teams went beyond the capability of each individual team member, and delivered highly rated products with creative initiatives. Team members were able to problem-solve, and work through their team issues. Sometimes, this was done without direct coaching from the instructor. Students were able to solve their own team problems. Team members on five teams surprisingly reported feeling no tensions on their teams. Students stated:

-We were all juggling several things at once but, somehow, it all came together, and we became a real team.

-I don't feel stressed working with my team members. We are a real team.

-We got off to a rocky start. At first, I felt my ideas were radically different from the rest of the group and I was dissatisfied. But we kept at it. We became a real team instead of a group.

Applying Katzenbach and Smith's (2003) team model, there were four teams that were assessed as potential teams. According to the authors, a potential team is one that displays a "significant, incremental performance need, and that really is trying to improve its performance impact. . .[but] it has not yet established collective accountability " (p. 91). Team E was characterised as a real team for the presentation, but when the paper was assessed, they were labelled a potential team. The paper was disjointed and fragmented and indicated little team interaction regarding the paper. In addition, two teams did not go far enough in its initiatives, but seemed to replicate what was already standard practice in education administration. Another team had a conflict between two members, which was resolved satisfactorily, but nevertheless affected the team, its members and the project.

Three teams were assessed as pseudo teams by a majority of its members. A pseudo team according to Katzenbach and Smith is a team that "has not focused on collective performance and is not really trying to achieve it" (p. 91). Two teams had members who did not fully participate in the team project because of alienation or withdrawal issues. Two team members who withdrew from their teams subsequently left the leadership program. One student wrote, "We are stalled; we are a pseudo team." While another member said, "I think that we have back-tracked to a pseudo team. We have fallen out of tune with each other." Members on one team were never able to completely coordinate their efforts because of outside commitments, and their presentation and paper fell short. Their team project resembled three separate projects rather than one coordinated effort.

Lastly, three teams never got beyond a working group. This was mainly due to time constraints regarding work and family issues as well as miscommunication among its members. A student noted, "Throughout, we remained only a working group." Within a working group, according to Katzenbach and Smith, "there is no realistic or truly desired 'small group' common purpose, incremental performance goals, or joint work products that call for either a team approach or mutual accountability" (p.91).

Theme 3 Teams mirror changes in this leadership program

In the first year of the study, participants were teachers and aspiring administrators primarily from the public schools; there were no administrators included. But in the succeeding years, practising administrators were participants in the study. The program was impacted by a contingent of students representing private schools located in New York City. This was the result of a grant that sought to upgrade the credentials of teachers and practising administrators, who were located in the private sector, such as secular and religious private schools (i.e. Christian, Jewish, Moslem).

By the third year of the study, program participants comprised 50% from the private schools and 50% from the public schools. By the end of the fourth year, students who were from the public schools were doubling up on their courses and hastening to finish their degrees before implementation of the New York State School Building Leader Examination. In the fifth year, there seemed to be an over-representation of students from the private schools. The representation of private school students seemed to lead to professional, ethical and more respectful interactions among team members as well as varied viewpoints, broader discussions and diverse initiatives for team projects. The make-up of the teams and the classes were impacted positively by changes in the overall system, which in this case was the leadership program itself (Senge, 2006). Three teams were composed of only private school students, while one team consisted of only administrators.

In this study, five of the leadership courses were taught in a traditional 15-week semester, and five courses were taught in a fast-track 8-week meeting venue. Students were able to complete their team projects within the allotted time period regardless of the venue. Students in the 8-week semester did not delay in setting up their team projects; they knew they had a limited time period to complete their projects, and they were able to adjust accordingly. They were focused immediately on the task (Katzenbach & Smith, 2003). One member in the fast-track wrote, "We waste no time or energy. In short, we work well together; we're efficient and I am proud to show off our work." Students in the 15-week semester worked more slowly than their fast-track counterparts in starting up their projects. But as they neared the project deadline, they quickly picked up speed. Students in the 15-week semester said:

> *-Things are progressing, but just at a slow rate.*
>
> *-We slowed down to a good speed, and I don't feel rushed.*
>
> *-Slow and steady wins the race. . .We are working slowly.*
>
> *-We were on a rollercoaster, slow to start, but, once we got moving, we picked up momentum, and it was exhilarating.*

Theme 4 Teamwork experiences and technological expertise expand

In the first and second years of the study, students made similar statements, such as, "I honestly haven't had a lot of team experiences," or "even though I use teams and groups in my own class, I have never been part of a team at my job." These types of statements were almost non-existent by the fourth and fifth year of the study. Initially, students also demonstrated little knowledge of technology upon entering the program. Statements, such as, "I have no knowledge of technology; that's why I entered this program," or "we don't use computers at my school" seemed widespread the first few years of the study. At the beginning of the study, leadership students seemed to need more help from the instructor in laying a team foundation; the instructor offered more guidance to teams regarding setting their purpose and the goals of the teams. For example, students stated:

> *-We are still a work in progress. We are working towards our goal but have not fully realised it yet.*
>
> *-We would have honey now if all the bees worked towards the queen – our goal - but we don't.*
>
> *-Our team started out hitting rough spots, but eventually we made it after learning new tricks and new ways to complete our goals.*

But as the study evolved, leadership students reported more team experiences at their work sites and in their graduate courses. Leadership students declared:

> *-I have had both positive and negative team experiences . . . I believe that one's attitude about the situation can help or hinder the experience.*
>
> *-We're working well together; things are going smoothly but I know - based on past teamwork I have done - that there will be roadblocks as we proceed.*
>
> *-I like to work on teams. I have been working on teams for most of my life; on sports teams and at work, and as long as everyone does their part, the team will be successful.*
>
> *-I have found working in teams at work to be a very positive experience. My co-workers care very much about their jobs and the completion of their tasks.*

> *-I have been co-teaching with a colleague at my school and it is wonderful.*

Furthermore, as the study progressed, leadership students demonstrated increased technological expertise upon entering the program. Leadership students reported:

> *-We each injected some information or contributed something at the particular moment it was needed over the Internet, and it made the team move forward.*
>
> *-We have become a virtual team meeting over the Internet.*
>
> *-My first Master's degree was in instructional technology; I did it on-line. At first, this was scary because we worked in different states . . . but it worked out.*

Theme 5 External and internal factors impact teams

Because the team process was monitored from beginning to end, there was an individual versus team tension displayed by certain individuals in the study that moved team members at various times towards or away from their team units. This is consistent with work developed by Tompkins (1994). This individual versus team tension was pronounced in some teams, but generally seemed to be representative of teams and team members who were impacted by overly stressful situations at home or at their work sites. These external factors sometimes threatened to derail a team. For example, some teams had members that were impacted by serious life issues that needed to be tended to that took precedent over the team project. In these cases, the other team members assumed additional responsibilities and covered for their "missing" team members until they could come back to the team. Besides work responsibilities and pressing family matters, members had to contend with divorce, illness, the birth of a child, or the illness and death of family members. In one instance, a team member dropped out of the team and the course because of illness. This factor affected the team and its members adversely. The effect of various external and internal factors caused members to comment:

> *-Losing a team member didn't help us; we seem to be running in place.*
>
> *-Our team is like a rubber band; we are connected, but stretched.*
>
> *-I am proceeding with caution as I continue on our team.*
>
> *-There's a lot on our plates. I feel like I am constantly swimming upstream.*

In the first year of the study, internal team problems were highly evident, such as team member alienation and withdrawal, intense emotionalism or lack of identification to the team. As a result, the instructor was required to intercede more often, and guide team members to positive team interactions and team closures. But in the later years of the study, even though there were internal problems that were evident, such as product fragmentation due to limited group interaction or misunderstandings among team members, successful team experiences far outweighed problematic team situations. Even though there was evidence of team problems, such as the temporary withdrawal of team members (because of external factors), issues were resolved amicably and members were able to unify themselves, and come to successful team closures without the instructor directly interceding. Team member alienation problems seemed non-existent as the study advanced. One student summarized this factor and stated, "We are adults and experienced educators; we should be able to resolve our team problems ourselves and try to unify our teams." Overall, in spite of difficulties and stressful influences, students reported that they learned about the team process whether it was fraught with tension or problem-free. Even with stressful factors impacting teams, projects were always completed within the allotted time period. A female member noted, "The heavy fog has lifted away, and we made it to our destination from strong will and determination."

Theme 6 Team identification and sharing leadership are displayed

Each of the 30 teams told a different and unique story. Because of the dynamic interaction of complex and diverse individuals, each of the 101 participants lived a different team experience. This is consistent with constructivist learning principles (Lambert, et.al, 2002). A majority of the students reported that they shared leadership on their teams. Team learning and self-discovery evolved as team members unified and identified with their teams. A team member from a private school who worked with two team members from the public schools stated, "Each one of us has had a leadership opportunity working together, and I think that shared power helped us work well as a team." Other leadership students documented:

> *-Leadership was always shared by all of us.*
>
> *-We are working as a family; we all worked diligently for the betterment of the whole team.*
>
> *-There were no arguments or conflicts. We functioned as a unit and were flexible enough to accommodate one another.*

> *-We put the puzzle pieces together and became one creative mind.*
>
> *-I would love the opportunity to work with this team again because of the chemistry we had when we came together. We all supported each other and helped each other especially when a team member needed the extra push. Dynamite!*
>
> *-We helped and supported one another throughout. We met [at a team member's house], laughed, had fun and worked well together. We critiqued and evaluated one another wit respect. We achieved our goals, shared leadership and achieved victory for all our members together.*

On four teams, however, there were members with strong personality traits that seemed to dominate the team project and influence the performance of team members. A team member stated, "Our team is small [with three members]. For that reason, I believe the strongest-minded team member took over." Nevertheless, the dominance of these individuals enabled team members to perform better. The individual may be the weakest link in the team system, but the individual can also be the strongest link in the team system. Differences within teams were not traced to gender, racial or ethnic differences among members. But some differences could be traced to whether members were from the private or public schools, or whether they had administrative experience. There were 19 administrators and 82 aspiring administrators in this study. Sixty-five were from the public schools, and 36 were from the private schools. These varied school and job orientations seemed to affect the teams positively, and lead to wider project choices as well as multiple viewpoints being exchanged. Surprisingly, administrators did not dominate the teams. Perhaps, it was because of their varied and increasing responsibilities at their work sites. But administrators did impact the teams positively; teams were accorded the opportunity of using an actual private school site as the focus of their initiatives as administrators opened up their schools to their team members. School administrators utilised their team members as consultants to develop creative solutions to their schools' problems. Team members were also afforded access to school stakeholders; they were able to survey or interview faculty and parents. More importantly, sometimes the team developed initiatives that were adopted at the private school. One administrator said, "When we launched our team project at my school, the cost of the initiative was priceless!"

Theme 7 The instructor influences the teams

There were 101 participants in this study. The instructor as the action-researcher was also a participant in this study, so, in actuality, there were 102 participants. According to Senge (2006), a leader is a designer, teacher and steward. The instructor in this study designed the syllabus, taught it, and served her students by trying to develop and expand their team skills. The instructor as the action-researcher was able to document her changes to the syllabus or "action plan" (Mills, 2003). For example, there were three distinct instructional techniques that were expanded and changed as this study evolved. These changes focused on: (a) team contracts; (b) periodic updates from all team members; and (c) the use of metaphors.

Instructional technique one: Team contracts

In the first year of the study, signed team contracts were mostly ignored by the students. Students claimed, "except for formulating our contract, we did not refer to the contract as the project evolved." By the second year of the study, the instructor spent more time in class on laying a foundation for the team contracts (Aranda, Aranda, & Conlon, l998; Marcellino, 2008). Signed team contracts were compared openly in class, and students were encouraged to go back to their original contracts if problems developed on their teams. By the third year of the study, team members were claiming more contract referrals, changing and even updating their contracts as the team process evolved to reflect the needs of their teams. Team contracts became acceptable negotiating vehicles to discuss team problems if one or more members were violating previously agreed-upon contract conditions. When this was done, problems were discussed, diffused and solved so that team members could continue their team interactions and concentrate on their team projects. Students reported:

> *-We are following our contract, and we are committed to it.*
>
> *-I think the team contract was a great idea. It gave us a clear picture of what our goals and expectations were for our team.*
>
> *-I think a team contract is good because you can always look back at it if there is a problem or question regarding what we should be doing.*
>
> *-The team contract was a first for me. I'd like to think that it wouldn't be necessary, in that we would all work together to get the job done even without the contract, but I see that it could be a preventative method to head off any potential problems.*

> *-Contracts in schools are a hot topic: when to use them; what they say; how to interpret the wording or language.*
>
> *-Contracts make everyone accountable. The team has input into the contract, and the team members know what is expected. Then we live up to it.*

Instructional technique two: Periodic updates from all team members

Secondarily, the instructor was able to monitor the teams more diligently by increasing the number of updates she required from each team member. Instead of relying on one team reporter submitting updates or asking for two updates (i.e. at the beginning and end of the team intervention similar to a pre and post), in the second year of the study, the instructor increased the number of updates to five per team member. This offered the instructor multiple perspectives of what was happening on each team, and also updated the instructor regarding the emergence of team tensions and problems. Team members were repeatedly asked several open-ended questions, which gave the instructor a wider perspective regarding what was happening on each team. From the information received, the instructor could assess team member interactions and a team's viability in regard to strengths and weaknesses. When teams were smaller (i.e. two and three members), the instructor was able to monitor the teams more closely, delve deeper, and garner more information.

Instructional technique three: The use of metaphors

Thirdly, in order to gain access to what was happening on each team without appearing intrusive, one of the questions in each of the periodic updates usually asked students to describe in metaphor, "what was happening on the team" (Couger, 1995; Greenlee, 2007; Ivie, 2003; Kemp, l999; Lakoff & Johnson, 1980; Marcellino, 2007; Pink, 2005). This instructional technique widened the instructor's perspective regarding the evolving team process, the viability of teams, and alerted the instructor indirectly to possible team problems that might be developing. If a team problem surfaced, students were usually willing to compose metaphors about it rather than explicitly stating what was actually happening on their teams. For example, the following metaphoric updates indicated that teams were progressing positively at various stages:

> *-[We are] connecting the dots, and putting our ideas together to create a plan.*
>
> *-Our team is like glue. We are a very cohesive team. We are working very well together bouncing ideas around, accepting good ones and casting aside the bad ones.*

> *-We are like puzzle pieces finding our proper place. We started out as individuals, but now we are pulling together as one.*

From the instructor's perspective, if one or more students indicated a problem was developing, the instructor could gain access to the team and intervene by referring to the metaphor. Further questions could be probed, and suggestions and guidance given to team members. For example, the instructor was alerted to team problems early-on with the following statements:

> *-[We are] a cake without the icing. The icing on the cake is what makes it shine and attract others. This team still needs more time to blend as one.*
>
> *-Although a working family is a unit functioning together for specific goals, we are too busy to spend enough quality time together as a family.*
>
> *-I feel like we are chickens running around with our heads cut off.*

By repeatedly having the students update her, the instructor could monitor team changes and the evolving team process. For example, the following metaphoric updates were two weeks apart, yet changes were indicated in the team process that was evolving:

> *-We are a team of synchronised swimmers getting ready for a big competition (Update 1)*
>
> *-We are still like a synchronised swim team. But at this time, some of the swimmers have come down with colds, broken bones and personal issues (Update 2).*

These two statements enabled the instructor to intervene, question team members more closely, and offer suggestions to help the team.

Overall, students indicated that they benefitted from the team experience; they wrote:

> *-I usually just 'go with the flow.' But my team members depended on me to initiate the task because I have been in the program for awhile. I was [considered] the experienced group member. Both my team members helped build my confidence because they respected what I had to say, and took my ideas and together we formed our own.*

> *-We are a sponge; the reason I chose this metaphor is that the team absorbs each other's ideas very well. . . Once the topic was chosen, we just forged ahead, taking in all the wonderful ideas. I've never seen such collaboration before.*
>
> *-We are a tree with many branches. This is applied to our team because we each represented a different perspective and idea. . .We all identified different aspects within our research. This represents the branches of a tree; they are off in different directions. However, even with the various differences, all of us were able to come together, decide on one topic area, and bring information together to create a team project that benefitted us all. This is represented by the tree as a whole.*

Conclusions and Implications

In this action-research study, education leadership students interacted in diverse learning teams in ten courses; 30 teams were compared and analysed. According to Mills (2000), action-research is "done by teachers, for themselves" (p. 3) primarily. By monitoring each team and receiving updates from all team members, the instructor was able to devise multiple perspectives of what was happening on a team. The instructor's team performance model changed and was refined in its application regarding three distinct areas: (a) team contracts; (b) periodic team updates; and (c) utilising metaphors (See Model A: Changes to the Instructor's Team Instructional Model). Whether the team experience was positive throughout or fraught with tensions, leadership students were able to increase their team skills. One student commented about the course and the team experience by stating, "Being in this course was like going to boot camp. But we all survived and learned about ourselves and our team-mates."

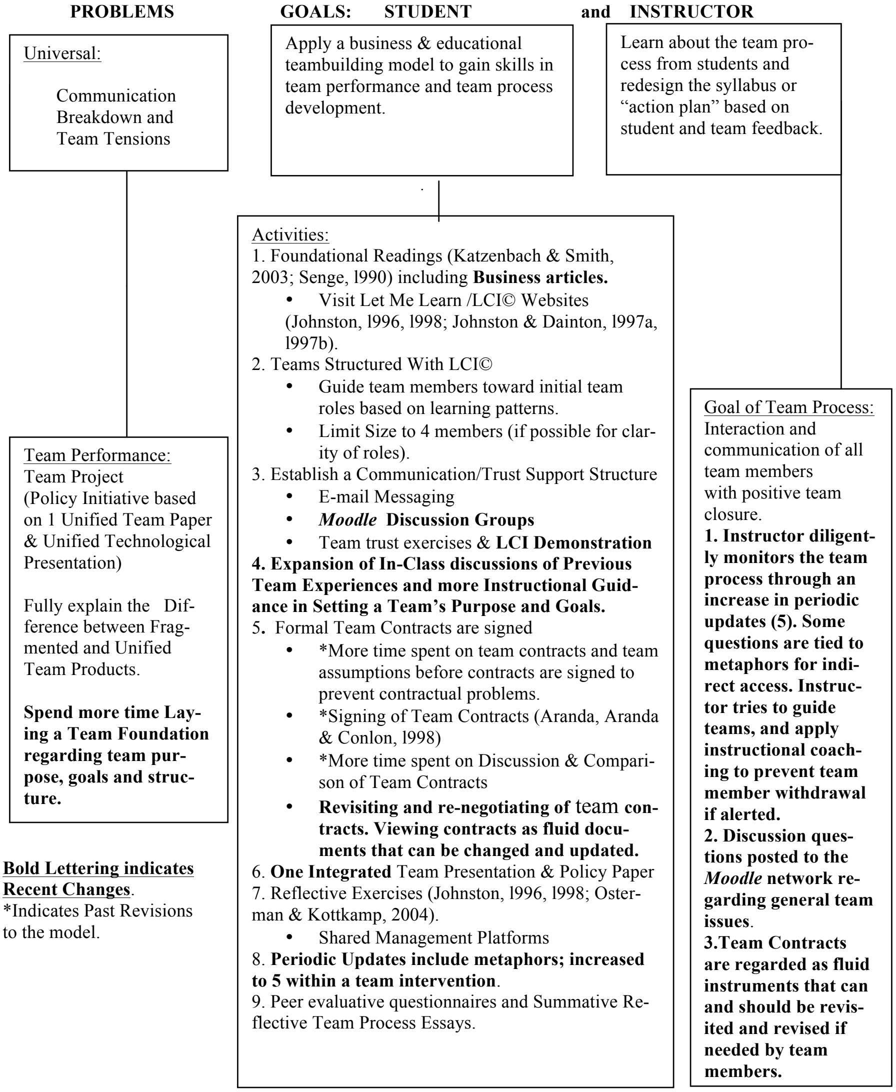
Because the instructor and the 101 participants in this study were the action-researchers (Mills, 2003), certain aspects of this study may not be generalised to the broader population and may only be applied to the participants in this study. But in regard to team building and the team development process in the educational leadership classroom, there are aspects of this study based on the examination of teams in ten educational leadership courses that may be generalised to a wider audience, such as:

1. In regard to educational leadership students, team and team work experiences both on the job and in the classroom have increased appreciably over the last five years.

2. External and internal factors do impact team cohesion, team commitment and team identification in the educational leadership classroom.
3. Rather than a single leader emerging, team members primarily shared leadership on their teams.
4. Instructors do influence the teams that are formed in their classrooms (in regard to how these teams are formed and the team members that interact on these teams).
5. Adult students can solve their own team problems without direct coaching from the instructor provided the proper team foundation is laid.
6. Educational leadership teams produce creatively and can problem-solve effectively.
7. Technological integration is readily applied by educational leadership students, and team members utilise technology for team interaction.
8. Educational leadership students are as proficient in team development and relationship-building as their peers in the business disciplines.

This study may broaden team understanding and influence the development of additional action-research team studies by educational leadership instructors. This study did attempt to delve "outside the box," (Houston, Blankstein & Cole, 2007; Pink, 2005), and combine precepts of another discipline (i.e. business management) with education leadership in exploring human agency (English, 2009). The instructor's team instructional model will continue to be refined, redesigned and revisited as she continues to engage in reflective practice and applies the action-research model (Mills, 2003) to improve her own learning and the learning of her students as they interact and work in educational leadership teams. Educational leadership instructors are invited to replicate this study or aspects of it in order to add to the knowledge base and understanding of the team process. Because of the complexity of human nature, studies that delve into the complexity of team development and team member interactions or relationship-building are ripe for further research study.

Model A Changes to the Instructor's Team Instructional Model



PROBLEMS

Universal:

Communication Breakdown and Team Tensions

Team Performance:
Team Project
(Policy Initiative based on 1 Unified Team Paper & Unified Technological Presentation)

Fully explain the Difference between Fragmented and Unified Team Products.

Spend more time Laying a Team Foundation regarding team purpose, goals and structure.

GOALS: STUDENT and INSTRUCTOR

Apply a business & educational teambuilding model to gain skills in team performance and team process development.

Learn about the team process from students and redesign the syllabus or "action plan" based on student and team feedback.

Activities:
1. Foundational Readings (Katzenbach & Smith, 2003; Senge, 1990) including **Business articles.**
   - Visit Let Me Learn /LCI© Websites (Johnston, 1996, 1998; Johnston & Dainton, 1997a, 1997b).
2. Teams Structured With LCI©
   - Guide team members toward initial team roles based on learning patterns.
   - Limit Size to 4 members (if possible for clarity of roles).
3. Establish a Communication/Trust Support Structure
   - E-mail Messaging
   - ***Moodle* Discussion Groups**
   - Team trust exercises & **LCI Demonstration**
4. **Expansion of In-Class discussions of Previous Team Experiences and more Instructional Guidance in Setting a Team's Purpose and Goals.**
5. Formal Team Contracts are signed
   - *More time spent on team contracts and team assumptions before contracts are signed to prevent contractual problems.
   - *Signing of Team Contracts (Aranda, Aranda & Conlon, 1998)
   - *More time spent on Discussion & Comparison of Team Contracts
   - **Revisiting and re-negotiating of** team **contracts. Viewing contracts as fluid documents that can be changed and updated.**
6. **One Integrated** Team Presentation & Policy Paper
7. Reflective Exercises (Johnston, 1996, 1998; Osterman & Kottkamp, 2004).
   - Shared Management Platforms
8. **Periodic Updates include metaphors; increased to 5 within a team intervention**.
9. Peer evaluative questionnaires and Summative Reflective Team Process Essays.

Goal of Team Process:
Interaction and communication of all team members with positive team closure.
1. Instructor diligently monitors the team process through an increase in periodic updates (5). Some questions are tied to metaphors for indirect access. Instructor tries to guide teams, and apply instructional coaching to prevent team member withdrawal if alerted.
2. Discussion questions posted to the *Moodle* network regarding general team issues.
3.Team Contracts are regarded as fluid instruments that can and should be revisited and revised if needed by team members.

Bold Lettering indicates Recent Changes.
*Indicates Past Revisions to the model.

- Adapted from: Aranda, Aranda & Conlon (1998). For additional information, see Marcellino (2006).

References

Allie, R.E., & Beam, H.H. (1998). The use of teams in an undergraduate management course. *Journal of Management Education, 22*(6), pp. 707-720.

Antil, L.R., Jenkins, J.R., Wayne, S.K., & Vadasy, P.F. (1998). Cooperative learning: Prevalence, conceptualizations, and the relation between research and practice.

American Educational Research Journal, 35(3), pp. 419-454.

Aranda, E.K., Aranda, L., & Conlon, K. (1998). *Teams: Structuring process, culture, and politics.* Upper Saddle River, NJ: Prentice Hall, Inc.

Bacon, D.R., Stewart, K.A., & Stewart-Belle, S. (1998). Exploring predictors of student team project performance. *Journal of Marketing Education, 20* (1), pp. 63-72.

Baldwin, T.T., Bedell, M.D., & Johnson, J.L. (1997). The social fabric of a team-based MBA program: Network effects on student satisfaction and performance.

Academy of Management Journal, 40(6), pp. 1369-1397.Bogdan, R.,& Biklen, S.K. (1992). *Qualitative research for education: An introduction to theory and methods.* (2nd ed.) Needham Heights, MA: Allyn and Bacon.

Bolman, L.G., & Deal, T.E. (1997). *Reframing organizations.* San Francisco, CA: Jossey-Bass, Inc.

Bolton, M.K. (1999). The role of coaching in student teams. *Journal of Management Education, 23,*(3), pp. 233-251.

Couger, J. D. (1995). *Creative problem solving and opportunity finding.* Danvers, MA: Boyd & Fraser Publishing Company.

DeMeuse, K.P, & Liebowitz, S.J. (1981). An empirical analysis of team-building research. *Group & Organizational Studies*, 6(3), pp. 357-378.

Deming, W.E. (1994). *The new economics for industry, education, government*. Cambridge, MA: MIT Center for Advanced Engineering Study.

Drucker, P.F. (1999). *Management challenges for the 21st century*. New York: Harper Collins.

Dufour, R. (2004). What is a "professional learning community"? *Educational Leadership, 61*(8), pp. 6-11.

English, F. (2009, August 5). *The restoration of human agency in educational leadership theory, research and practice.* Walter B. Cocking Lecture at the National Council of Professors of Educational Administration Annual Meeting (August 4-

7, 2009), San Antonio, Texas.

Freeman, K.A. (1996). Attitudes toward work in project groups as predictors of academic performance. *Small Group Research, 27*(2), pp. 265-283.

Goltz, S. M., Hietapelto, A.B., Reinsch, R.W., & Tyrell, S.K. (2008). Teaching teamwork and problem solving concurrently. *Journal of Management Education, 32*(5), pp. 541-562.

Green, R.L. (2010). *The four dimensions of principal leadership: A framework for leading 21st century schools.* Boston, MA: Allyn & Bacon.

Greenlee, B.J. (2007). Metaphor as an instructional tool to develop metacognition in educational leadership students. In L.K. Lemasters & R. Papa (Eds.), *NCPEA 2007 yearbook – At the tipping point: Navigating the course for the preparation of educational administration,* pp. 339-350. Lancaster, Pennsylvania: Pro>Active Publications.

Houston, P.D., Blankstein, A.M., & Cole, R.W. (2007). *The soul of educational leadership:* Out- of-the-box leadership. Thousand Oaks, CA: Corwin Press.

Ivie, S. D. (2003). *On the wings of metaphor*. San Francisco, CA: Caddo Gap Press.

Johnston, C.A. (1996). *Unlocking the will to learn.* Thousand Oaks, CA: Corwin Press, Inc.

Johnston, C.A. (1998). *Let me learn.* Thousand Oaks, CA: Corwin Press, Inc.

Johnston, C. A. & Dainton, G.R. (1997a). *Learning connections inventory*. Pittsgrove, NJ Let Me Learn, Inc.

Johnston, C.A. & Dainton, G. R. (1997*b*). *Learning combination inventory users'manual.* Pittsbrove, NJ: Let Me Learn, Inc.

Katzenbach, J. R., & Smith, D.K. (2003). *The wisdom of teams.* Boston, MA: Harper Business.

Kemp, E. (1999). Metaphor as a tool for evaluation. *Assessment & Evaluation in Higher*

Education, 24(1), pp. 81-90.

Klimek, K.J., Ritzenhein, E., & Sullivan, K.D. (2008). *Generative leadership: Shaping new futures for today's schools.* Thousand Oaks, CA: Corwin Press.Kline, T. (1999). Remaking teams: *The revolutionary research-based guide that puts theory into practice.* San Francisco, CA: Jossey-Bass, Inc.

Kling, J. (2000, July). *Tension in teams.* Harvard Management Communication Letter. Harvard Business School Publishing, Article reprint #C0007A.

Lakoff, G., & Johnson, M. (1980). *Metaphors we live by*. Illinois: University of Chicago Press.

Lambert, L.,Walker, D., Zimmerman, D.P., Cooper, J.E., Lambert, M.D., Gardner, M.E., & Szabo, M. (2002). *The constructivist leader.* NY: Teacher's College Press.

Leavitt, H., & Lipman-Blumen, J. (1995, June). Hot Groups. *Harvard Business Review, 73* (4), pp. 109-116.

Let Me Learn Website (http://www.letmelearn.org). Retrieved from the web, January 2007.

Lightner, S., Bober, M.J., & Willi, C. (2007). Team-based activities to promote engaged learning. *College Teaching, 55*(1), pp. 5-18.

Lipnack, J., & Stamps, J. (1997*). Virtual teams.* New York: John Wiley & Sons, Inc.

McKendall, M. (2000). Teaching groups to become teams. *Journal of Education for Business, 75*(5), pp. 277-282.

Marcellino, P. A. (2005). Bridging disciplines and setting up diverse teams. *Journal of Behavioral and Applied Management 6*(3), pp. 167-210.

Marcellino, P.A. (2006). A teambuilding model for the educational leadership

Classroom. In F. Dembowski & L. Lemasters (Eds.), *NCPEA 2006 yearbook - Unbridled spirit: Best practices in educational administration* (pp. 216-225). Lancaster, Pennsylvania: Pro>Active Publications.

Marcellino, P.A. (2007). Reframing metaphors in business and education teams. *Journal of Educational Administration, 45*(3), pp. 289-314.

Marcellino, P.A. (2008). Action-research: Adopting team contracts to initiate team learning. *American Association of School Administrators Journal of Scholarship and Practice,* 5(1), pp. 15-20.

Marcellino, P.A., Eichenholtz, S., & Sosin, A.A. (2007). Applying leaning pattern theory to electronic portfolio development: Navigating on-going programmatic evaluation. In Lemasters, L.K. & Papa, R. (Eds.), NCPEA 2007 yearbook - *At the tipping point: Navigating the course for the preparation of educational administration* (pp. 145-155).Lancaster, Pennsylvania: Pro>Active Publications.

Miles, M.B., & Huberman, A. M. (1994). *Qualitative data analysis.* Thousand Oaks, CA: Sage Publications.

Mills, G.E. (2000). *Teaching action research sans rapport: Life as a virtual professor.*

Paper presented at the annual meeting of the American Educational Research Associa- tion (April 27, 2000), New Orleans, Louisiana.

Mills, G.E. (2003). *Action research: A guide for the teacher researcher.* Upper Saddle River, NJ: Prentice Hall, Inc.

Nowak, L.I., Miller, S.W., & Washburn, J.H. (1996). Team testing increase performance.*Journal of Education for Business, 71*(5), pp. 253-256.

O'Neil, D. A., & Hopkins, M. M. (2002). The teacher as coach approach: Pedagogical choices for management educators.*Journal of Management Education, 26*(4), pp. 402-414.

Osterman, K.F., & Kottkamp, R.B. (2004). *Reflective practice for educators:*

Professional development to improve student learning. Newbury Park, CA: Corwin Press, Inc.

Pacanowsky, M. (1995).Team tools for wicked problems. *Organizational Dynamics, 23*(3), pp. 36-49.

Pearce, C. L., & Conger, J. A. (2003). *Shared leadership: Reframing the hows and whys of leadership.* Thousand Oaks, CA: Sage Publications.

Pink, D. (2005).*A whole new mind: Moving from the information age to the conceptual age.* NY: Riverhead Books.

Polzer, J. T. (2003 February). *Leading teams.* Harvard Business School Publishing. Article Reprint #9-403-094.

Prichard, J. S., Bizo, L. A., & Stratford, R. J. (2006). The educational impact of team-skills training: Preparing students to work in groups. *British Journal of Educational Psychology, 76*, pp. 119-140.

Saunders, W.M., Goldenberg, C.N., Gallimore, R. (2009). *Increasing achievement by focusing grade-level teams on improving classroom learning: A prospective, quasi-experimental study of title 1 schools, 46*(4), pp. 1006-1033.

Senge, P.M. (2006). *The fifth discipline: The art and practice of the learning organization.* New York: Currency Doubleday.

Tompkins, T.C. (1994). *How collective learning occur. A study of diffusion of competency. (*Doctoral Dissertation, Claremont Graduate School).

Thompson, L. (2000). *Making the team: A guide for managers.* Upper Saddle River, NJ: Prentice Hall, Inc.

Topping, K. (1998). Peer assessment between students in colleges and universities. *Review of Educational Research, 68*(3), pp. 249-276.

Tuckman, B.W. (1965). Development sequence in small groups. *Psychological Bulletin*, 63, pp. 384-399,

Vescio, V., Ross, D., & Adams, A. (2008). A review of research on the impact of professional learning communities on teaching practice and student learning. *Teaching and Teacher Education,* 24, pp. 80-91.

• CHAPTER 11 •

From Pedagogy to Diagnosis: Metaphors Provide Access to Leadership Teams

Patricia Ann Marcellino

Introduction

Various leadership academicians and scholars have applied metaphors in their works. For example, Bolman and Deal (1997) illustrated how adopting metaphors and applying them to school could reframe the school as a factory, jungle, family or theatre. Hoyle, Bjork, Collier and Glass (2005) compared a school district superintendent to the CEO of a business corporation, while Norton et al. (1996) compared the school district superintendent to a lightning rod, teacher, catalyst, director and builder (pp. 62-63). Cherry and Spiegel (2006) described an educational leader metaphorically as a touchstone leader (i.e. the change agent); an advocate (i.e. fair and equitable leader); and a parent (i.e. supportive and caring leader). With similar design, Deal and Peterson (1999) contend that school leaders must become historians, anthropological sleuths, visionaries, symbols, potters, poets, actors and healers (pp. 87-99). Senge (2006), a business academic expanded the leader's role regardless of the discipline by advising leaders to become designers, teachers and stewards.

The concept of using teams is prevalent today. According to Kline (1999) and Thompson (2000), teams are easily useful to enhance creativity and problem-

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This manuscript has been peer-reviewed, accepted and endorsed by the National Council of Professors of Educational Administration (NCPEA) as a significant contribution to the scholarship and practice of education administration. In addition to publication in the Connexions Content Commons, this manuscript was published in the International Journal of Educational Leadership Preparation, volume 5, Number 1 (January – March 2010).

solving; these are characteristics that are needed globally as we advance on a fast track technologically (Pink, 2005). Couger (1995) suggested having adults compile metaphors about an experience in order to stimulate creativity, while Kemp (1999) suggested that the use of metaphors might help students evaluate an experience as it evolves. According to Kemp, the use of metaphor could support faculty in assessing learning groups.

The board expansion of technology allows leadership students to interact as virtual teams (Lipnack & Stamps, 1997). Moreover, academics posit that individual growth will occur more readily in teams as adults interact, discuss and influence one another to adapt and change (Bolman & Deal, 1997; Katzenbach & Smith, 2003; Pearce & Conger, 2003; Polzer, 2003; Senge, 2006). When the team process works, its members feel a sense of exuberance and energy that is testament to the extraordinary power of teams (Leavitt & Lipman-Blumen, 1995). But, unfortunately, when adults interact in teams, not all teams are successful (Bolman & Deal, 1997; Katzenbach & Smith, 2003; Kline, 1999, Kling 2000; Lipnack & Stamps, 1997; Marcellino, 2006; Pacanowsky, 1995; Senge, 2006). According to Kling (2000), an individual may grapple with maintaining self-identity versus identifying with the team.

Problem

If team tensions exacerbate and remain unchecked, that tension can lead to team problem, such as alienation or withdrawal of members, intense emotionalism, and task avoidance (Marcellino, 2006; Pancanowsky, 2005). To offset problems, Bolton (1999) and O'Neil and Hopkins (2002) recommended that teams have supportive coaching from the instructor. Unfortunately, the instructor does not serve as a member of the team, and adult students working in a team may view the instructor as an "outsider." They may be reluctant to discuss team problems with the instructor because, when problems are "leaked" to the instructor, then the member who "leaked" the information may be perceived as a team "defector." The instructor, therefore, must build trust with team members and convince each one of them that the instructor's role is one of a team coach and facilitator. The instructor's focus must become intentional in monitoring the teams and assessing their viability (Marcellino, 2007). Moreover, even when instructors are accepted as trusted facilitators, they are not privy to all that happens on a team. Therefore, an instructor may have to devise instructional techniques that provide indirect access so that teams may be systematically monitored if the team tensions or problems are surfacing (Marcellino, 2007). The instructor in this study reasoned that applying metaphors as an instructional technique in the educational leadership classroom might allow indirect access to what was happening on the teams in regard to the dynamics taking place among team members and within the team.

Purpose

An exploratory action-research study was conducted to assess team viability (i.e. strengths and weaknesses) in 26 teams from nine educational leadership courses. The nine courses were taught by the same instructor who also served in the role of researcher. The instructor wanted to explore the use of metaphors or metaphoric fragments (i.e. glimpses of a metaphor) in order to (a) compare the 26 educational leadership teams, and (b) examine team viability so as to further understand the team development process.

Theoretical and Metaphorical Framework

The primary theoretical frameworks that were applied in this study were based on the works of Johnston (1996, 1998), Osterman and Kottkamp (2004) and Senge (2006). Their works are compatible and focus on reflective practice in order to gain insight regarding individual and team learning. Katzenbach and Smith's (2003) team model provided another lens that indicated a metaphorical assessment of a team, as a "working group, pseudo-team, potential team, real team and high performance team" (p.84).

Methodology

The research design of the study was qualitative action-research (Mills, 2003). It was exploratory in that it investigated aspects of the phenomenon of group or team work. According to Mills (2003), instructors who engage in action-research try to improve their own teaching and learning. They engage in a four step process of (a) identifying an area of focus (in this study, the area of focus was team-work), (b) collecting data, (c) analysing and interpreting the data and (d) developing an action plan, which might be refining or changing an instructor's syllabus or instructional techniques. (p. 5). Reflection is foundational to the Mills' model as teachers engage in reflecting on improving their student's learning. Furthermore, in this study, the participants were also engaged in action-research as they each update the instructor by applying metaphors to access their teams.

Participants

Participants (n=89) were current or aspiring school building leaders from public (60) and private (29) schools enrolled in a nationally accredited master's degree programme in educational leadership at a private suburban university on Long Island, New York. Of the 89 participants, 71 were female and 18 were male. Most of the students (47) were characterised as diverse or minority students, such as: African-Americans (29); Caribbean-American (6); Hispanic (6); Middle Eastern (2); Asian (3); European (1). There were 42 Caucasian students participating. Depending on the size of each class, teams ranged from 2 to 5 members (O' Neil & Hopkins, 2002). Of the 26 teams, there were 5 teams of 2 members each; 7 teams of 3 members each, 12 teams of 4 members; 2 teams of 5 members. The number of teams and the number of students on a team were dependent on the total number of students registered in a particular class.

Researcher's Perspective

Because the instructor was also the action researcher in this study, the perspective of the instructor as researcher should be explained. Metaphorically, the instructor provided the primary lens in this study. When the researcher began working with teams, metaphoric updates were requested at the beginning and end of the team intervention (i.e. pre and post assessment). But as this study evolved, the instructor increased the number of assessments from two to five from each team member. The instructor reasoned that, if all the teams members participated in periodic updates and similar metaphoric class exercises regarding the team experience, problematic information would be included in their depiction. The utilisation of metaphor or metaphoric fragments (i.e. glimpses of a metaphor) to describe what was happening on a team might aid the instructor in not only monitoring a team's progress, but also diagnosing a team's variability. For example, when the instructor first became working with educational leadership teams, two individuals on a 6-member team applied boating metaphors to their teams, which indicated a need for instructional coaching. Two members stated:

> *In actuality, we were six individuals in a group rowing in different directions (Male).*
>
> *We did not become a team; we were like ships passing in the night. We were six separate individuals doing our own thing (Female).*

Unfortunately, the above updates were received after the team intervention ended, so instructional coaching could not be applied (Marcellino, 2005b). But this team's experience served as a wake-up call for the instructor. The instructor realised that she needed to be alerted earlier to the tensions and problems that team members were experiencing. She needed to be kept apprised of what was happening on each team from the beginning of the team intervention until its ending. Metaphoric descriptions might become the signal that would alert the instructor systematically to what actually happening on each team.

Moreover, Morgan (1986), as cited in Beavis and Thomas (1996), stated "a metaphor can only produce a partial view of reality, and any insight gained will perforce be one-sided" (p. 99). But the instructor reasoned that if each team member submitted teams updates throughout the team experience, the instructor might be able to gain a broader perspective of the evolving team process. The use of positive metaphors by team members would indicate that the team was progressing smoothly. But, if one or more students utilised a metaphor that indicated they were experiencing tensions or problems, the instructor could coach team members and offer suggestions to strengthen the team.

Data Collection

Methods were triangulated to insure trustworthiness, credibility, and dependency of the data (Mills, 2003). Various methods enabled the instructor and researcher to collect multiple perspective from team members. Action-research is an iterative process as an instructor continually applies it to each course that is taught. Methods for collecting the data included field notes; observations of team member interactions; technological presentations that were peer evaluated; written team policy papers; evaluative questionnaires that had been pre-tested; periodic team member updates regarding the team experience (which included all the class and team members devising metaphors about the evolving team experience); summative reflective essays about the team experience; discussion questions over the Internet; and selective follow-up interviews in-person or telephone. These methods became the data sources.

Data Analysis

The participants' "words" became the main unit of analysis (Bogdan & Biklen, 1992) with metaphors or metaphoric fragments the key focus of questions within the updates requested. Students' words were compared, contrasted and analysed. Data was analysed for themes, patterns, surprises (Miles & Huberman, 1994). After the data was collected, a categorisation process was established and a coding system was generated. Categories and sub-categories were created based on the number of participants who mentioned a theme or pattern as well as the uniqueness of the information. The process of categorising the data was repeated in order to refine the analysis.

Key Questions

Questions and answers were primarily open-ended. Students were asked not to confer with their team members regarding their team updates, which were usually requested and submitted at the beginning of a class meeting. The final update included a reflection on the team experience as well as formal evaluations of each team member. While there were many questions asked throughout this study, two key questions were:

1. How do educational leadership students apply metaphors to describe the evolving team experience?
2. Can the use of metaphors become a diagnostic tool to access team viability in regard to team strengths and weaknesses?

Team Construction and Context

While participants were diverse according to their culture, background, race, and ethnicity, they were also diverse in regard to their learning patterns (i.e. sequential, precise, technical and confluent). Sequential learners appreciated order; precise learners valued detail; technical learners were realistic; and confluent learners displayed unique creativity (Johnston, 1998, p. 25). Diverse teams were constructed utilising a research tested inventory, the Learning Connections Inventory © developed by Jonston and Dainton (1997a, 1997b). Teams were formulated that emphasised students' use-first or lead learning patterns so as to enhance diversity, creativity and problem solving (Let Me Learn Website: www.letmelearn.org2).

Each student received a copy of each class and team members' learning pattern scores. A team's mean score was compared to the mean score of the class. Teams were structured in order to provide balance so as not to give one team an unfair advantage over another team regarding having over-representation or under-representation of a particular learning pattern (Marcellino, 2005a). Previous evaluations regarding students in this educational leadership program indicated that students primarily led by sequence, followed by precision and technical processing with confluence (or unique creativity) ranking a distant fourth (Marcellino, Eichenholtz, & Sosin, 2006). The instructor's learning pattern was categorised as one who led by confluence, followed by precision, sequence and technical processing.

Team members developed team topics which were based on actual education problems or realistic conditions in their own schools. Students in 26 teams conferred and submitted one policy paper. Technologically, they presented one overview of their chosen team topic to class members that included the team's recommended initiatives and solutions to actual school problems. Team technological presentations were evaluated by the instructor and class members (Topping, 1998). The instructor evaluated the team papers. Rubrics were used for these evaluations.

Introduction to using metaphors

To introduce leadership students to metaphoric application, Bolman and Deal's (1997) metaphoric reframing school perspective (i.e. a school as a factory, family; jungle; theatre) and additional metaphoric exercises were applied. For example, one metaphoric exercise compared a student's "ideal" school to a student's "actual" school. Follow-up discussions were conducted in a discussion forum over the internet. Leadership students from private and public schools commented for both an ideal and realistic perspective and stated:

> *The school where I teach is like a mustard seed plant. Like a plant, it must be nurtured and maintained. It has grown and produced many seeds (students) in many flowers (classrooms). (Public School Female).*
>
> *My school embodies the metaphor of the sun because we believe that God created the sun (Private School Female).*
>
> *Many times we are playing Russian Roulette, where we know that we do not have the infrastructure in place to educate our students, especially the low achievers (Public School Male).*
>
> *My school is a light in a sea of darkness. [Students] not only come to school to learn, the school also serves as a temporary outlet for them to forget their problems (Public School Female).*

Discussion, Findings and Results

Question #1 of this study asked: How do educational leadership students apply metaphors to describe the evolving team experience?

Findings indicated that there were similarities when teams were compared in the nine education leadership classes in regard to the evolving team process. The amount of tension that evolved among team members did not seem to directly affect the creativity of the team product. To reduce tensions, the instructor spent time laying a foundation of team learning that included: (a) introducing the team concepts of business and education theorists, (b) suggesting team guidelines, and (c) demonstrating the differences in students' learning patterns. It seemed that the more time the instructor spent laying the foundation for the project at the beginning of the team intervention, the less trouble team members had in developing the team project or interacting with team members. But even though results indicated a creative team product, it did not necessarily mean that team members were satisfied with the resulting team process that had evolved among its members. The metaphors that students applied were multiple and varied, and displayed (a) societal influences; (b) diverse learning patterns; and (c) previous team experiences.

Research Question One: Varied Metaphors Display Influences upon Students

The metaphors developed by the leadership students not surprisingly were multiple and varied. Metaphors included (a) food samples (i.e. cake, chocolate, coffee, cooked steak, egg, lemons, peas in a pod, peanut butter and jelly); (b) fluidity and bodies of water (i.e. a canal of water, heavy fog, rising tide, ocean, waterfall, waves); (c) designs and structures (i.e. dots, four-legged stool, hexagon, puzzle pieces, pillars, skyscrapers); (d) means of transportation and mechanical items (i.e. bicycle wheel, cargo ship, car, engine, horse, pendulum, rocket, roller-coaster, locomotive, train, virtual highway, and find tuned, well-oiled or productive machines); (e) sources of power, light, hear and energy (i.e. energiser battery, hot-fired colas, charcoal, chemistry, electrical circuit, laser beams, dynamic trio, power team); (f) naturalistic items (i.e. reed, rock, rocky start, sponge, tree); (g) animals, aquatic species and insects (i.e. beaver, bee, beehive, birds, geese, horse, school of fish, runts of a litter); (h) music and musical symbols (i.e. guitar, multi-movement symphony, song); (i) material examples (i.e. glue, rope, rubber-band, tapestry); (j) sports and physical activities (i.e. basketball, mountain climbing, sailing, softball, swimming); (k) families and culture (i.e. working and dysfunctional families, melting pot; one people), and (l) races and journeys (i.e. journey by horse, over a mountain, relay race).

Metaphors display various influences from society

Team members borrowed popular metaphors from the media (i.e. movies and television), made references to what was happening in society, or indicated influences from their distinct cultures. They wrote:

> *We are a line from Forest Gump ... this team is like a box of chocolates. Each one of us is different, but we each contribute to the whole (Female).*

> *Our team is like a box of chocolates. You put all the candy together, not knowing how it will taste and somehow it tastes good (Male).*

> *Our team is like the Jerry Seinfeld show. My team mate is Jerry, lower key than me. I am George; I fly off the handle and stress more. But we always work it out. She calms me (Female).*

> *I feel like we have a long road ahead of us much like Hillary Clinton's campaign team. We can see the end result, and we can do well, but there is a lot of work ahead of us, and a few obstacles (like time constraints) for us to overcome (Female).*

> *The Jamaican motto is out of many are one people. Out of the different ideas each of us brings, we will finally arrive at a consolidated presentation to express a unified position (Female).*

Metaphors demonstrate team members' learning patterns

There were metaphors that emerged over the span of the study that indicated that students were displaying their use-first or lead learning patterns. For example, students who led by sequence tended to enjoy the repetitiveness of the updates; they also repeated the same metaphors. A female student with a sequential lead first learning pattern repeated the metaphors of an ocean and a tapestry in various updates:

> *The ocean is a metaphor for this team because it is fluid, yet waves (and the undertow) pull and push one in directions that he/she may or may not want to go. Learning how to work with these forces to get a desired result will take some creative designing (Update 1).*

I still believe our team is like the ocean. The waves and currents can sweep you up, but one can navigate tough waters with know how (Update 3).

Weavers of a tapestry is the perfect metaphor for this week's update. The care and artistry that a weaver puts into his/her tapestry, such as choosing the right thread before placing it upon a loom, is similar to what we are doing (Update 4).

We are a finely woven tapestry. The threads have been woven, the fringe and final accessories have been added and the tapestry is complete. The end product can be seen as a whole beautiful piece that took many hours of dedication and effort into completing (Update 5).

Precise students were detailed in their descriptions. One female student wrote:

Earlier, I felt that the group was working as if the project was a relay race. There was this feeling that one needed to finish one piece at a particular time for the project to proceed (thanks to the sequential nature of people). But, although I have used it in previous [update], I am drawn towards using migrating geese as a descriptor again. Each member contributed to moving [us] towards the goal, with not just one person leading all the time. When one person faltered, one helped bring her back to the group. Progress did not stop, and the others joined upon recovery. We expressed how we liked what the other has done, and that is like geese honking to encourage the others. In the end, it was confluence that worked to help us achieve what we did, and the geese as exceptional examples for this.

Students whose leadership pattern indicated technical processing tended to apply their words sparingly.

For example, technical students briefly wrote:

Slow and steady wins the race. I feel this an appropriate for our team. I feel that the ideas we started have finally matured into an extraordinary collections of ideas (Female).

We are puzzle pieces finding their proper place. We started as individuals but then pulled together as one (Female).

I consider us the melting pot. We are all from different backgrounds and cultures, and we worked well together (Male).

Confluent students were unique in their creative metaphors. For example, one student stated in three separate updates:

> *Right now, at this point, I see us as an electrical circuit. There is a positive wire and a negative wire, and a ground wire. Separately, they each have their own charge, but when connected, they provide a unified power source. Right now [the members of my team] are 3 separate wires about to be twisted together (Update 1).*
>
> *My metaphor is an egg. An egg is comprised of several parts. Individually, each part can be useful for a purpose. The shell has been used for things like candy coating, the yolk for cooking, the whites for baking and for beauty products. Put together, they produce one product that has its use and is used by many. Each one can serve a purpose on its own, but together makes one excellent product (Update 2).*
>
> *Right now, I can see us as one those Ikea end tables for a TV stand. All the pieces are available; everything that is needed is already in place to form a piece of furniture. Now comes the tedious endeavour of placing those bolts and dowels and plastic nail hole covers where they need to go in order to have a finished, complete product (Update 4).*

Metaphors reveal previous team experiences and hesitation with teams

As the study progressed, there were students who indicated previous experiences working on teams either in a work-related school setting or a university classroom environment. A student's familiarity with working on teams seemed to give them insight (or undue tension) when confronted with working on a team. Students were wary beforehand that problems might develop. Leadership students wrote:

> *Working with my team is like taking a ride in the country and every so often coming across a horse in the roadway (Female).*
>
> *I feel that we are like a waterfall. We start out strong, but as we hit the different levels, we slow down for a brief time and then we get strong again. I think that, as we get stronger, we will work harder and better. At the end, we pool together to create the pond at the bottom (Female).*

> *Even though we work well together, I feel that our journey together is like a mountain journey with ups and downs (Female).*

Question #2 of this study asked: Can the use of metaphors become a diagnostic tool to assess team viability in regard to team strengths and weaknesses?

Findings indicted that the use of metaphors could be used to diagnose a team's viability in regard to the team's strengths and weaknesses. Team strengths (i.e. a focus on purpose and goals, collective energy, supportive interactions of tea members, team identity and team learning); and weaknesses (i.e. confusion over a team's purpose and goals, lack of communication, team tensions and underlying problems, and feelings of disappointment or dissatisfaction with team members) outlined by various team theorists (Bolman & Deal, 1997; Katzenbach & Smith, 2003; Kline, 1999; Kling, 2000; Pacanowsky, 1995; Pearce & Conger, 2003; Polzer, 2003; Senge, 2006; Thompson, 2000) were apparent in this study. Strengths and weaknesses were illustrated metaphorically in regard to various team characteristics.

Research Question Two: Team Strengths and Weaknesses Are Revealed

Throughout this study, students continuously revealed both team strengths and weaknesses in their metaphoric updates. By systematically monitoring the teams, the instructor and action-researcher was able to assess the viability of the teams in accordance with the recommendations of team theorists (Bolman & Deal, 1997; Katzenbach & Smith, 2003; Kline, 1999; Kling, 2000; Pacanowsky, 1995; Pearce & Conger, 2003; Polzer, 2003; Senge, 2006; Thompson, 2000), and decide when instructional coaching was necessary. Various team phases evolved that included: (a) creation of a team's purpose, focus and energy; (b) indications of team interaction and human complexity; (c) fostering team commitment and identification; (d) illustrating team performance and team learning; and (e) developing teamwork and building relationships.

A team's purpose creates a team focus and creates team energy

At the initial meeting of team members and throughout a team's development process, students stated that they needed to focus primarily on their team's purpose or goals. For example, students indicated team strengths and weaknesses in regard to maintaining a team's purpose or goals in the following statements:

> *We are a bicycle wheel; each one of us come together like the spokes in a wheel connected by one goal (the hub) to complete the project. We work independently but when we come together we move together (Male).*

> *We were like a train on the right track. Together we see the goals and we are on the task working towards them (Female).*

> *At this time, I feel the team is like a school of fish swimming together towards a goal (Female).*

But students were sometime confused about the purpose of a team especially if they initially listed too many goals. If team members were not focused on a single purpose, energy was dissipated, time was wasted and team tensions developed (Kline, 1999; Kling, 2000; Senge, 2006). Leadership students stated:

> *Chaos is hitting our team (Female).*
> *This team seems to be a mission impossible (Female).*
> *I never know what's going on; it's hit or miss with this team (Male).*

A team's energy was described directly and indirectly in metaphoric language.

Sometimes, it was explicitly referred to in the initial period of team development as students began to interact with one another, but energy and movement were also referred to as a team evolved. Leadership students declared:

> *Our team as a team is mostly energised, but can always use more life to the battery since we are all dealing with other stresses in our other classes and/or our personal lives (Female).*

> *We were like a locomotive. We got off to a slow start but, once we finally got going, we continued moving quickly until we arrived at our stop (Female).*

In some cases, if students had prior commitments or could not make team meetings, the other students moved ahead without them, and they seemed to be alienated from the communication process. Statements were made by the following students conveyed that they were not part of an open and equitable communication process on their teams. When group members are not interacting and communicating with one another, it is difficult to maintain a collective energy (Senge, 2006). Leadership students claimed:

> *I would say we are oil and water, regardless of what efforts we make to work together, it is extremely difficult (Female).*
>
> *The only analogy that comes to mind is a basketball team. There are five members on the team but two have fouled out, and the three that are left have to cover everyone (Female).*

Team interaction and human complexity is displayed in teams.
Nevertheless at times, conflicting messages also appeared indicating both the complexity of human beings, and the differences among them regarding their expectations, perceptions and assessments of their team. For example, team members on a 2-member partnership team asked to meet with the instructor individually (and privately). Both assessed that they were having problems. The male student stated:

> *I think there may be some problems; can we talk?*
> *His female partner stated, "Please, let's talk," and added:*
> *I am alone. Maybe I am a wimp and not asserting myself [my e-mails and telephone calls sometimes are returned and sometimes not] ... Maybe, I am exaggerating; then again, maybe not...*

Table 11.1 Asking for Support from the Instructor

He said	She said
[We are] a well-oiled machine. I have no regrets, and no worries (Update 1)	[We are] hot fired coals on a grill. Waiting to heat up something.
We are getting ready to fire up the rockets. (Update 2)	We are charcoal to a grill that can light any fire and cook a great meal.
I think there may be some problems; can we talk? (Update 3)	Please, let's talk.

The instructor met with each team member privately, and made suggestions regarding their work together. She suggested that their problems might be traced to their different expectations regarding the team's goals, as well as the differences in their learning patterns. She led by a learning pattern that was high in precision (she wanted to meet often to work out the details of their project), while he led by a technical processing pattern (he felt frequent interaction was not necessary). She was heavy on detail, while he filled in the details sparingly. After the instructor met with each individual separately, the next update (i.e. Update 4) was positive for both. Each wrote:

Table 11.2 Revealing Differences in Their Learning Patterns

His Statement	Her Statement
[We] are doing well. We have almost finished the paper. We work together like two gears in a productive machine.	We're the antibodies of the common cold. This means we have what it takes to get rid of any problem. We're keeping our eyes on the prize… I am going with the flow as long as it is a flow and not a drought. I also feel too that, if we met more often, we could finish quicker. I think sometimes it might be helpful for my learning pattern if my partner would respond to my e-mails. There had been sometimes when I would e-mail and he wouldn't respond. I think I took it personally like you! But I have come to the realisation that it is n't that serious, and when we get together we create beautiful music. He always makes up for any mistakes by working hard and letting me know he understands… Our [recent] meetings have been successful.

The final reflection and assessment on the team experience (Update 5) revealed:

Table 11.3 A Final Reflection

He Wrote	She Wrote
Our time together was smooth sailing. We arrived at our destination, and had a nice time travelling. But, we did not, however, break any records.	We made beautiful music together.

Both students assessed their teams differently, but the end result was positive in regard to their interaction, respect for one another and their product outcome. It takes effort on the part of all team members to get a team's energy moving in a unified direction so that team members identify with their teams share leadership of their teams (Kline, 1999; Pearce & Conger, 2003; Polzer, 2003; Senge, 2006). To prevent team problems, Senge (2006) recommends adopting a system approach to teams; this approach focuses on the team tasks to be performed, but also interacting closely with people performing the tasks.

Team commitment fosters team identification

The following metaphors described the work involved in getting all team members to move in unison toward their common goals and foster team identification (Kline, 1999; Senge, 2006). Some of these metaphors described machinery or mechanistic tasks. But within many of these mechanistic metaphors, movement, energy and interaction were imbedded in the descriptions. Leadership students noted:

> *I think we are cargo shops. We were all working at different speeds and on different routes but we all managed to get to the same port to deliver our packages (Female).*

> *I keep going back to the well oiled machine metaphor; we are a "virtual" or "digital" machine! We are a true team because we care about the project and each other (Male).*

As the team process evolved, students also described their team members in humanistic terms. They explained the intricacies of their teams as reliance widened from an individual outlook to supportive interactions of members working in a unified commitment towards the team (Bolman & Deal, 1997); Katzenbach & Smith (2003) indicated things were currently "going well," and a team identity was starting to evolve. Leadership students stated:

> *We are people climbing a mountain; each person needing to be willing to take risks and push higher for the team (Female).*

> *We are like a softball team on a winning streak. The runs just keep on coming. We're near the end of the season with the playoffs this weekend and the championship next week (Female).*

> *We are more confident like experienced sailors, learning it is possible and very likely that we can and will get to our team destination (Female).*

Students also described their team members in naturalistic terms as they worked collaboratively toward an interactive and unified tea identity. Students commented:

> *I would compare us to a beehive. We each accomplished [a] task and then meet at the "hive" to share our results and work collaboratively (Female).*

> *Our team is like a reed. We appear fragile and insubstantial, but we are resilient and can weather the storm (Female).*
>
> *If a goose falls out of formation, it suddenly feels the resistance of trying to go it alone, and quickly gets back into formation to take advantage of the bird with the power who is right in front (Female).*
>
> *We are like a school of fish swimming toward the goal, but now finding food (Female).*
>
> *The fog is lifting and we are beginning to see the way, hooray! (Female).*

Team performance and team learning

While team formations are valued for their creativity and problem-solving potential (Bolman & Deal, 1998; Kline, 1999; Leavitt & Lipman-Blumen, 1995; Polzer, 2003; Senge, 2006; Thompson, 2000), not at all team ventures are positive experiences. Not all teams succeed according to team members' expectations. Theorists have recommended that team members become accountable to the team product to solidify team identity (Katzenbach & Smith, 2003). Unfortunately, students have time constraints imposed upon them personally and professionally which affect the team performance and learning as a unified team. Some teams experienced problems that centred on the lack of communication and interaction with some team members. There were team members that did not seem committed to the team because they were experiencing personal or professional problems. A student wrote:

> *We are the runts... meaning a mish mash of differences. We seem like the leftovers. We are all over the place doing other things. We don't have much left to give to the team (Female).*

Teams that were "successful" performance-wise tended to communicate with one another often, and followed the advice of team theorists and the instructor's guidelines. The interaction of team members as part of a positive interconnected unified system was described. Leadership students commented on their unity and wholeness:

> *When you eat peanut butter and jelly separately, you have 2 enjoyable snacks. But when you put the 2 together, you get a better and even more enjoyable snack (Female).*

> *Our team is like a rope with each strand entwined and adding strength to that of the others. We seem to be getting more entwined and stronger (Female).*

Unfortunately, on some teams, students learned about the fragility of relationship-building and the unpredictability of the team process. Students learned that relationship-building is hard work and everyone does not always contribute as expected. When the team did not meet a team member's expectations, disappointment and dissatisfaction seemed to be a secondary by-product of the team experience. Team members learned about the team process, which added to their knowledge base, but they did not always experience learning as a unified team. The team process did not always meet expectations for team learning or unified learning outcomes. Sometimes, this happened even when the team performance (i.e. team presentation/paper) was well received and highly evaluated. For example, a student on a highly rated team expressed his disappointment:

> *Our team had a solid base with which to start the project, like a strong horse in a carousel ride... The carousel ride began. Illuminated by coloured lights; they smiled...Stretch! Stretch! The brass ring approaches! Got it! Got it! One remains, faintly touched as the ride and the music slow.... We handled the ups and downs of the project, remembering never to stop laughing and keeping it fun. However, as our work neared completion, some perspectives shifted, and it can be said not all members truly did a good job. I feel safe saying we were a high functioning group with certain members displaying true leadership qualities and others not so (Male).*

Teamwork and building team relationships

When the instructor began working with the educational leadership teams, updates on a team's progress were requested twice during the experience (comparable to a pre and post assessment). By asking for updates throughout the team process, the instructor and action-researcher was able to monitor the teams and gain a multiple (and comprehensive) perspective regarding the evolution of each team. The instructor asked for team updates starting two weeks after the teams were formed and then continuing weekly or biweekly depending on the semester's length (i.e. 8-weeks or 15-weeks) for a total of 5 updates. The number of weeks in a semester did not seem to affect a team's performance, commitment, team identification, teamwork or propensity to build team relationships.

There were successes (and tensions) whether the teams were formulated in an 8-week or 15-week semester. A comparison of metaphoric thinking among teams and classes widened the instructor's understanding of the team process. Whether the team experience was categorised as "positive" or "tense", students learned from the team experience. They learned what to do and what not to do on a team, which added to their knowledge about teams and building relationships on teams. They also learned about fostering professional and respectful interactions with others. Two leadership students on the same team stated:

> *We worked like the ocean. We came on strong, and went out calmly. We were able to roll with the waves (Female).*
>
> *Our team started out as a person trying to climb a mountain with their teammate by their side, hitting rough spots along the way, but eventually making it to the top after learning tricks and new ways to complete our team goals (Female).*

When problems were revealed in metaphoric updates, the instructor asked team members to reflect on: (a) "what happened?" (b) "what have you done (or not done) that may have contributed to this team's tensions or problems?" and (c) "what can you do as a team member to fix the problem?" Based on their reflections, students devised solutions to their team problems. They realised that teamwork and relationship-building is hard work. Moreover, they took responsibility and ownership in solving their team problems. The application and utilisation of metaphors, subsequently enabled the instructor and action-researcher to revise an action-plan (or syllabus) that expanded the use of metaphors from an instructional technique (Greenlee, 2007) to a diagnostic tool. The instructor was able to assess a team's viability in regard to its strengths and weaknesses and initiate coaching when necessary (Bolton, 1999; O'Neil & Hopkins, 2002). The instructor and the students learned from the team experience that evolved, which added to their knowledge base concerning teams.

The following is an example of positive interactions on a team from a female team member in regard to four of her five updates.

> *Our team is like a song with a written chorus and a bridge, but the verse is still a work in progress (Update 1).*
>
> *We are like a guitar that has been properly strung but is still being finely tuned. (Note: I figured I would continue with the music metaphor) (Update 2).*
>
> *A symphony is not constructed overnight. It takes a great deal of time, commitment and love to get the symphony just right. (Update 4).*
>
> *We were a multi-movement symphony and the music was beautiful (Update 5).*

Conclusions and Recommendations

In this study, students in nine educational leadership courses at a private university were presented an opportunity to interact as a member of a diverse learning team. Teams (n=26) were compared and analysed by the instructor and action-researcher. By receiving updates from 89 team members, the instructor was able to devise multiple perspectives of what was happening on the teams. Moreover, the instructor was able to refine and widen the utilisation of metaphors from a pedagogical or instructional technique to a diagnostic tool, which could alert the instructor to team tensions or emerging team problems.

When multiple perspectives were presented by students as the team process evolved, the diagnostic process became fine-tuned. It no longer appeared one-sided (Beavis & Thomas, 1996) but instead provided a multiple and broader perspective. The instructor expanded her instructional techniques by monitoring the teams and guiding students towards solving their team problems, and taking ownership of their teams (and the problems that were evolving on them). The instructor and students applied the action-research process of rethinking, reflecting, discussing, re-planning, understanding and learning (Mills, 2003; p. 16).

While the application and analysis of metaphors widened instructional understanding, the instructor deduced that students also learned within their teams whether the experience was categorised as positive or tense. Students learned about the unpredictability and disappointment of building team relationships. They also learned about the diversity of team members (in regard to distinct cultures and diverse learning patterns) as well as the satisfaction derived from building a professional team product. Metaphoric updates, which were continuous throughout the evolving team process, allowed the instructor to:

1. Gain non-intrusive access to teams; the metaphor itself became the common reference for entrance.
2. Monitor teams for indicators of team strengths.
3. Identify problematic situations in teams early on.
4. Assess teams based on a broader perspective from all team members.
5. Apply coaching techniques when the team situation warranted it.

There were no differences noted in regard to team strengths or weaknesses when the variable of race, ethnicity or gender was examined. Nor were differences noted when administrator or teachers (i.e. aspiring administrators) from private or public schools working in teams were compared. Team tensions and positive team interactions were displayed throughout a team intervention regardless of team members' diverse physical or job-related characteristics. This study showed that students were influenced by their previous team experiences, which seemed to affect their initial propensity or hesitancy towards working on a team in this study. Teams ranged in size from two members, and in this regard both team strengths and team weaknesses were displayed regardless of the size of a team. As indicated in regard to the "He Said/She Said" example in this study, differences in team members' learning patterns and their assumptions and expectations regarding a team's development did seem to contribute to various team tensions. As Mills (2003) states, human beings "are very complicated organisms, and compared with chemicals . . .their behaviour can be disorderly and fairly unpredictable" (p. 3).

Lakoff and Johnson (1980) claimed that most thought was metaphorical, and in this study, students in diverse learning teams illustrated that they were influenced by various societal influences in their metaphoric descriptions, such as their distinct cultures and the media. Perhaps, a follow-up study could explore these influences and experiences, and how they affect students' assumptions, expectations and preconceptions about teams. Students were also influenced by their previous team experiences; another follow-up study might explore how previous team experiences, or the lack of them, may affect professional relationship-building and task development on teams.

Research Significance

This study may broaden team understanding and influence the development of additional action-research team studies. In so doing, educational leadership instructors may be able to improve their team instructional models. The use of metaphor may be applied as an instructional technique as well as a tool for diagnosis of team tensions or problems, which may allow leadership instructors to gain access to teams and apply supportive coaching when appropriate so that team learning and professional relationship-building may be improved.

References

Beavis, A.K., & Thomas, A.R. (1996). Metaphors as storehouses of expectation. *Journal of Educational Administration*, 37 (1), 80-89.

Bolman, L.G., & Deal, T.E. (1997). *Reframing Organizations* . San Francisco, CA: Jossey-Bass.

Bogdan, R.,& Biklen, S.K. (1992). *Qualitative research for education: An introduction to theory and methods*. Needham Heights, MA: Allyn and Bacon.

Bolton, M.K. (1999). The role of coaching in student teams. *Journal of Management Education*, 23, (3), 233-251.

Cherry, D., & Spiegel, J. (2006). *Leadership, myth, & metaphor*. California: Corwin Press.

Couger, J. D. (1995). *Creative problem solving and opportunity Finding*. Danvers, MA: Boyd & Fraser Publishing Company.

Deal, T.E., & Peterson, K.D. (1999). *Shaping school culture: The heart of leadership* . San Francisco, CA: Jossey-Bass, Publishers.

Greenlee, B.J. (2007). Metaphor as an instructional tool to develop metacognition in educational leadership students. In L.K. Lemasters & R. Papa (Eds.), *NCPEA 2007 Yearbook*. At the tipping point: Navigating the course for the preparation of educational administration (pp. 339-350). Lancaster, Pennsylvania: Pro> Active Publications.

Hoyle, J.R., Bjork, L.G., Collier, V., Glass, T. (2005). *The superintendent as CEO*. Thousand Oaks, CA: Corwin Press.

Ivie, S. D. (2003). *On the Wings of Metaphor*. San Francisco, CA: Caddo Gap Press.

Johnston, C.A. (1996). *Unlocking the will to learn*. Thousand Oaks, CA: Corwin Press, Inc.

Johnston, C.A. (1998). *Let me learn*. Thousand Oaks, CA: Corwin Press, Inc.

Johnston, C. A. & Dainton, G.R. (1997a). *Learning connections inventory*. Pittsgrove, NJ; Let Me Learn, Inc.

Johnston, C.A. & Dainton, G. R. (1997b). *Learning Combination Inventory Users' Manual*. Pittsbrove, NJ: Let Me Learn, Inc.

Katzenbach, J. R., & Smith, D.K. (2003). *The Wisdom of Teams*. Boston, MA: Harper Business.

Kemp, E. (1999). Metaphor as a tool for evaluation. *Assessment & Evaluation in Higher Education*, 24 (1), 81-90.

Kline, T. (1999). *Remaking Teams: The Revolutionary Research-Based Guide that puts Theory into Practice*. San Francisco, CA: Jossey-Bass, Inc.

Kling, J. (2000, July). Tension in teams. *Harvard Management Communication Letter.* Harvard Business School Publishing, Article reprint #C0007A.

Lako_, G.,& Johnson, M. (1980). *Metaphors we live by*. Illinois: University of Chicago Press.

Leavitt, H., & Lipman-Blumen, J. (1995, June). Hot Groups. *Harvard Business Review*, 73 (4), 109-116.

Let Me Learn Website (http://www.letmelearn.org). Retrieved from the web, January 2007.

Lipnack, J., & Stamps, J. (1997). *Virtual Teams*. New York: John Wiley & Sons, Inc.

Marcellino, P. A.(2005a). Bridging disciplines and setting up diverse teams. *Journal of Behavioral and Applied Management* 6 (3), 167-210.

Marcellino, P.A. (2005b). Learning from contrasting teams. *Academic Exchange Quarterly*, 9 (2), 230-234.

Marcellino, P.A. (2006). A teambuilding model for the educational leadership Classroom. In F. Dembowski & L. Lemasters (Eds.), *NCPEA 2006 yearbook - Unbridled spirit: Best practices in educational administration* (pp. 216-225). Lancaster, Pennsylvania: Pro> Active Publications.

Marcellino, P.A. (2007). Reframing metaphors in business and education teams. *Journal of Educational Administration*, 45 (3), 289-314.

Marcellino, P.A., Eichenholtz, S., Sosin, A.A. (2007). Applying Learning Pattern Theory to Electronic Portfolio Development: Navigating On-going Programmatic Evaluation. In Lemasters, L.K. & Papa, R. (Eds.). *At the Tipping Point: Navigating the Course for the Preparation of Educational Administrators.* (pp. 145-155). Lancaster, PA: DEStech Publications, Inc..

Miles, M.B., & Huberman, A. M. (1994). *Qualitative Data Analysis*. Thousand Oaks, CA: Sage Publications.

Mills, G.E. (2003). *Action research: A guide for the teacher researcher*. Upper Saddle River, NJ: Prentice Hall, Inc.

Norton, M.S., Webb, L.D., Dlugosh, L.L., & Sybouts, W. (1996). *The school superintendency: New responsibilities new leadership*. Upper Saddle River, NJ: Allan & Bacon.

O'Neil, D. A., & Hopkins, M. M. (2002). The teacher as coach approach: Pedagogical choices for management educators. *Journal of Management Education*, 26 (4), 402-414.

Osterman, K.F., & Kottkamp, R.B. (2004). *Reactive Practice for Educators: Professional Development to Improve Student Learning*. Newbury Park, CA: Corwin Press, Inc.

Pacanowsky, M.(1995).Team tools for wicked problems. *Organizational Dynamics*, 23 (3), 36-49.

Pearce, C. L., & Conger, J. A. (2003). *Shared Leadership: Reframing the Hows and Whys of Leadership*. Thousand Oaks, CA: Sage Publications.

Pink, D. (2005). *A Whole New Mind: Moving from the Information Age to the Conceptual Age*. NY: Riverhead Books.

Polzer, J. T. (2003 February). *Leading Teams* . Harvard Business School Publishing. Article Reprint #9-403-094.

Senge, P.M. (2006). *The Fifth Discipline: The Art and Practice of the Learning Organization*. New York: Currency Doubleday.

Thompson, L. (2000). *Making the Team: A Guide for Managers*. Upper Saddle River, NJ: Prentice Hall, Inc.

Topping, K. (1998). Peer assessment between students in colleges and universities. *Review of Educational Research*, 68 (3), 249-276.

PART III

The Let Me Learn Process Applied to Higher Education and Academic Advising

• CHAPTER 12 •

The Power of Personalised Learning Patterns in Academic Advising

Christine Johnston and Betsy McCalla-Wriggins

The goal of both advising and teaching is to support students as they learn. Defining what we want students to learn is often discussed in conversations on accountability, assessment and learning outcomes. "We are all, as colleagues and educators, now accountable to students and society for identifying and achieving essential student learning outcomes and for making transformative education possible and accessible for all students" (Keeling, 2004, p.1).

If we are to look at learning as the goal of teaching through the advising process, then this question must be asked, "What is learning and how does learning occur?" For the purpose of this chapter, learning will be defined as "the ability of individuals to take in the world of stimuli which surrounds them, to make sense of it and to respond to it in appropriate ways" (C. Johnston, personal communication, July 13, 2003).

By understanding how students learn, we can structure our interactions to help students make sense of the world around them, and significantly increase the opportunities for learning to occur. We can also empower them to take responsibility for their own learning which is fundamental to the development of intentional lifelong learners in the 21st century (AAC&U, 2002).

This chapter was first published in Hunter, M. S., McCalla-Wriggins, B.& White, E. R. (Eds.), Academic advising: New insights for teaching and learning in the first year (Monograph No. 46 [National Resource Center]; Monograph No. 14 [NACADA], pp. 41-57). Columbia, SC: University of South Carolina, National Resource Center for The First-Year Experience and Students in Transition. Reprinted with permission. All rights reserved.

This chapter will discuss an advanced learning process, entitled aptly, the Let Me Learn Process, which identifies learning patterns. Practical suggestions of how advisors can use this process with first-year students will be described and evidence will be presented to demonstrate the power of this advanced learning process. Finally, recommendations are presented about how to incorporate this process into initiatives for first-year college students.

An Advanced Learning Process

Students receive and act on information based on the combinations of their learning patterns. Below is an example of a common task for all students registering for classes, described in four ways that reflect different learning patterns. Advisors should read through each version and identify which approach resonates with them.

One set of instructions explains registration in a step-by-step fashion, organising and numbering all items that need to be completed. Another set of instructions explains the process in a very exact, specific, detailed manner. A third approach would have the advisor showing the student a web page with links to the Advisement Centre and Registrar's page. Still another explanation would simply tell the student to follow the directions on the web to register. Each approach is equally valid, but students may prefer one method to another. When directions are offered in a less preferred manner, then there is a greater probability that students will begin the college experience with some degree of anxiety. Their reaction may be, "If I can't even understand how to register for classes, how will I ever be successful in a college-level course?"

Individuals usually present information in the manner in which they prefer to receive it. It is helpful to examine and reflect on how advising information is presented in first-year orientation programs, as well as in other first-year initiatives on campus. Which approach is most often used? Is that approach the one understood by most students? This chapter will present information that will assist advisors in finding the answers to these questions.

In the 90s, Johnston began exploring how to give students and educators information about their learning processes along with a common vocabulary so that they could communicate their learning experiences more effectively. In order to capture the degree to which individuals use their learning processes, Johnston and Dainton developed The Learning Connections Inventory (LCI), a 28-item Likert-style (from 1 never to 5 always) instrument that reports the degree to which individuals use each of the four learning patterns. Johnston and Dainton's (2005) development of the instrument (tested on 9,000 children and adults) revealed that each learner uses (a) sequence, (b) precision, (c) technical reasoning, and (d) confluence. The LCI reports the patterns as four different scale scores, each representing the degree to which a person uses a learning pattern first, as needed, or avoids its use altogether. If a person's learning pattern is at the "use-first" level, the individual responds instinctively and automatically. If scores are at the "as-needed" level, the individual uses these patterns when the situation calls for that particular approach. If the scores of a pattern are at the "avoid" level, this means that the individual does not naturally draw on this approach and normally feels some anxiety if those patterns of behaviour are required for a task.

There is no genetic, gender, or cultural predisposition to any particular set of learning patterns. It is important to understand that working within each of the patterned processes are three distinct operations: (a) cognition (thinking), (b) conation (doing), and (c) affectation (feelings). For a complete explanation of this, refer to Johnston's *Unlocking the Will to Learn* (1996) and *Let Me Learn* (1998).

Learning Patterns

The following descriptions briefly explain the thinking, behaviours, and feelings associated with each of the patterns. However, this relatively simple bulleted list should not belie the complexity of the interaction of the patterned processes within the learner.

The *sequential pattern* is that aspect of learning that needs to follow step-by-step directions, organise and plan work carefully, and complete the assignment free from interruptions. At the use-first level, sequence involves the following thoughts, actions, and feelings:

- I want clear directions.
- I want time to do my work neatly.
- I like to do my work from beginning to end.
- I don't want to change direction after I have begun a project.
- I want to know if I am meeting the instructor's or my boss's or my teammates' expectations.

Learners who avoid sequence do not value directions, and neither plan nor live by a schedule. They also find following directions confusing and, maybe, even frustrating.

The *precise pattern* is that aspect of learning that needs to process detailed information carefully and accurately, take detailed notes, know exact answers, and write in a highly specific manner. Precise learners have the following thoughts, actions, and feelings:

- I want complete and thorough explanations.
- I ask a lot of questions.
- I like to answer questions.
- I need to be accurate and correct.
- I like many details.
- I like test results.
- I seek written documentation of my success.
- Words are my friends.

Students, who avoid precision, rarely read for pleasure and do not attend to details. Memorisation for these students is tedious and a waste of time.

The *technical reasoning pattern* requires practical application and relevance to any learning task. It is the non-verbal process, which sees the mechanics of operations, the function of pieces, and needs to work hands on, unencumbered by paper-and-pencil requirements. The technical reasoning pattern is not reflective of the technology industry. It is that component of the learning pattern that seeks practical application, solves problems, and understands how mechanisms operate. Technical reasoning provides thoughts, actions, and feelings similar to those described below.

- I don't like to write things down.
- I need to see the purpose of what I am doing.
- I like to work by myself.
- I like to figure things out.
- I don't like to use a lot of words.
- I look for relevance and practicality.
- If it's broken, I'll fix it.

Students who avoid technical reasoning do not take things apart to understand how they work; they hire others to do building and repair work. Problem-solving is done with others, not alone.

The *confluent pattern* of learning is that aspect that avoids conventional approaches, seeks unique ways to complete any learning task, begins work before all directions are given, takes risks, and allows for failure and starting again. The learning processes of confluence involve the following thoughts, actions, and feelings:

- I don't like doing the same thing over and over again.
- I see situations very differently than others do.
- I like to do things my own way.
- I don't like following the rules.
- I enjoy using my imagination.

For students who avoid confluence, taking risks seems foolish and wasteful to them. They would rather not make mistakes than have to learn from them. They are more careful and cautious in making life decisions.

A more detailed chart that describes how learners think, feel, behave and speak based on a use-first-and-avoid pattern is included in Tables 1 and 2.

Bridge learners are those who use all patterns as needed without a clear use-first level preference. They learn from listening to others and interacting with them. Sometimes, they feel like a jack of all trades and a master of none, but they also find they can blend in, pitch in, and help make things happen as a contributing member of any group. They lead from the middle by encouraging others rather than taking charge of a situation.

If three or more patterns are employed at the use-first level, the students are *strong-willed learners*. They prefer to work alone so that they can control the plan, the ideas, the talk, the decisions, the process and the outcomes. They lead from out in front and, sometimes, others find it hard to follow their lead.

Tools to Support the Let Me Learn Process

Advisors may find that the students with whom they have the greatest rapport may very well have learning patterns similar to their own. Advisors should consider these additional questions: How do advisors communicate with their students, both verbally and in writing? What learning patterns do students use first? Are students in specific majors more likely to have certain learning patterns? What could happen when students select a major or area of study that draws on a learning pattern that they avoid? The Let Me Learn (LML) process provides tools to help advisors find the answers to the above questions.

Learning Connections Inventory

The Learning Connections Inventory (LCI) provides the most specific information on how advisors and their students process information through the four learning patterns. While the paper version of the LCI needs to be validated by trained staff, the online version self-validates and generates a report geared specifically to the individual. More specific information about the LCI is available at www.lcrinfo.com. However, advisors can begin to implement the concepts that support this process through other methods as well. For example, advisors can identify students' learning preferences from reviewing their class notes and by observing their behaviour in a group. Responses to and types of questions asked (or not asked) in an advising session can also give some indication of their use-first patterns as well as what they avoid (see Tables 12.1 and

12.2). With this information, an advisor can change the way he or she responds to the student to be more effective. Advisors can also help students look at classroom assignments to determine what the instructor is requiring and then work with students to develop strategies so they can appropriately respond to those requirements.

Advising Strategies Using the LML Process

At the beginning of this chapter, four examples of directions that might be given to students about registration were listed. The different directions are read, heard and understood through the different learning processes of your students. See Table 12.3 for suggestions on how to communicate more effectively with students in advising sessions based on their learning preferences.

Table 12.1 Indicators of Students' Use-First Levels

How I think	How I do things	How I feel	What I might say
SEQUENTIAL			
I organise information.	I make lists.	I thrive on consistency and dependability.	Could I see an example?
I mentally categorise data.	I organise.	I need things to be tidy and organised.	I need more time to double-check my work.
I break down tasks into steps.	I plan first, then act.	I feel frustrated when the game plan keeps changing.	Could we review those directions?
		I feel frustrated when I'm rushed.	What are my priorities?
PRECISE			
I research information.	I challenge statements and ideas that I doubt.	I thrive on knowledge.	I need more information.
I ask lots of questions.	I prove I am right.	I feel good when I am correct.	Let me write up the answer to that.
I always want to know more.	I document my research and findings.	I feel frustrated when incorrect information is accepted as valid.	I'm currently reading a book ...
	I write things down.	I feel frustrated when people do not share information.	Did you know that ...?
			Actually ...

How I think	How I do things	How I feel	What I might say
		TECHNICAL	
I seek concrete relevance – what does this mean in the real world?	I get my hands on it.	I enjoy knowing how things work.	I can do it myself!
I only want as much information as I need – nothing extraneous.	I tinker.	I feel self-sufficient.	Let me show you how ...
How does this work?	I solve the problem.	I feel frustrated when the task has no real-world relevance.	I don't want to read a book about it, I want to do it!
	I do!	I do not feel the need to share my thoughts.	How can I fix this?
			I could use a little space ...
		CONFLUENT	
I think outside the box.	I take risks.	I enjoy improvisation.	Why do we have to do it that way?
I brainstorm.	I am not afraid to fail.	I feel comfortable with failure.	Can we try this?
I make obscure connections.	I try new things.	I feel frustrated by people who are not open to new ideas.	Let's bend the rules.
Unique ideas.	I might start things and not finish them.	I feel frustrated by repetition.	I have an idea ...
	I will start a task first, then ask for directions.		I have another idea ...

Table 12.2 Indicators of Students' Avoid Levels

How I think	How I do things	How I feel	What I might say
SEQUENTIAL			
These directions make no sense!	Avoid direction; avoid practice.	Jumbled	Do I have to do it again?
I did this before.	Can't get the pieces in order.	Scattered	Why do I have to follow directions?
Why repeat it?	Ignore table of contents, indexes, and syllabi.	Out of synch	Does it matter what we do first?
Why can't I just jump in?	Leave the task incomplete.	Untethered/unfettered	Has anybody seen….?
		Unanchored	
PRECISE			
Do I have to read all of this?	Don't have specific answers.	Overwhelmed when confronted with details.	Don't expect me to know names and dates!
How am I going to remember all of this?	Avoid debate.	Fearful of looking stupid.	Stop asking me so many questions!
Who cares about all this stuff?	Skim instead of read.	Angry at not having the "one right answer!"	Does it matter?
	Take few notes.		I'm not stupid!
TECHNICAL			
Why should I care how this works?	Avoid using tools or instruments. Talk about it instead of doing it.	Inept	If it is broken, throw it away!
Somebody has to help me figure this out!	Rely on the directions to lead me to the solution.	Fearful of breaking the object, tool or instrument.	I'm an educated person; I should be able to do this!
Why do I have to make something? Why can't I just talk or write about it?		Uncomfortable with tools; very comfortable with my words and thoughts.	I don't care how it *runs*; I just want it to *run*!
CONFLUENT			
Where is this headed?	Don't take social risks.	Unsettled	Let's stay focused!
Where is the focus?	Complete one task at a time.	Chaotic	Where did that idea come from?
What do you mean, imagine?	Avoid improvising.	No more change or surprises, please!	Now what?
	Seek parameters.		This is out of control!

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Table 12.3 Advising Strategies Using the Let Me Learn Process

For highly sequential students	For highly precise students	For highly technical students	For highly confluent students
	ADVISORS CAN …		
Make sure that all directions are clearly stated step-by-step.	Make sure that directions contain detailed information.	Make sure that students understand the real-life consequences of not following up on the advisement tasks.	Anticipate that some students will avoid reading or following directions; help them to understand when it is optional or imperative for them to do so.
Provide a model or sample.	Provide additional references or URLs for independent information gathering.	When possible, demonstrate the practical application of the material provided.	Make sure that the students had opportunities for risk-taking.
Expect to repeat the directions more than once.	Anticipate requests for detailed information about directions.	Provide opportunities to learn and to be assessed through hands-on activities and/or problem solving.	Understand that some students will profit from making mistakes.
Allow adequate time for students to fill out forms.	Anticipate requests for detailed explanations of concepts, procedures and narratives.	Anticipate that some students would prefer to figure out their career path and courses through trial and error.	Negotiate alternative ways for completing advisement tasks.
Remain on topic.	Expect to observe the student writing down everything that is said during the session.	Anticipate that some students will take minimal notes and will need coaching to meet your expectation for completing required paper work.	Anticipate that some students will have difficulty completing repetitive tasks.
Use numbered sequences when listing items in a sequential order.	Expect to help students balance a compulsion to gather information against the requirements of meeting deadlines.	Be practical. Couch your questions so that they do not appear to be overly personal. Allow the student his/her personal space. Get to the point of the advisement session. Make the time worthwhile. The students need to leave the session with practical advice and insights.	Anticipate that some students will generate ideas and grasp the larger picture, but may be perceived as not pulling their own weight with the tedious task of follow-up work and meeting deadlines.

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Understanding Assignments

When students and faculty have similar learning patterns, students will understand the assignments and be able to complete them in ways that are acceptable to the instructor. However, this is not always the case. There may be times when students are stymied by an instructor's projects and find themselves frustrated because the assignment is unclear to them so that they have difficulty meeting the expectations of the instructor. Most importantly, not understanding a student's learning preference is not just a problem for the student. The following comments reflect this situation. Students say, "Dr. X is a lousy teacher/ advisor. I just cannot understand what he wants or expects me to do." Instructors/advisors would comment about the same students, "They just don't get it. No matter how I try to explain it, they're just not working hard enough or putting enough effort into completing the assignment or gathering more information as I have directed." Before learning about the advanced learning process, one specific instructor used these words to describe students who had learning patterns different from his:

> *I used to think some students were just dense, uninterested, or at the very least unmotivated. I judged students who didn't ask questions as less academic. I thought students who did assignments in a unique way were the brightest. I couldn't have been more wrong. Now I know they simply learn differently than I do. (D. Stoll, personal communication, November 16, 2005)*

Rather than be frustrated, a useful tool for advisors is the *word wall* (Table 12.4). It assists advisors in communicating more effectively with students based on the students' learning preferences.

Table 12.4 Word Wall

Sequential cue words		**Precise cue words**	
alphabetise	order	accurate	explain
arrange	organise	calibrate	facts
classify	outline	certainty	identify
develop	plan	describe	label
distribute	put in order	detail	measure
group	sequence	document	observe
in a series	show a sample	exact	specific
list	show an array	examine	write
Technical cue words		**Confluent cue words**	
assemble	erect	brainstorm	improvise
autonomy	experience	carefree	incredible
build	figure out	create	independent
concrete	illustrate	different	invent
construct	just do it	dream up	risk
demonstrate	make	far-fetched	take a chance
draw	problem-solve	ideas	unique
engineer	tools	imagine	unusual

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Advisors can also use the *word wall* to help students identify the patterns reflected in the assignment given in any class. When students understand their personal learning processes, they can direct their patterns in such a way to be able to take specific action. Using the knowledge of learning patterns and cue words (as seen in the word wall), students can decode assignments, objectives, or the task at hand. They can look for key words within a set of directions and engage specific patterns (i.e. sequential, precise, technical, or confluent) to accomplish the task.

For example, if the task is to "write in bulleted form a brief technical description of the newly-developed circuitry board," sequential learners may only see the word "write" and reject the entire assignment because they are not precise learners. But, if they overcome the initial rejection and translate the assignment into sequential cue words (i.e., substituting the word "write" with "list," then they will succeed.

Using Patterns With Intention

Sometimes, assignments may require students to use a pattern they avoid or a pattern that is not their primary one. Table 12.5 gives advisors and students specific strategies to use when an assignment or project calls for a learning pattern that students avoid. These are called forge strategies (Table 12.5). For example, if I avoid any pattern, I may need to forge (pull up) its use. Table 12.6 identifies strategies when a pattern is not called for in an activity and the advisor and/or student need to tether (pull back) their primary pattern. For example, when I use a pattern first in a situation that does not call for it, I may need to tether (pull back) its use. Sometimes, if I use a pattern as needed, I may need to intensify (turn it up a little) its use.

A good example of the effects of personalised strategies used by students aware of their learning processes comes from a conversation overheard between two students who were discussing the challenges of their organic chemistry class. One student said there was no way he could understand the text.

He said, "I'd start to read and the words would just swim in front of my face. I thought, 'What is this guy talking about?' "

The second student responded, "Oh, I loved the text. It saved my life! I don't know what I would have done if I hadn't been able to read and re-read his lecture. But that kit we had to buy. Now that was useless."

"Useless?" the first student responded, "That saved my life! When I couldn't understand a word I was reading, I would take out the kit and build the model. Then I could make the words on the page make sense. In fact, I asked the instructor if I could use the kit during exams. See, if I can build a model of the problem we are supposed to solve, then I can solve the problem, and explain my thoughts on paper."

The two students grinned at each other and began to laugh as they realised that they both were solid learners who had very different approaches to learning (C. Johnston, personal communication, July 10, 2005).

Evidence to Support Advanced Learning Process

When educators take the time to inform students about their learning patterns, they can expect measurable results. In studies completed at Foothill College in Los Altos Hills, California, and at Cumberland Community College in New Jersey, students whose advisors and instructors used this advanced learning process as a part of their instruction and advisement had a significant increase in student retention.

Table 12.5 Strategies to Help Forge Patterns

Sequential	Precise	Technical	Confluent
Read the directions carefully.	Take my time and carefully read over all of the information.	Be willing to show others what I know by demonstrating something or building it.	Think of something unusual for real life and then stretch it to be imaginary.
Mark off each step as I go.	Read the subtitles to know where to gather information.	Use whatever tools are given to me to show what I know.	Be willing to take small risks with new ideas.
Look for words that ask me to respond using a specific order or organisation.	Don't trust my memory, and write it down!	Remind myself that I can learn from experiences; so observe and absorb the experience as it is occurring.	Be willing to do a skit with other people to show what I know.
Double-check my work for completeness.	Look for words that ask for important facts or details.	Check if I can work with someone who uses technical as needed.	Take my time to think of ways to do assignments in a unique or different way.
Make sure that I follow the key directions step-by-step.	Answer questions using at least two full sentences.	Look for words that ask me to build or make something.	Ask others for ideas to get started.
Make sure that I do not start something until I have all of the directions or unless I have permission to try a different approach.	Double-check my work for accuracy.	Think about how I can apply this to my life.	Be willing to learn about things in creative, fun, and entertaining ways.
Work to follow through with one project from beginning to the end.	Whenever possible, ask questions about things of which I am not sure.	Stick with the task until I can make it work.	Look to see if I can work with someone who uses confluence as needed.
Check if I can work with someone who uses sequence as needed.	Check if I can work with someone who uses precision as needed.	Communicate through action.	Work to make connections in order to see the big picture.

Table 12.6 Strategies in Help Tether Patterns

Sequential	Precise	Technical	Confluent
When the directions are not clear, think of an assignment that was similar to the current task and make up my own directions.	Answer the question first and add detail if there is time.	Take short breaks to refresh and keep motivated.	Remember that not everyone likes change.
Think through the steps carefully before asking what I am to do.	Remember that not everyone communicates in words.	Remember that I can communicate using words.	Don't get discouraged if my idea is not used.
Take a deep breath when plans change and take the risk not to be in control for the moment.	Think about the question before I ask.	Know that when I work with others they have something to teach me too.	Make sure to follow the assignment's objectives and, if I'm not sure, ask.
When there is a time limit, don't panic and place a star by the most important areas that need to be double-checked.	Remember to allow others to share their information.	Try to connect with the task faster rather than mulling for a long period of time.	Work not to wait until the very last minute. This will give me time to make corrections and allow it to be more complete.
Remember that not everyone has the same plan as I.	Don't get hung-up on inaccuracies. Correct them and move on.	Remember that I have something that is valuable to teach others.	Allow others to share their opinions.
Allow wait time for others to respond.	Remember that there are times when I don't have to prove my point.	If I can't get it to work and there's a time limit, ask for help.	Remember that others may need help "seeing" my idea and its connections to the task.
Don't panic when the final product doesn't look like the example.	Seek to prioritise the amount of information that needs to be shared out loud or on paper.	Keep in mind that not everything has a purpose or has to work.	Stick to the task; don't let my mind wander.
Look to see if I can work with someone who uses sequence as needed.	Look for body language that suggests I am giving too much information.	Don't be afraid to share your thoughts or ideas.	Remember to rehearse before I express.

In 1996-1997, an average of 68% of the students at Foothill College completed courses, and 35% persisted from fall to spring quarter. These figures are consistent with national retention data (Astin, 1993; Tinto, 1993). After being exposed to the LML process in their career and entry-level courses (i.e., composition, maths., world language, and basic skills) and licensure courses in pharmacology, dental hygiene and veterinary technician, 88% of the 469 students completed the courses. That is a marked improvement from the average course completion rate before the intervention. One previously disengaged student said, "Lately, I have been studying with a partner, and that has been very helpful. I am able to learn more with the help of other people's patterns." Among students, there was also a realisation that the LML Process had transferability, both to other courses and to work situations. In the second year of the study, 87% of the 769 students completed their courses, and 92% received transferable grades. Again, this shows a sustained improvement from the 68% retention rate prior to using the LML process (Pearle, 2002).

Student exit data at the community college in New Jersey revealed similar results. Of the 330 first-year students surveyed at the conclusion of their courses in which the LML process was integrated into the instruction, 60% reported that knowing their instructor's teaching/learning patterns contributed to their ability to perform up to expectations in the class. Sixty-one percent said they had been able to use knowledge of their learning patterns in other classes as well as outside of the classroom. Sixty-two percent reported, "The LML process has helped me in becoming a better student" (Dainton, 2004, p. 13). A particularly interesting point is that, of the 330 students who found themselves in courses in which this study was being conducted, 35 reported they had considered dropping the class but decided not to because of the influence of the LML process on the learning environment and the instructor's sensitivity to their learning processes.

This process was also included as part of a Visions of the Future learning community for undeclared first-year students at Rowan University in New Jersey. Students who participated reported that it was helpful not only in understanding the teaching styles of their professors but also in understanding their friends and roommates (Braun, 2005).

Another first-year student who used this process in class explained that it really helped him understand that he was "not weird." This particular student is highly confluent and loves literature and discussing the new and varied thoughts expressed in many of the books he read his first semester at the university. When returning home for his first visit, his family asked what he had learned, and he began to share some of the ideas he had been exposed to in his literature class. The response from his family was, "Didn't you do anything?" Based on his new knowledge of learning patterns, he understood that most members of his family are highly technical and that to them "learning" was "doing something." Rather than feeling defensive, he realised the reason for their differences and understood that both views were equally valuable, just different (B. McCalla-Wriggins, personal communication, November 2, 2005).

How to Incorporate LML Into First-Year Advising Activities

Regardless of the setting where interactions with students take place, there are multiple ways to incorporate this advanced learning process into the first year of college.

Individual Advising Sessions

When meeting with students individually, discussing their learning patterns can reinforce the impact of their patterns both in and out of the classroom. It also provides an opportunity to help students develop specific strategies that they can use when situations and tasks require them to tether and/or forge their patterns. As students learn to intentionally make choices and change their behaviours, they begin to feel very empowered. The Career and Academic Planning Centre at Rowan University developed a brochure, included in the chapter appendix, which is a useful learning pattern reference for students. It provides a way for advisors to structure their conversations so students can develop individual short- and long-term goals, career exploration options, and personal learning success strategies.

Professional Development Activities

Incorporating learning pattern information into the professional development activities for faculty and full-time advisors, academic and student affairs staff, as well as peer advisors, tutors, and residence assistants provides a strong foundation for the entire campus to support students' learning. It gives everyone a new vocabulary through which to communicate. Most importantly, the more frequently students reflect on and discuss their learning patterns and the strategies needed to be successful in various settings, the more likely this information will be incorporated into their lives.

First-Year Orientation Programs

It is beneficial for students to take the LCI as part of a first-year testing/placement program and have the results explained at first-year orientation. Programs for parents on learning patterns can help reinforce this approach to learning and also give parents and students insights into why they may have had difficulty communicating. As advisors meet with new students at orientation and subsequent follow-up advising sessions, they can further discuss learning patterns and how that knowledge can be used in the classroom, in interactions with roommates and classmates, as well as in exploring appropriate academic and career options.

First-Year Seminars and Other First-Year Courses

Having information about their own and their students' learning patterns can be especially helpful to faculty. It provides an opportunity to discuss how the faculty members' learning patterns play out in both how they teach and the type of assignments they create. Faculty can also coach students with different learning patterns to respond in ways that will allow them to be more successful and create teams that draw on the strengths of all the students. If students take the online version of the LCI, a system can be created that allows the faculty to have access to their reports and to see their scores in graph form.

Introduction to the Major and Career Decision making Classes

Looking at various majors and careers through the lens of learning patterns is valuable. For example, if students are considering accounting as a major but find the precision requirements of the accounting profession a problem, it is helpful to discuss aspects of a profession that may not match the students' preferred learning pattern. It does not mean that these students should give up their goal to become accountants; rather, they will frequently need to forge those patterns that they naturally would avoid. Likewise, for students who rely heavily on their confluence, a career in the arts could draw on that learning pattern.

As is suggested by the ideas presented above, there are endless possibilities to using learning pattern information to support student success. However, as with any new initiative, there are challenges and opportunities. One very effective approach is to gather those on your campus who are truly interested in the transformative learning model discussed in *Learning Reconsidered* (Keeling, 2004). Representatives from both academic and student affairs need to be included in this conversation because learning occurs at multiple locations, settings, environments, and times on our college and university campuses.

Conclusion

The impact that our learning patterns have on how we understand and respond to each other begins with the old adage: Know thyself. It begins by capturing an individual's mental process as he or she engages in the act of learning. As the processes "speak" to each other, they chatter, argue, and negotiate. When used skilfully, they support one another in achieving the intended learning outcomes. When learners understand their mental processes, they can develop personal strategies to overcome otherwise defeating behaviours.

As advisors working with first-year students, we have the unique opportunity to interact with students at the very beginning of their higher education experience. What we choose to include in the activities, programs, small-group discussions, advising sessions, and classes during those first critical weeks can have a significant impact on whether our students are retained and persist to graduation.

As we teach first-year students through the advising process, we can help them develop personal learning strategies that guide their actions. We must understand what is being asked in a specific situation and act with intention to coax students' learning patterns to formulate reasonable and appropriate responses and help them find a career path that matches, complements and enhances their learning processes. The aim of advising then becomes teaching an individual to make adjustments: adapt, improvise, and overcome. For as much as we attempt to make the first-year experience a foundation upon which students will develop a strong sense of belonging and efficacy, we miss the mark when we fail to recognise that entering students bring not only their hopes, dreams, aspirations, prior education and experiences to the campus, but also bring their learning patterns.

As advisors, we should consider how students' lives can be changed if they possess the tools and language to successfully communicate with others. Just as students who have knowledge about their learning patterns can take responsibility for their own learning and create strategies to be successful, we, as advisors working with first-year students, can take the lead in moving our institutions to where the focus is truly on learning and the student.

References

Association of American Colleges and Universities (AAC&U). (2002). *Greater expectations: A new vision for learning as a nation goes to college*. Washington, DC: Author.

Astin, A. W. (1993). *What matters in college: Four critical years revisited*. San Francisco: Jossey-Bass.

Braun, J. T. (2005). *Enhancing the efficacy of a college learning community through teaching meta-cognition*. Unpublished master's thesis, Rowan University, Glassboro, N.J.

Dainton, G. (2004). *Executive summary: A study of Cumberland County Colleges' use of Title III funding to raise student achievement*. Turnersville, NJ: LCR, LLC.

Johnston, C. (1996). *Unlocking the will to learn*. Thousand Oaks, CA: Corwin Press.

Johnston, C. (1998). *Let me learn*. Thousand Oaks, CA: Corwin Press.

Johnston, C., & Dainton, G. (2005). *The learning connections inventory*. Turnersville, NJ: Learn- ing Connections Resources.

Keeling, R. (Ed.). (2004). *Learning Reconsidered: A campus-wide focus of the student experience*. Washington, DC: American College Personnel Association and National Association of Student Personnel Administrators.

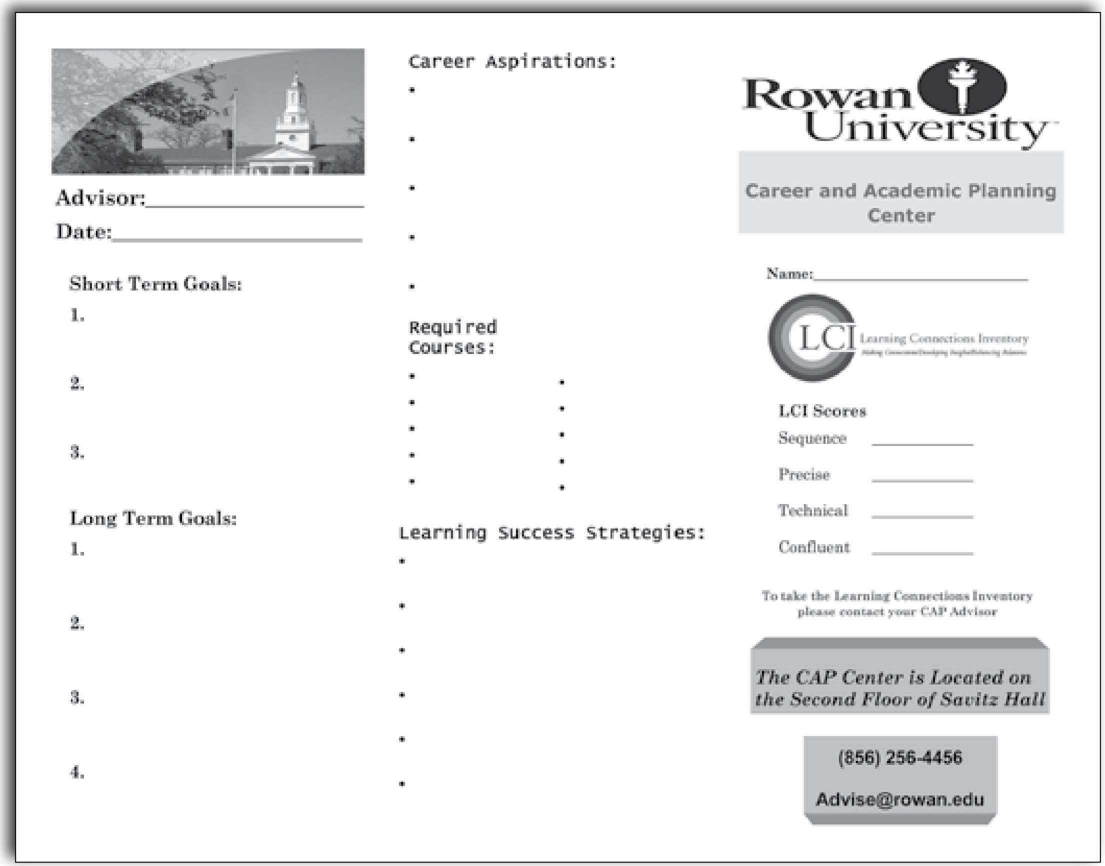
Pearle, K. (2002). *Metacognition as vehicle for organizational change: How "thinking about thinking" and intentional learning break the mold of "heroic" teaching in higher education*. Unpublished doctoral dissertation, Rowan University, Glassboro, NJ.

Tinto, V. (1993). *Leaving college. Rethinking the causes and cures of student attrition* (2nd ed.). Chicago: The University of Chicago Press.

Online Resources Let Me Learn www.letmelearn.org
Learning Connections Resources www.lcrinfo.com/index.shtml

Appendix

Figure 12.1 Rowan University's Career and Academic Planning Center brochure: A useful pattern reference for students



Advisor:________________

Date:__________________

Short Term Goals:

1.

2.

3.

Long Term Goals:

1.

2.

3.

4.

Career Aspirations:

-
-
-
-
-

Required Courses:

-
-
-
-
-
-
-
-
-
-

Learning Success Strategies:

-
-
-
-
-
-

Rowan University

Career and Academic Planning Center

Name:__________________

LCI Learning Connections Inventory

LCI Scores

Sequence ________

Precise ________

Technical ________

Confluent ________

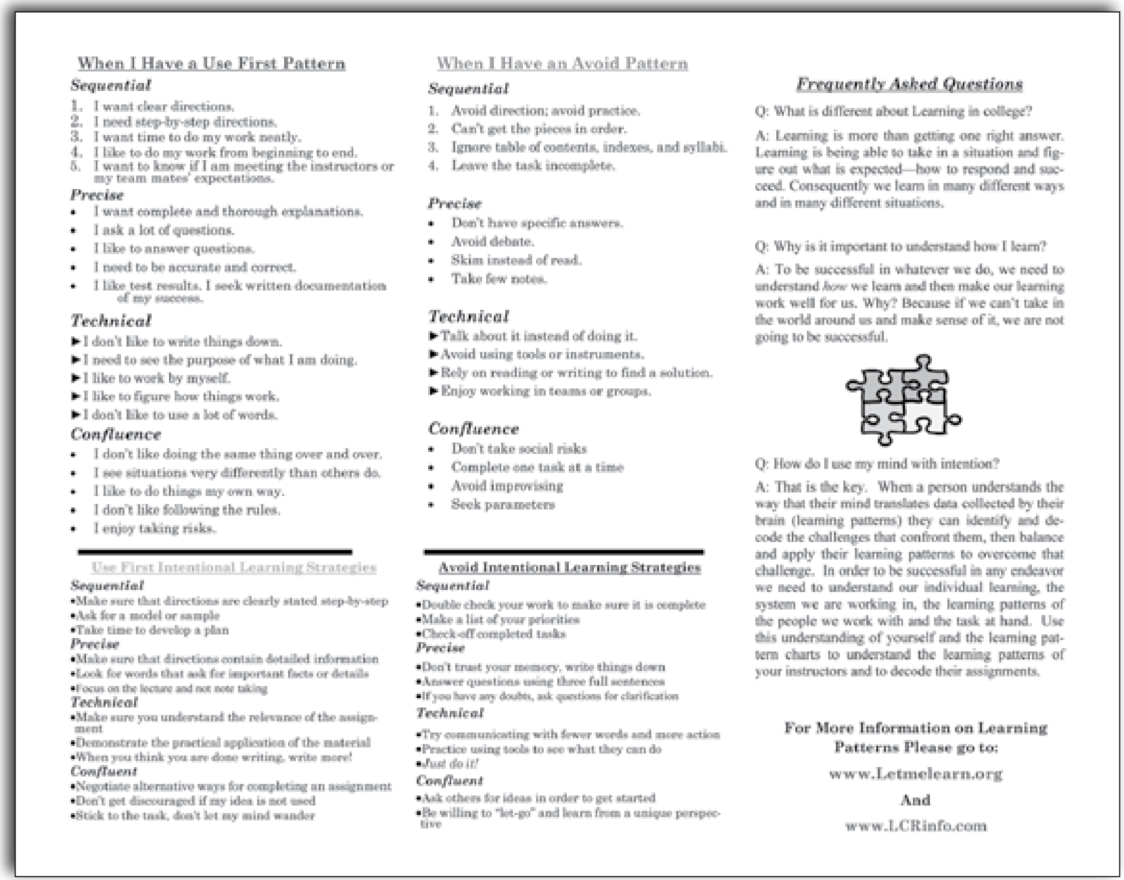
To take the Learning Connections Inventory please contact your CAP Advisor

The CAP Center is Located on the Second Floor of Savitz Hall

(856) 256-4456

Advise@rowan.edu

Figure 12.2



When I Have a Use First Pattern

Sequential

1. I want clear directions.
2. I need step-by-step directions.
3. I want time to do my work neatly.
4. I like to do my work from beginning to end.
5. I want to know if I am meeting the instructors or my team mates' expectations.

Precise

- I want complete and thorough explanations.
- I ask a lot of questions.
- I like to answer questions.
- I need to be accurate and correct.
- I like test results. I seek written documentation of my success.

Technical

►I don't like to write things down.
►I need to see the purpose of what I am doing.
►I like to work by myself.
►I like to figure how things work.
►I don't like to use a lot of words.

Confluence

- I don't like doing the same thing over and over.
- I see situations very differently than others do.
- I like to do things my own way.
- I don't like following the rules.
- I enjoy taking risks.

Use First Intentional Learning Strategies

Sequential

•Make sure that directions are clearly stated step-by-step
•Ask for a model or sample
•Take time to develop a plan

Precise

•Make sure that directions contain detailed information
•Look for words that ask for important facts or details
•Focus on the lecture and not note taking

Technical

•Make sure you understand the relevance of the assignment
•Demonstrate the practical application of the material
•When you think you are done writing, write more!

Confluent

•Negotiate alternative ways for completing an assignment
•Don't get discouraged if my idea is not used
•Stick to the task, don't let my mind wander

When I Have an Avoid Pattern

Sequential

1. Avoid direction; avoid practice.
2. Can't get the pieces in order.
3. Ignore table of contents, indexes, and syllabi.
4. Leave the task incomplete.

Precise

- Don't have specific answers.
- Avoid debate.
- Skim instead of read.
- Take few notes.

Technical

►Talk about it instead of doing it.
►Avoid using tools or instruments.
►Rely on reading or writing to find a solution.
►Enjoy working in teams or groups.

Confluence

- Don't take social risks
- Complete one task at a time
- Avoid improvising
- Seek parameters

Avoid Intentional Learning Strategies

Sequential

•Double check your work to make sure it is complete
•Make a list of your priorities
•Check-off completed tasks

Precise

•Don't trust your memory, write things down
•Answer questions using three full sentences
•If you have any doubts, ask questions for clarification

Technical

•Try communicating with fewer words and more action
•Practice using tools to see what they can do
•*Just do it!*

Confluent

•Ask others for ideas in order to get started
•Be willing to "let-go" and learn from a unique perspective

Frequently Asked Questions

Q: What is different about Learning in college?

A: Learning is more than getting one right answer. Learning is being able to take in a situation and figure out what is expected—how to respond and succeed. Consequently we learn in many different ways and in many different situations.

Q: Why is it important to understand how I learn?

A: To be successful in whatever we do, we need to understand *how* we learn and then make our learning work well for us. Why? Because if we can't take in the world around us and make sense of it, we are not going to be successful.

Q: How do I use my mind with intention?

A: That is the key. When a person understands the way that their mind translates data collected by their brain (learning patterns) they can identify and decode the challenges that confront them, then balance and apply their learning patterns to overcome that challenge. In order to be successful in any endeavor we need to understand our individual learning, the system we are working in, the learning patterns of the people we work with and the task at hand. Use this understanding of yourself and the learning pattern charts to understand the learning patterns of your instructors and to decode their assignments.

For More Information on Learning Patterns Please go to:

www.Letmelearn.org

And

www.LCRinfo.com

• CHAPTER 13 •

A Teambuilding Model for the Educational Leadership Classroom

Patricia Ann Marcellino

Introduction and Background

According to Levine (2005), "the quality of preparation of the nation's school leaders ranges from 'inadequate to appalling.' University-based programs designed to prepare the next generation of educational leaders are not up to the task" (p.1). Levine suggests that aspiring administrators pursue a business degree in order to prepare for the role of educational leader. Levine's conclusion has caused heated debate and re-evaluation of the educational leadership knowledge base (Creighton, Harris, & Coleman, 2005). At a private university located in suburban New York, faculty from the schools of business and education conceived of an educational leadership master's degree program that integrates business and education concepts in its knowledge base. For example, one of the educational leadership courses applies a teambuilding model that integrates the work of business and education theorists. The teambuilding model developed by the instructor combines business and educational learning concepts, i.e. Katzenbach and Smith's (2003) business team model with Senge's (1990) systems team learning framework in concert with Johnston's interactive learning model (1996, 1998) and reflective practice exercises (Johnston, 1996, 1998; Osterman & Kottkamp, 2004).

Currently, there has been an increase in utilising team units (Kline, 1999; Polzer, 2003). Even modern media sources like *The Apprentice* or *Surv*ivor feature teams

This paper was first published in the 2006 NCPEA Yearbook entitled: Unbridled Spirit: Best Practices in Educational Administration, edited by: Frederick L. Dembowski and Linda K. Lemasters

and are achieving high ratings with the general public. Teams are not new, but what is new is their increased prevalence (Katzenbach & Smith, 2003; Kline, 1999). But there seems to be a difference in the use of teams in business class settings compared to teams in educational class settings. The business team model emphasises the task, job or performance primarily, while the educational team model emphasises the development of values, such as cooperation, respect and teamwork (Katzenbach & Smith, 2003; Kline, 1999). According to Kline (1999), there is no unified team model, but team members seem to work better when they are cooperating with one another. Therefore, the need for a teambuilding model that combines task delivery with developing teambuilding skills seems evident.

Unfortunately, not all teams are successful; sometimes teams fail (Bolman & Deal, 2003; Marcellino, 2005b). Too often, faculty set up teams haphazardly without laying the structural foundation necessary to support teams in the university classroom (Barbour & Harrell, 2005; Bolton, 1999). A team does not evolve simply because an instructor places adults into a group and labels them a "team." It is recommended that teams be limited in size, develop rules, have clearly defined goals, clarify roles for team members and focus on performance outcomes (Bolman & Deal, 2003; Katzenbach & Smith, 2003; Kline, 1999; Marcellino, 2002, 2003; Polzer, 2003, Thompson, 2000). But when individuals interact on teams, team process problems may also develop, such as breakdowns in communication and individual team "tensions." (Katzenbach & Smith, 1993; Kling, 2000, Lipnack & Stamps, 1997; Marcellino, 2005b, Pacanowsky, 1995; Thompson, 2000). The instructor, therefore, needs to become alerted to team process problems as well as team performance problems so that team members may be guided and coached towards their team units.

Statement of Goal and Purpose

The goal of this chapter is to outline "best practice in research" through the application of action-research in an educational leadership program. Action-research or putting theory into action in the classroom builds on the qualitative approach (Bogdan & Biklen, 1998). Action-research is a foundational skill in this educational leadership program, largely because it embodies the relational process of constructivist learning that is central to administrative leadership (Lambert et al., 2002). While implementing the action-research model, the students' goal was to develop their team skills as they interacted and engaged in the team process (Marcellino, 2002, 2003). The instructor and action-researcher's goal was to enable aspiring administrators (n=63) to develop their team skills and apply a teambuilding model that integrated business and educational concepts.

Theoretical Framework

The teambuilding model that was developed by the instructor combined business and educational concepts, i.e. Katzenbach and Smith's (2003) business team model with Senge's (1990) system's team learning framework. Teams were set up utilising Johnston and Dainton's (1997a, 1997b) reflective Learning Connections Inventory©. Reflective exercises were also applied based on the work of Johnston (1996, 1998) and Osterman and Kottkamp (2004). The instructor felt the work of these scholars was compatible.

Action-Research Design, Activities, Methods and Assessment

The instructor and students in a graduate degree program applied action-research to an exploratory study of teams in five educational leadership courses at a private university. Mills' (2003) action-research model formed the basis of the design. Action-research according to Bogdan and Biklen (1998) builds on the qualitative approach. Instructors who engage in action-research try to improve their own teaching as they engage in discussions with their students that will aid their learning and the learning of the instructor. Reflection is an integral part of the action-research cycle. Academics posit that engaging in reflective practice leads to self-awareness, growth and professional improvement for instructors and adult students (Osterman & Kottkamp, 2004). The instructor sought to support students in developing their team skills and sought to develop an understanding of the evolving team process so that the teaching of the course could be improved (See Model A).

Participants

There were 11 participants (2 teams) in the first course, 17 participants (4 teams) in the second course, 11 participants (3 teams) in the third course, 15 participants (4 teams) in the fourth course and nine participants (2 teams) in the final course. Within the 15 teams, there were 50 females and 13 males participating.

Activities for Achieving the Goal

Activity #1: Students were assigned foundational readings from noted theorists so they would become familiar with the business team model (Katzenbach & Smith, 2003) as well as gain familiarity with the systems oriented framework proposed by Senge (1990). Senge's model (1990) is applied in both business and educational settings. Students were also asked to visit the Let Me Learn website (http://www.letmelearn.org) which outlines Johnston's (1996, 1998) learning precepts and the tenets of her interactive learning theory. Johnston's work has also been adopted in business and educational settings and her learning model is compatible with Senge's (1990).

Activity #2: Diverse teams (n=15) were set up utilising the Learning Connections Inventory (LCI) © developed by Johnston and Dainton (1997a, 1997b). Nationally and internationally validated, the inventory has test-retest reliability (Learning Connections Resources Website: http://www.LCRinfo.com) as well as content, construct, and predictive validity (Johnston & Dainton, 1997b). According to Johnston and Dainton, the inventory can help instructors and students develop an understanding of their own learning patterns as well as an understanding of their peers' learning patterns.

Individual learners are represented by the four learning patterns of sequence, precision, technical processing and confluence. The interaction of these four learning patterns defines the learner, the instructor and the approach to learning that takes place in the classroom (Johnston, 1996, 1998). The four learning patterns are defined as follows:

- Sequential: the process of organising, planning, seeking order and consistency;
- Precise: the process of using information and words, detail-oriented, seeking confirmation of what is valid, right, and/or true;
- Technical: the process of practical, active, autonomous problem-solving;
- Confluent: the process of generating ideas, reading between the lines, and making connections, comfortable with taking risks, trying and failing and trying again, seeking to do it "my own way" (Silverberg, 2003).

Johnston's (1996,1998) research-based approach advises setting up teams according to learning pattern constructs. Diverse teams were set up with members who were representative of leading by one of the four learning patterns. The instructor sought to set up diverse teams because they were thought to be more creative and could focus on problem-solving (Thompson, 2000). Individual scores and team scores (total scores in each learning pattern area and team mean scores) were distributed to all students. The instructor then attempted to guide team members towards initial team roles based on their preferred or lead learning pattern. For example, a sequential learner was asked to become the initial team organiser; a precise learner was asked to become the team's initial communicator; the technical learner was asked to become the team problem-solver and the confluent learner was asked to become the team challenger or initial idea-generator (Marcellino, 2005a).

Activity # 3: A communication support structure was set up for the teams. E-mail addresses were exchanged among team members and *Blackboard* discussion groups and *Blackboard* teams were set up. The *Blackboard teams* had only the students interacting. The instructor chose not to have access to the *Blackboard* teams because the thought was to give each team access to privacy and enable team members to freely communicate and identify with one another as team members. The instructor distributed a list of suggested team tips, such as “make sure every team member is part of the communication process.” The instructor also described possible team problems for team members to be alerted to, such as communication breakdowns, team member withdrawal, product fragmentation, etc.

Activity #4: After diverse teams were formulated, an outline of a team contract was distributed to students, which enabled students to focus on the team product or performance outcomes as well as the team process that would be evolving. The contract outline included team goals, rules, proposed meetings as well as product and process outcomes (Aranda, Aranda & Conlon, 1998). Team members engaged in discussions of individual team assumptions and negotiated these in their team contracts. Team members were asked to sign their team contract when agreement was reached. Each team member received a copy of the contract for future referral and reference. Students were initially asked to return their contracts in a week’s time, but some of the teams extended the time span to two or three weeks. When completed, team contracts were compared.

Activity #5: According to Mills (2003), in action-research, instructor and students engage in a four-point process of 1) focusing on a theme (in this case, the application of a teambuilding model), 2) data collection, 3) data analysis, and 4) the development of an action plan (i.e. for the students, developing a team topic and learning about the team process; i.e. for the instructor, a possible revision of the action plan or syllabus). Within the 15 teams, students conducted research on two levels, namely, they researched a team topic and they researched the team process that evolved. Teams were asked to investigate an educational problem and develop policy initiatives for that problem. Teams presented their initiative technologically to their peers for evaluation (Topping, 1998) and also developed a follow-up team policy paper which outlined their initiatives.

Activity #6: Reflective exercises were applied that were suggested by Johnston (1996, 1998) and Osterman and Kottkamp (2004) in order to allow participants to interact and come to an understanding of their team members. For example, students shared their background or autobiographies. Students also shared their educational or management platforms with one another for evaluation. These platforms were compared and students were offered suggestions for improvement by their peers (Topping, 1998). Team trust exercises were also applied to enable students to become comfortable with one another.

Activity #7: Students provided the instructor with periodic updates in-person or e-mail regarding the team process as it evolved. Follow-up discussion involving the team product and the team process also evolved in person, on e-mail and on the *Blackboard* network. The instructor monitored the team process and applied instructional coaching when alerted by team members to team tensions or a possible team problem.

Activity #8: As final activities, students evaluated the team process and one another in an evaluative team questionnaire. In a summative reflective team essay, individual team members summarised what they had learned about the team process based on their interactions with their team members. This activity enables the instructor to gain multiple perspectives on the team process. Each team and team member tells a story that adds to the instructor's perspective as a practitioner and action-researcher.

Methods and Assessment Process

Assessment was based on self, peer (Topping, 1998) and instructor evaluation. Because this was an action-research study, methods were triangulated to ensure trustworthiness and credibility of the data (Mills, 2003). The methods became the data sources and assessment was based on these sources. Methods included periodic updates from team members in person, by e-mail or *Blackboard*, pre-tested evaluative questionnaires, reflective exercises and summative essays. Selected interviews were conducted as a follow-up after a course ended. Data was analysed for themes and surprises (Miles & Huberman, 1994). A coding/categorisation process was developed that analysed the uniqueness of an item, its applicability to teams and its relevance to the team process.

Discussion, Findings and Results

The main question asked by the instructor was: Can a teambuilding model (derived from business and education theorists) be applied in the educational leadership classroom? A majority of the participants (60) reported that the teambuilding model, which included both business and educational concepts, widened their knowledge base in regard to business (task completion) and educational (values) team concepts. For example, one team member stated, "We valued each contribution that was made and enhanced each other in the process. We enjoyed each other's company but, most importantly, we accomplished our task." A number of themes emerged, namely:

Theme: Appreciating Diversity in Learning through Team Interaction

Students reported that the instructor's suggestion of initial team roles based on individual learning patterns helped team members expedite a team focus. One student stated, "People worked on tasks that matched their strengths and relied on others to take on tasks that they might not have been as skilled in doing." Students reported that they developed an appreciation of their own learning pattern as well as the diverse learning patterns of their team members. For example, student comments included,

> *I now see that when a team is composed of people with different learning patterns, more seems to get done.*
>
> *The learning patterns helped me to understand why my team members acted the way they did.*
>
> *It makes sense to know people's learning patterns; it gives us a chance to look through a lens of people's strengths or preferences.*
>
> *Their patterns became so much a part of their personality that at times I felt as if I were reacting to patterns and not people.*

Furthermore, students came to value the diversity of their team members within the team context. Students stated,

> *I am in awe of my team members and their creativity. [One team member] especially has the ability to think out of the box. Creatively, we pushed ourselves in a technological direction because of her.*
>
> *I would never have come up with those creative ideas by myself; [two of my team members] made certain things happen that I would not have initiated working alone.*
>
> *I am very sequential and organised in my thoughts. If things aren't structured and certain, then I can't function at my best. When alone, I tend to make it more intense and this project helped me to learn more about others and enjoy myself too."*

Theme: Taking the Time to Reflect about the Team Process

Furthermore, students indicated that taking the time to interact in teams helped them develop their team skills and learn about the strengths and weaknesses of the team process. One student commented, "The team experience was enlightening and helpful in so far as it showed me how to approach tasks in a positive way and learn to allow others to use their strengths to accomplish goals." Team members stated that they shared responsibilities and leadership on their teams. Students viewed the sharing of leadership as a team's strength. For example, students claimed,

> *We shared leadership and each one of us had a chance to be the driving force. We valued each other.*

> *Four of us took turns at leadership.... this was a good thing.*

> *I believe with each task or topic that was discussed a new leader arose. The individual who emerged as leader was the person whose strength addressed the task or topic at hand.*

Some students indicated that they adapted through reflection and the influence of their team members. One team member wrote:

> *I began evaluating my own personality, needs and expectations and wondered how people would perceive my team qualities and skills. I was honest enough to know I was not perfect, but I was curious to see what imperfections would be most frustrating and bothersome to my team members. At one meeting, my team discussed my precise behaviour and joked about my approach being somewhat obsessive. I acknowledged my first weakness observed by the team and realised that in the future I must learn to work with people by being less stressed and projecting my anxiety onto others in order to get a job accomplished.*

In contrast, one of her team members stated:

> *I felt like I was on Survivor because [one of my team members] needed to win everyone on her side about her ideas. I began to understand that this was just who [she] was. She needed everything to be perfect and, although we all did, hers was more prominent. In the end, I learned to appreciate her style and way of doing things. As we combined to converse as a group, it became more personal and humorous. The load was no longer feeling heavy... we ultimately learned to share and create while maintaining our vision.*

Theme: Learning About Teambuilding and Producing a Team Product

Students reported that they were able to widen their knowledge base about team units and complete their team task by developing accountability to the team. Not only did students emphasise task completion (business model), but they also began to value and appreciate the unique skills and abilities of their team members (education model). Team members commented:

> *The team was supportive, encouraging and fun to work with. We grew to care about each other and really know and enjoy each other's strengths, weaknesses and all that goes with it.*
>
> *This was a positive learning experience because I learned that I didn't have to do it all by myself. I also learned to trust the expertise of other members of the team.*
>
> *Overall, it was a positive learning experience. I would love to implement teaming at work.*
>
> *I was pleased and satisfied with the results, my role on the team and the work of my team members.*

Theme: Pulling Away from the Team

But difficulties also emerged on some teams, i.e. team tensions and team member withdrawal. All teams displayed evidence of team tensions; the so-called "successful" teams as well as the teams that had process problems. When team tensions were revealed to the instructor beforehand, the instructor discussed the problem with individual team members and sought to have each team member analyse the team tension from an individual perspective. Team members were coached to first evaluate their own assumptions and perceptions about team units and team members by asking questions, like "What could you have done differently?" and "What can you do to rectify this situation." Usually, team tensions were traced to individual differences in expectations concerning the team's productivity and the work of team members (Kling, 2000).

On three teams (Teams 5, 6 and 14), one team member withdrew from the team process. When this happened, the remaining team members (11) compensated for the "missing" team member and became more cohesive. In spite of the instructor's efforts or the efforts of team members to bring these team members back into the team, these individuals continuously withdrew. Because of this, the other team members felt they had not achieved team status as outlined by Katzenbach and Smith (2003) in their team performance graph (p. 84). They rated themselves as a "pseudo team" or a "potential team" rather than a "real team." In addition, the more precise learners on the team rated the team lower than the other team members because as one precise learner stated, "the team experience was not perfect."

In the second course, team members claimed to withdraw because of role confusion. Unfortunately, their roles were not clearly delineated on the teams and team roles were shared. The female team member on team 5 wrote, "I was confused about my role on this team." The male team member on team 6 stated, "I was not satisfied with my role on this team." In the final course, the female team member claimed that her contributions "were not accepted by the others in the contract or the project."

Theme: Fragmented Products Are Traced to Team Contracts

Team contracts helped students formulate team rules, goals and focus on performance outcomes (Aranda, Aranda, & Conlon, l998). But sometimes, team process problems and team product problems could be traced to the team contracts if they were hurriedly conceived or did not include all team members in the construction of the contract. For example, one team member stated, "we spent more time on our team contract because we wanted to get it right." But on two teams (team 2 in the first course and team 8 in the third course), team members planned their team product as separate entities in their team contracts. Instead of presenting unified products (technological presentation and/or policy paper), it was clearly evident where one team member's work began and ended. On team two, this fragmentation was based on minimal interaction of team members. Students worked separately throughout the time allotted for the team project. Instead of working on a unified project, they worked on their own individual projects under a loosely conceived team umbrella (Marcellino, 2005b).

On team eight, students did interact, but their product still resulted in fragmentation, which again could be traced to the team contract. In the case of team two, process was affected because there was limited team interaction, but in the case of team eight, students did interact and came to value one another's contributions. A team member on team 8 said, "Even though we decided to work on our own from the beginning and our individual topics were stated in our team contract, we did interact and comment on one another's work."

On team 11 (fourth course) and team 15 (final course), team members had not intended to present a partially fragmented team product (presentation or paper). On team 11, students were able to present a unified team policy paper after receiving instructional coaching. On team 15, suggestions were presented to the students by the instructor in order to submit a unified team paper. Students on both teams did not recheck or revisit their contracts to make sure that all contract stipulations were followed as outlined. Overall, students are reluctant to discuss team problems in an open class forum if team infractions appear contrary to team contract stipulations. Because of this, the instructor intentionally has students revisit their team contracts by questioning them in individual periodic updates. Each time there were process and product problems, the instructor went back to the drawing board and made changes to the team model. The instructor now posts additional questions for discussion specifically dealing with the team contracts to the *Blackboard* network.

Conclusion and Recommendations

On all teams, there were students who tried to make the process work and tried to apply the guidelines suggested by the instructor and the team theorists (Johnston, 1996, 1998; Katzenbach & Smith, 2003; Osterman & Kottkamp, 2004; Senge, 1990). The majority of students (60) reported a widening of their knowledge base in regard to the team process and in developing an appreciation for the unique skills and abilities of their team members. Students learned about the external process of producing a team product and the internal dynamics of the team process (Bolman & Deal, l997; Katzenbach & Smith, 2003; Kline, l999; Senge, l990). Moreover, team members on 8 (out of 15) teams indicated that they had become "real teams" or "high-performing teams" (Katzenbach & Smith, p.84).

Unfortunately, as indicated by team theorists, sometimes teams do not achieve all their goals or outcomes even with the best intentions (Bolman & Deal, 2003; Katzenbach & Smith, 2003; Kline, 1999; Senge, l990; Thompson, 2000). When this happened, students learned the pitfalls of teaming in regard to product and process development (Marcellino, 2005b). According to Mills (2003), "human beings, however, are very complicated organisms, and, compared with chemicals – and mice, for that matter – their behaviour can be disorderly and fairly unpredictable (p.3)."

Because multiple perspectives were provided from team members, the instructor was able to learn from the team process that evolved. At the completion of each course, the instructor updated and made changes to the teambuilding model (See Model A). The instructor learned to monitor the team process more diligently with more periodic updates so that team tensions can be lessened (Kling, 2000). In the future, after a general discussion takes place in the classroom, the instructor posts additional questions on the *Blackboard* network so that additional information on a team's progress or a team's contract is rendered. Moreover, the instructor learned to limit the size of teams to four members to prevent role confusion in order to prevent withdrawal of team members. But based on a particular course's enrolment, this is not always possible. When there is a fifth team member, a fifth team role is recommended, which is initial team facilitator. Six member teams are no longer considered viable options. The instructor's preference is to create three member teams with all team members sharing the least preferred team role. When team members perform a role initially on a team, they seem to identify more readily with the team.

The application of a learning model that focuses on learning patterns (Johnston, 1996, 1998) and the LCI© may help educational professionals (including university professors and aspiring educational administrators) increase their own learning and their awareness about the learning of others. By focusing on a new category of learning differences as represented by the diversity in learning patterns, perhaps the "old" categories of individual physical and cultural differences based on age, race, ethnicity or gender may be minimised or overridden. The cooperative education model was originally implemented to ease racial differences (Stewart, 1982), perhaps Johnston's interactive learning model can do the same by creating a new non-threatening category of differences, i.e. the diversity of learning patterns.

Students came into this leadership course with their own personal mastery; they shared a vision and many were able to experience collective team learning (Senge, 1990). Hopefully, students would continue to engage in reflective practice and examine their assumptions and mental models concerning the team process. Learning about leadership and teambuilding is a process that is not easily accomplished in a semester. It is a process that hopefully would continue to evolve as these aspiring educational leaders continue to perfect their craft on-the-job by interacting and collaborating in teams with school stakeholders – teachers, administrators, staff personnel, parents, community representatives and students.

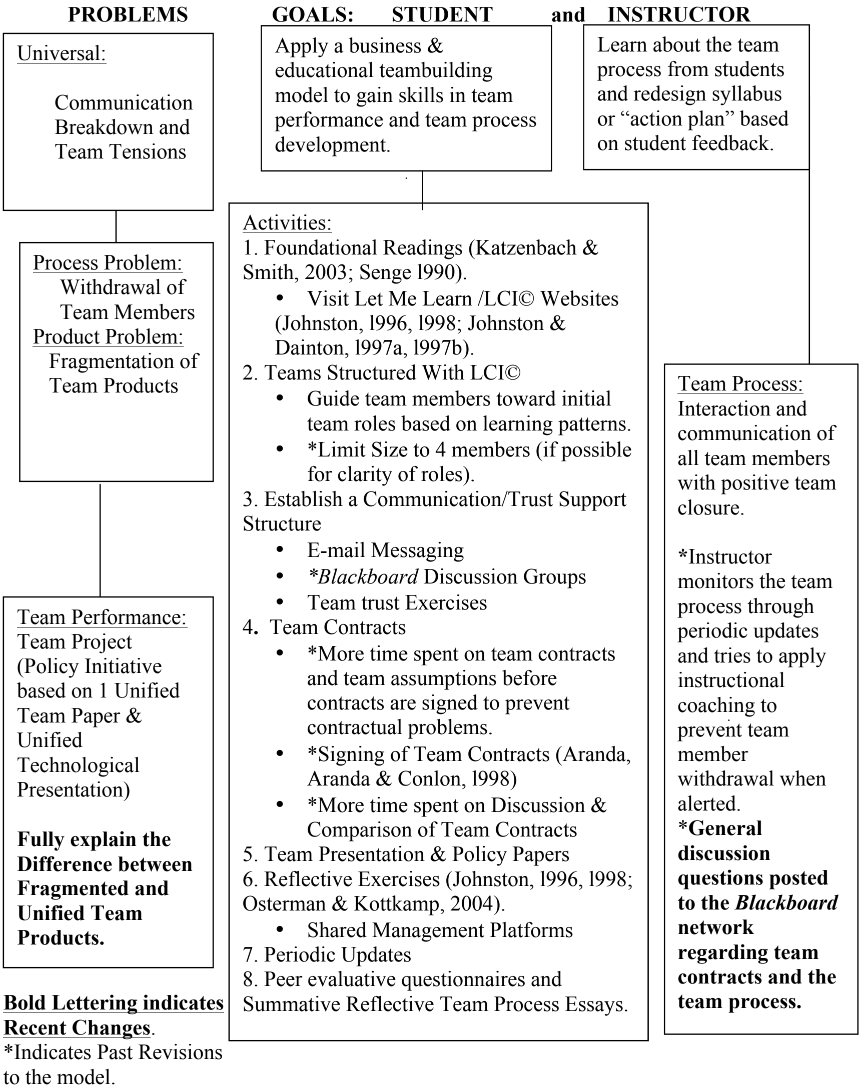
While business and education share a common theoretical knowledge base, the application of the methods and techniques of implementation in regard to teams are different. This should not be. Because people working within business and educational organisations today must continually adapt and change, there is a need to emphasise, balance and fuse both models. The business team performance model works positively when teamwork and cooperation are injected into the equation. The educational model functions positively when performance is stressed. Both disciplines should strive for a balance between performing the task effectively and developing cooperative and collaborative team members. The application of a teambuilding model based on business and educational concepts seems especially useful in broadening the knowledge base of aspiring administrators.

Research Significance

The presentation of a teambuilding model that combines business and educational concepts based on the results of this action-research study may widen the knowledge base of educational leadership instructors who utilise teams in the educational leadership classroom. Even though the instructor's teambuilding is still evolving with each action-research iteration, aspects of this model may be adapted to various classroom disciplines.

In addition, presentation of the results of this action-research study may add to the concept of sharing leadership on teams. The concept of sharing leadership on teams is currently an emerging area of research (Pearce & Conger, 2003). Previous research on team leadership focused on the individual leader within the team rather than sharing leadership on teams.

Model A Team Building Model



PROBLEMS

Universal:

Communication Breakdown and Team Tensions

Process Problem:
Withdrawal of Team Members
Product Problem:
Fragmentation of Team Products

Team Performance:
Team Project (Policy Initiative based on 1 Unified Team Paper & Unified Technological Presentation)

Fully explain the Difference between Fragmented and Unified Team Products.

GOALS: STUDENT and INSTRUCTOR

Apply a business & educational teambuilding model to gain skills in team performance and team process development.

Learn about the team process from students and redesign syllabus or "action plan" based on student feedback.

Activities:
1. Foundational Readings (Katzenbach & Smith, 2003; Senge 1990).
    - Visit Let Me Learn /LCI© Websites (Johnston, 1996, 1998; Johnston & Dainton, 1997a, 1997b).
2. Teams Structured With LCI©
    - Guide team members toward initial team roles based on learning patterns.
    - *Limit Size to 4 members (if possible for clarity of roles).
3. Establish a Communication/Trust Support Structure
    - E-mail Messaging
    - **Blackboard* Discussion Groups
    - Team trust Exercises
4. Team Contracts
    - *More time spent on team contracts and team assumptions before contracts are signed to prevent contractual problems.
    - *Signing of Team Contracts (Aranda, Aranda & Conlon, 1998)
    - *More time spent on Discussion & Comparison of Team Contracts
5. Team Presentation & Policy Papers
6. Reflective Exercises (Johnston, 1996, 1998; Osterman & Kottkamp, 2004).
    - Shared Management Platforms
7. Periodic Updates
8. Peer evaluative questionnaires and Summative Reflective Team Process Essays.

Team Process:
Interaction and communication of all team members with positive team closure.

*Instructor monitors the team process through periodic updates and tries to apply instructional coaching to prevent team member withdrawal when alerted.
***General discussion questions posted to the *Blackboard* network regarding team contracts and the team process.**

Bold Lettering indicates Recent Changes.
*Indicates Past Revisions to the model.

References

Aranda, E.K., Aranda, L., & Conlon, K. (1998). *Teams: Structuring process, culture, and politics.* Upper Saddle River, NJ: Prentice Hall, Inc.

Barbour, J.D., & Harrell, D. D. (2005). Leader as Teacher: Conversations to grow teams. *Academic Exchange Quarterly, 9* (2) pp. 81-85.

Bogdan, R. C., & Biklen, S.K. (1998). *Qualitative research in education.* Needham Heights, MA. Allyn & Bacon.

Bolman, L.G., & Deal, T.E. (2003). *Reframing organizations: Artistry, choice and leadership (3rd. ed.).* San Francisco, CA: Jossey-Bass, Inc.

Bolton, M.K. (1999). The role of coaching in student teams. *Journal of Management Education, 23*, (3), pp. 233-251.

Creighton, T., Harris, S., & Coleman, J.C. (2005). *Crediting the past, challenging the present, creating the future*. Huntsville, Texas*:* National Council of Professors of Educational Administration.

Johnston, C.A. (1996). *Unlocking the will to learn.* Thousand Oaks, CA: Corwin Press.

Johnston, C.A. (1998). *Let me learn.* Thousand Oaks, CA: Corwin Press, Inc.

Johnston, C. A. & Dainton, G.R. (1997a). *Learning connections inventory*. Pittsgrove, NJ: Let Me Learn, Inc.

Johnston, C.A. & Dainton, G. R. (1997b). *Learning combination inventory users' manual.*

Katzenbach, J. R., & Smith, D.K. (2003). *The wisdom of teams.* Boston, MA: Harper Business.

Kline, T. (1999). *Remaking teams: The revolutionary research-based guide that puts theory into practice*. San Francisco, CA: Jossey-Bass, Inc.

Kling, J. (2000, July). *Tension in teams.* Harvard Management Communication Letter. Harvard Business School Publishing, Article reprint #C0007A.

Lambert, L., Walker, D., Zimmerman, D. P., Cooper, J.E., Lambert, M. D., Gardner, M., Szabo, M. (2002). *The constructivist leader.* New York: Teacher's College, Inc.

Learning Connections Resources Website: http://www.LCRinfo.com

Let Me Learn (LML). Website: http://www.letmelearn.org.

Levine, A. (2005, March). *Educating school leaders.* New York: Columbia University. The Education Schools Project.

Lipnack, J., & Stamps, J. (1997). *Virtual teams.* New York: John Wiley & Sons, Inc.

Marcellino, P.A. (2002). A team building model for management/leadership classrooms. Model presented at the *University Council for Educational Administration.* November 2, 2002, Pittsburgh, Pennsylvania.

Marcellino, P.A. (2003). Creative problem solving: A teambuilding model for leadership classrooms. Paper presented at the *University Council for Educational Administration.* November 9, 2003, Portland, Oregon.

Marcellino, P.A. (2005a). Bridging disciplines and setting up diverse teams. *Journal of Behavioral and Applied Management, 6* (3), pp. 167-210.

Marcellino, P.A. (2005b). Learning from contrasting teams. *AcademicExchange Quarterly Journal 9* (2), pp. 230-234.

Miles, M.B., & Huberman, A. M. (1994). *Qualitative data analysis.* Thousand Oaks, CA: Sage Publications.

Mills, G.E. (2003). *Action research: A guide for the teacher researcher.* Upper Saddle River, NJ: Prentice Hall, Inc.

Osterman, K.F., & Kottkamp, R.B. (2004). *Reflective practice for educators:Professional development to improve student learning (2nd ed.).* Newbury Park, CA: Corwin Press, Inc.

Pacanowsky, M. (1995). Team tools for wicked problems.*Organizational Dynamics,23*(3), pp. 36-49.

Pearce, C. L., & Conger, J. A. (2003). *Shared leadership: Reframing the hows and whys of leadership.* Thousand Oaks, CA: Sage Publications.

Polzer, J. T. (2003 February). *Leading teams.* Harvard Business School Publishing. Article Reprint #9-403-094.

Senge, P.M. (1990). *The fifth discipline: The art and practice of the learning organization.* New York: Currency Doubleday.

Silverberg, R. (2003). Developing relational space: Teachers who came to understand themselves and their students as learners. *American Educational Research Association Conference*, Chicago, Illinois; April 22, 2003.

Stewart, A.J. (1982). *Motivation and society.* San Francisco: Jossey-Base Publishers.

Thompson, L. (2000). *Making the team: A guide for managers.* Upper Saddle River, NJ: Prentice Hall, Inc.

Topping, K. (1998). Peer assessment between students in colleges and universities. *Review of Educational Research,* 68 (3), pp. 249-276.

• CHAPTER 14 •

The Impact of Structured Writing and Developing Awareness of Learning Preferences on the Performance and Attitudes of Engineering Teams

Kevin Dahm, James Newell, Heidi Newell and Roberta Harvey

Introduction

The term "metacognition" describes a learning process in which the learner is conscious of how he/she learns (Austin, 1993) A metacognitive learner is one who understands how he/she learns and consciously uses this knowledge to facilitate learning (Brown et al 1983; Angelo & Cross, 1993). The value of instilling metacognition in students has long been recognised; a 1984 study Group on the Conditions of excellence in American higher education, for example, stated:

There is now a good deal of research evidence to suggest that the more time and effort students invest in the learning process and the more intensely they engage in their own education, the greater will be their satisfaction with their educational experiences, their persistence in college, and the more likely they are to continue their learning (National Institute of Education, 1984).

This paper explores methods of instilling metacognition in engineering students in a team-based, project setting. It builds upon a pilot study published in *Chemical Engineering Education* in 2004 (Newell et al, 2004).

This paper was first published in the Journal Advances in Engineering Education, ASEE. Spring 2009

Let Me Learn®

The Let Me Learn (LML) process is a comprehensive strategy for building metacognitive practice in students. It was developed by Dr Christine Johnston and is described in detail in her 1998 book (Johnston, 1998). The Process begins by having students take the Learning Connections Inventory (LCI), a self-report instrument that characterises a student's combination of learning preferences with respect to four distinct (discrete) learning patterns. Studies validating the LCI as an instrument are summarised on the LML web site at http://www.letmelearn.org. The four patterns are: sequence, precision, technical reasoning, and confluence.

- *Sequence* refers to organisation, structure, and step-by-step directions. Individuals who use this pattern tend to be well organised and meet deadlines reliably, but may be intimidated by open-ended projects.
- *Precision* refers to needing detail, specifics, and information. Individuals who use this pattern tend to take extensive notes, speak and write with high levels of detail, and choose their words carefully even in informal settings.
- *Technical Reasoning* refers to problem-solving by understanding function and active work rather than through the use of words. Individuals, who use this pattern typically like to work in a lab or shop, often dislike abstract material and demand a practical application for everything. They value accomplishment and hands-on learning but don't necessarily value demonstrating their knowledge to others.
- *Confluence* refers to rapid generation of ideas and risk taking. Individuals who use this pattern tend to find detailed instructions confining, preferring to do things their own way. They are generally vocal participants in all activities and do not fear failure.

All learners are capable of using any or all of these patterns, but individuals have preferences which the LCI quantifies as a number in the range 7–35. Each individual pattern is measured along a continuum of "use first (25–35)," "use as needed (18–24)," or "avoid (7–17)." Once an individual understands the four patterns and his or her own preferences for using or avoiding them, he or she can:

- Identify tasks that require use of, or avoidance of, particular patterns.
- Intensify the use of patterns that he or she prefers to avoid but needs for particular tasks.
- Tether the use of preferred but task-inappropriate patterns.
- Understand, appreciate, and value peers who have different learning patterns.
- Formulate effective strategies for group tasks, based on individual learning patterns.

LML has been implemented by hundreds of teachers with thousands of K-12 students, demonstrating that children as young as six years old can learn to do these things; and that the process improves learning, students' attitudes toward school and working relationships with peers and teachers (Johnston, 1998).

Role of LML in the Engineering Curriculum

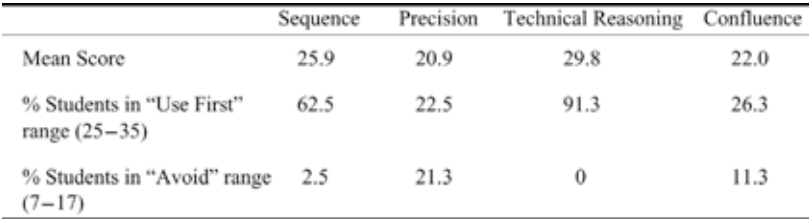
To date, the authors are aware of no applications of LML in engineering education outside Rowan University. Numerous authors have used instruments such as the Myers-Briggs type indicator (Pittenger 1993) or the Felder-Silverman model (Felder, 1993; Felder & Silverman, 1988) to characterise student learning styles and have applied the concept of learning styles to various aspects of engineering education. An excellent summary of this work is given by Felder and Brent (2005). These studies demonstrate (Felder, 1993; Felder & Silverman, 1988; McCaulley, et al, 1983; McCaulley, Macdaid & Granade, 1985) that the traditional lecture mode of instruction is much better for students with certain personalities and learning styles (e.g. sequential, intuitor). The focus in these studies tends to be on the instructor: the studies present teaching methods that engage all learning styles and show that students benefit from such methods (Bernold et al, 2000). The LML process is complementary to the previous work in that it is student-centred: The focus is on empowering students to consciously and effectively control their learning patterns. The differences between LML and learning style models are discussed extensively in Dr Johnston's book (Johnston, 1998).

This study examined the effect of implementing LML in a project-based engineering course. Engineering students tend to lead with the technical pattern (table 1 summarises the patterns of the Rowan class of 2006, and all cohorts that were tested have been similar) and this study was intended to address specific challenges associated with technical learners. While technical reasoning serves engineering students well in many respects, two common attributes (Johnston, 1998) of technical learners are:

- They often prefer to work alone.
- They often have an aversion to writing.

These tendencies of technical learners have significant implications for the engineering curriculum. There is extensive literature (Guzzo & Dickson, 1996) demonstrating the importance and benefits of teaming in the engineering curriculum, and also demonstrating that interpersonal and teaming skills are highly valued by practicing engineers and by employers (Seat & Lord, 1999; Kranzber, 1993). Since 2000, ABET has specifically required an emphasis on communication skills and teaming skills in all engineering programs (Latucca, Terenzini & Volkwein, 2006). As a result, many engineering programs now incorporate writing-to-learn in their

Table 14.1 Summary of learning patterns for 80 students in the Rowan Engineering class of 2006



	Sequence	Precision	Technical Reasoning	Confluence
Mean Score	25.9	20.9	29.8	22.0
% Students in "Use First" range (25–35)	62.5	22.5	91.3	26.3
% Students in "Avoid" range (7–17)	2.5	21.3	0	11.3

curricula (Ludlow & Schulz, 1994; Newell et al., 1997; Elbow, 1983; Van Orden, 1990; Wankat, 1999). But these vital skills are unappreciated by many engineering students, whose preferred learning patterns as measured by the LCI make them likely to resist activities that involve writing and teaming.

This study was a design experiment examining the effect of implementing LML in a project-based course, both with and without targeted writing exercises. The next section describes the course in which the experiment was conducted.

Junior/Senior Engineering Clinic

The project was carried out through the Junior/senior engineering Clinic. The Rowan Clinic program has been described in detail previously (Schmalzel,Marches & Hesketh, 1998; Newell, et al., 2001). Briefly, Junior/senior engineering Clinic is a course in which teams of engineering students conduct semester-long and sometimes multi- year projects, many of which are sponsored by local industry. While the sophomore engineering Clinic provides an introduction to open-ended design problems, the Junior/senior engineering Clinic presents students with real research, design, and product development challenges; including accountability to real, external sponsors. The Junior/senior Clinic thus provides an exciting and meaningful learning experience, but one fraught with challenges that students are typically encountering for the first time.

The LCI provides a context for understanding some of the barriers to effective learning and effective teaming. For example, the highly sequential learner's preference for order, planning, and consistency is in sharp contrast with the highly confluent learner's desire to try new ideas and willingness to take risks. The skill sets are complementary if used effectively. However, the potential for conflict is clearly present and is likely heightened by the intense, unfamiliar and often unpredictable environment of Junior/senior Clinic. Another notable barrier to team success is the technical learner's aversion to writing. For example, a technical learner is likely adept at conducting hands-on experiments and is likely to learn a great deal from them. However, he/she is not necessarily adept at, and unlikely to place great value on, the activity of communicating what was learned to others. Yet in a Junior/senior Clinic project, the final report is generally the primary vehicle by which the sponsors receive value from the project.

In the fall of 2003, a small sample of clinic teams within the chemical engineering department was given some basic LCI training and exposed to a series of structured writing assignments, in an attempt to instil metacognitive behaviours that would help teams overcome the obstacles described previously. This preliminary study, published in Chemical Engineering Education in 2004 (Newell et al., 2004), was encouraging, but the results were qualitative and anecdotal. Here we describe a more formalised design experiment intended to measure directly the impact of LML with and without structured writing assignments, on the students' performance on team projects, as well as their attitude towards teaming.

Experimental

During the fall semester of 2004, 11 engineering teams in the Junior/senior engineering Clinics were broken into four categories, with two or three teams in each category.

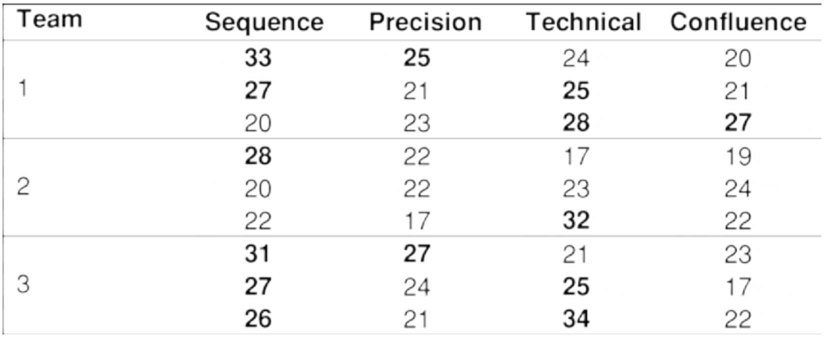
- Category I teams received instruction in the use of the LCI, and met with a facilitator and their teammates to examine their LCI profiles. In this meeting, potential areas for future conflict were discussed, and the teams developed strategies to avoid these conflicts.
- Category II teams received no LCI instruction but participated in a series of structured writing assignments designed to encourage continuous, active reflection on the project and barriers to its completion. These assignments included developing and ratifying a team charter, and submitting biweekly reports on barriers to success and team dynamics.
- Category III teams both received the LCI training and participated in the structured writing assignments.
- Category IV teams served as a comparison group and participated in none of the activities.

The assignment of students to teams was completed before any LCI data was collected, and teams were assigned to meet the needs of the industrial clients sponsoring the projects, not to optimize this study. Drs James Newell and Kevin Dahm placed their own clinic teams into category III and other teams were assigned into categories in accordance with the preferences of their faculty supervisors. Since this resulted in two to three teams in each category no further adjustments were made. In total, there were 33 Junior and senior students on the teams, all but three of whom were chemical engineering students. There was one student from another engineering discipline in each of categories I, II and III.

The students in categories I and III met with Dr Kevin Dahm and Dr James Newell during the first week of clinic to discuss their LCI scores and those of their team members. These discussions included the attributes of each learning pattern, possible sources of conflict that were predictable from the team's specific patterns, consideration of how different people process information and approach problems, and ways to bridge differences in learning patterns. Two examples are provided:

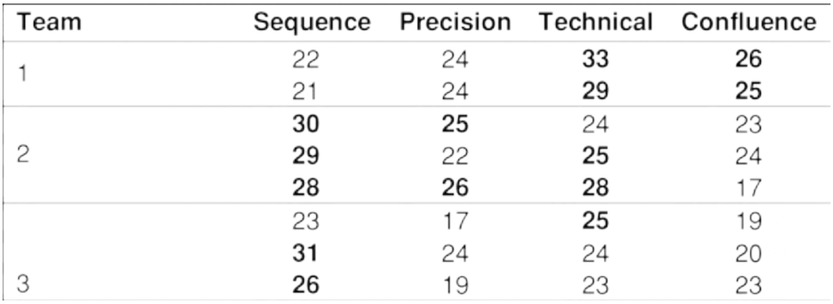
1. A team (team 1 in table 14.2) had two members with a strong preference for sequence but one member who led with technical and confluence, while placing in the low use-as-needed range for sequence. Without intervention the high-sequence team members might well have viewed the other member as lazy, while the sequence-avoidance learner would likely view his teammates as uptight. The rationale for this study is that students recognise the potential for this conflict in advance, understand its cause and are equipped with a non-confrontational vocabulary with which to discuss the issue; e.g., "more sequential than me" and "less sequential than me," rather than "lazy" and "anal-retentive."

Table 14.2 Summary of Learning Patterns for Category III teams. Use-first patterns are boldfaced



Team	Sequence	Precision	Technical	Confluence
1	**33**	**25**	24	20
	27	21	**25**	21
	20	23	**28**	**27**
2	**28**	22	17	19
	20	22	23	24
	22	17	**32**	22
3	**31**	**27**	21	23
	27	24	**25**	17
	26	21	**34**	22

Table 14.3 Summary of Learning Patterns for Category I teams. Use-first patterns are boldfaced



Team	Sequence	Precision	Technical	Confluence
1	22	24	**33**	**26**
	21	24	**29**	**25**
2	**30**	**25**	24	23
	29	22	**25**	24
	28	**26**	**28**	17
3	23	17	**25**	19
	31	24	24	20
	26	19	23	23

2. Some teams consisted largely or entirely of learners who used the technical pattern first. These students were counselled on the merits of the technical learning pattern as well as the potential pitfalls of exclusive reliance on this pattern. Technical learners when left to their own devices are generally inclined toward a purely hands-on, empirical approach that is not optimal for most projects. Team 1 in table 14.3, for example, was composed of two very similar learners who strongly lead with technical reasoning, though neither avoided any pattern. The discussion, consequently, focused on the important role of background research and a literature review in the project, and the importance of distinguishing between levels of enthusiasm for a task vs. the importance of that task. Teams like this one, composed entirely of use-first technical learners, were advised to appoint one member to begin working on a literature review right away, even if this meant working outside his/her preferred pattern.

Many different levels of implementation of LML are possible within a course. In this case, there was no further use or even mention of the LCI (unless the students brought it up) beyond this single introductory meeting, or any explicit requirement that the students apply what they had learned to their projects. Eight of the eleven teams were supervised not by the authors of this paper, but by other chemical engineering faculty who were not knowledgeable about the LCI or LML. The assessment section will demonstrate that this modest time commitment had a measurable impact on team performance and student attitudes toward teaming.

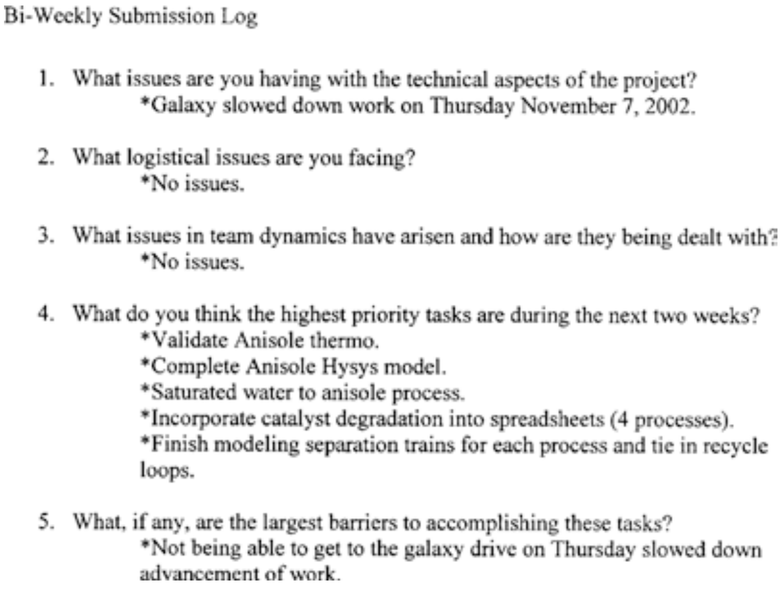
The other strategy employed to inspire metacognition in teams was the use of targeted writing exercises. Faculty members supervising teams from Categories II and III required each individual on each team to answer the following questions, in writing, every two weeks:

1. What issues are you having with the technical aspects of the project?
2. What logistical issues (ordering problems, scheduling, software issues, etc.) are you facing?
3. What issues in team dynamics have arisen since our last meeting and how are you dealing with them?
4. What do you think the highest priority task is during the next two weeks?
5. What is the largest barrier to accomplishing that task?

These questions resemble journaling activities reported previously at Clemson University (Hirt, 1995) and the University of Texas at Austin (Korgel, 2002) . Here the intent was both to engage the students in active reflection on the project and to compare the students' perceptions on priorities, barriers, etc. These bi-weekly status reports were not graded (apart from ensuring that they were submitted), but often served as the starting point for discussion at subsequent team meetings with faculty project supervisors. Figure 14.1 shows a typical response; a very brief memo presenting responses in list form and not necessarily using complete sentences. A few students submitted detailed memos in more of a report style, such as the one shown in Figure 14.2.

Also during the first week of the semester, each team in Categories II and III was asked to develop and sign a team charter that addressed expectations for the team and

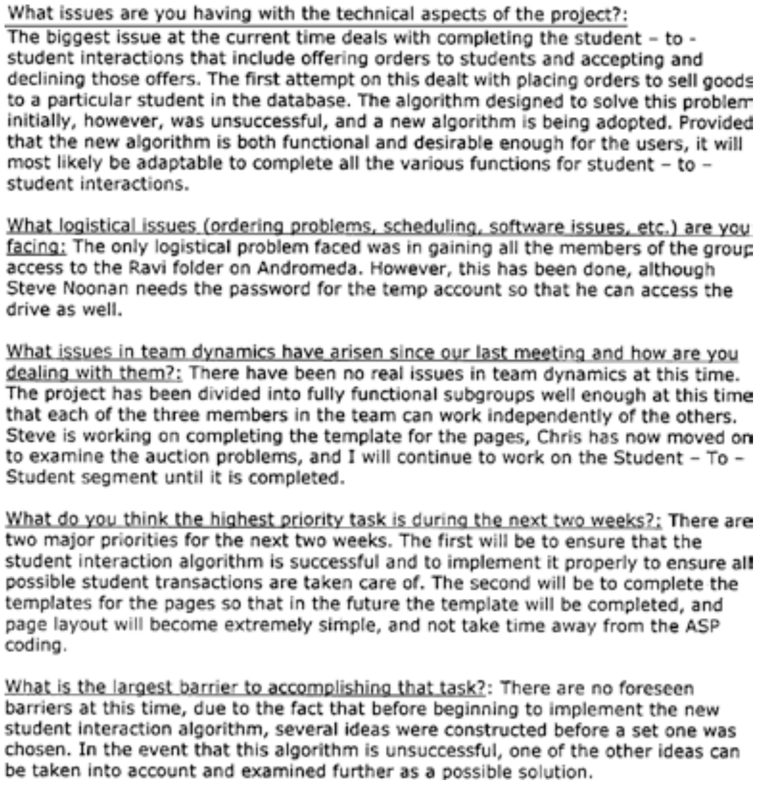
Figure 14.1 Actual bi-weekly memo submitted by a member of a category III team



Bi-Weekly Submission Log

1. What issues are you having with the technical aspects of the project?
   *Galaxy slowed down work on Thursday November 7, 2002.
2. What logistical issues are you facing?
   *No issues.
3. What issues in team dynamics have arisen and how are they being dealt with?
   *No issues.
4. What do you think the highest priority tasks are during the next two weeks?
   *Validate Anisole thermo.
   *Complete Anisole Hysys model.
   *Saturated water to anisole process.
   *Incorporate catalyst degradation into spreadsheets (4 processes).
   *Finish modeling separation trains for each process and tie in recycle loops.
5. What, if any, are the largest barriers to accomplishing these tasks?
   *Not being able to get to the galaxy drive on Thursday slowed down advancement of work.

Figure 14.2 Actual bi-weekly memo submitted by a member of a category III team



What issues are you having with the technical aspects of the project?:
The biggest issue at the current time deals with completing the student – to - student interactions that include offering orders to students and accepting and declining those offers. The first attempt on this dealt with placing orders to sell goods to a particular student in the database. The algorithm designed to solve this problem initially, however, was unsuccessful, and a new algorithm is being adopted. Provided that the new algorithm is both functional and desirable enough for the users, it will most likely be adaptable to complete all the various functions for student – to – student interactions.

What logistical issues (ordering problems, scheduling, software issues, etc.) are you facing: The only logistical problem faced was in gaining all the members of the group access to the Ravi folder on Andromeda. However, this has been done, although Steve Noonan needs the password for the temp account so that he can access the drive as well.

What issues in team dynamics have arisen since our last meeting and how are you dealing with them?: There have been no real issues in team dynamics at this time. The project has been divided into fully functional subgroups well enough at this time that each of the three members in the team can work independently of the others. Steve is working on completing the template for the pages, Chris has now moved on to examine the auction problems, and I will continue to work on the Student – To – Student segment until it is completed.

What do you think the highest priority task is during the next two weeks?: There are two major priorities for the next two weeks. The first will be to ensure that the student interaction algorithm is successful and to implement it properly to ensure all possible student transactions are taken care of. The second will be to complete the templates for the pages so that in the future the template will be completed, and page layout will become extremely simple, and not take time away from the ASP coding.

What is the largest barrier to accomplishing that task?: There are no foreseen barriers at this time, due to the fact that before beginning to implement the new student interaction algorithm, several ideas were constructed before a set one was chosen. In the event that this algorithm is unsuccessful, one of the other ideas can be taken into account and examined further as a possible solution.

the project. Charters could be as extensive as the team chose, but at minimum had to address the role of each individual, the responsibility of each individual to the team, and a process for addressing and resolving conflicts. Teams in Categories I and IV submitted written memos if required by their individual faculty supervisors to do so, but did not complete a team charter, and did not have a specific format or schedule for the memos.

Students in all four categories were told verbally and through the course syllabus (as is done every semester) that every clinic project is unique, that specific assignments, tasks and expectations would vary from one project to another and that these would be established by the faculty supervisor. Students were not, however, specifically informed that this design experiment was occurring. This specification served its purpose in that none of the students in any of the cohorts expressed a perception of unfairness, or of being required to do "extra" work, either anecdotally or in any of the assessment instruments used.

Results and Discussions

To evaluate the effectiveness of these strategies, student attitude and performance were both measured. To objectively measure performance, a set of rubrics that have been published previously in Chemical Engineering Education (Newell, Newell & Dahm, 2004) were applied to the final Junior/senior Clinic reports produced by each team. Although these rubrics focus on demonstrating specific learning objectives (such as "meaningful error analysis," "formulating appropriate conclusions," etc.), they are presented in terms of grades to make them more meaningful to students. A sample rubric is shown below:

Area: Technical Awareness

The A-team:

- Clearly demonstrates an awareness of the works of others and establishes a context for its project
- Identifies and understands works from multiple literature sources.

The B-team:

- Shows some understanding of the work in the field, but has limited depth and breadth.
  - Demonstrates understanding that is limited to faculty-provided materials.

The C or lower–team:

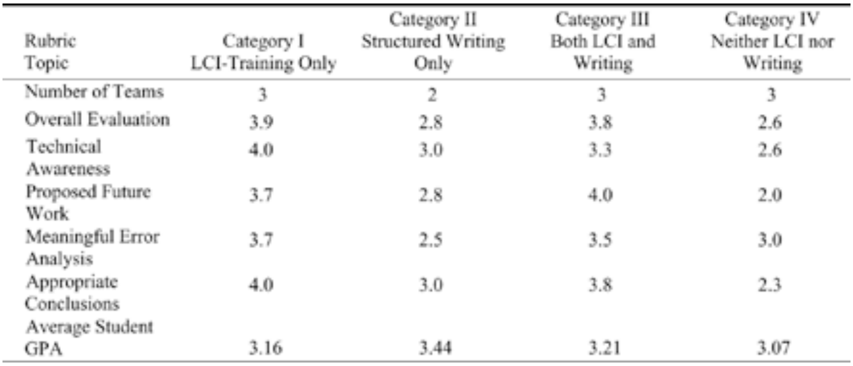
- Fails to demonstrate an awareness of the works of others and the significance of its project.

The average performance of the teams in each of the four categories was quantified as a GPA, as follows: An A-level performance for a specific objective was assigned a score of 4, a B-level performance a score of 3, etc. Table 14.4 below summarises the average results for the teams in each category, with respect to each objective. The "overall evaluation" is the average score for teams with respect to all objectives, weighted equally. Each report was read by two engineering faculty members, with no faculty member evaluating his/her own team's report. Agreement between readers was usually perfect and always within one point, and the results in Table 4 reflect an average of the ratings. The sample sizes were very small and the authors do not regard the results as statistically significant, but the results do indicate that teams that received LCI training only (Category I) and teams that received both LCI training and structured writing assignments (Category III) performed better than those that received only structured writing assignments (Category II) and those that received no teaming training (Category IV) in all of the rubric areas, and the overall evaluation was approximately one full point better on the four point scale. Note that the Category I and III teams out-performed Category II teams in this course despite the fact that the Category II students had higher overall GPAs on average. Generally, little difference was found between teams receiving LCI training only (Category I) and teams receiving both LCI training and structured writing (Category III), though the Category I teams did much better on one particular outcome, "technical awareness.

There are at least two possible explanations for the improvement observed in teams receiving the LCI training. One is that the LCI training helped the students overcome potential obstacles to working effectively as a team, and therefore these students did a better job on the project. Another possibility is that the LCI training helped students overcome their natural aversion to writing, and therefore helped them to write better reports about their projects. The data included in no way tried to isolate such effects, but anecdotally the authors believe both occurred to some degree.

To examine how the project affected team attitudes, all students on participating teams were given a survey at the beginning and end of the semester. The results of this survey are summarized in Table 14.5. Analysing the responses in Table 14.5 shows that the results of the pre-semester survey were very similar across the four categories, which is logical, as the assignment of teams to categories was in effect random. The results show that student attitudes toward teams changed markedly during the semester for the students who received LCI training, but did not significantly change for those who did not. The single most compelling result is the responses to the statement "I

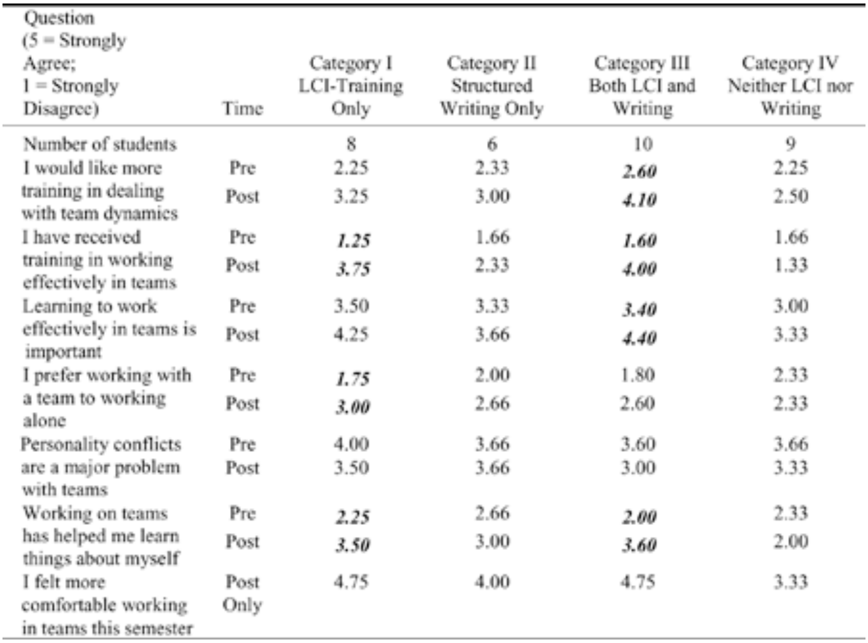
Table 14.4 Average performance of teams in Categories I-IV with respect to desired learning outcomes (4 5 best, 1 5 worst).



Rubric Topic	Category I LCI-Training Only	Category II Structured Writing Only	Category III Both LCI and Writing	Category IV Neither LCI nor Writing
Number of Teams	3	2	3	3
Overall Evaluation	3.9	2.8	3.8	2.6
Technical Awareness	4.0	3.0	3.3	2.6
Proposed Future Work	3.7	2.8	4.0	2.0
Meaningful Error Analysis	3.7	2.5	3.5	3.0
Appropriate Conclusions	4.0	3.0	3.8	2.3
Average Student GPA	3.16	3.44	3.21	3.07

have received training in working effectively in teams." All groups on average firmly disagreed (mean response below 2) with this statement on the pre-survey. On the post-survey, students in Categories I and III agreed (mean response 3.75 or better) with this statement. Students in Categories I and III on the post-survey also indicated an increased desire for more such training, placed an increased importance on these skills, and attributed working in teams with increased self-awareness. The results of the pre-survey reflect a clear preference for working alone to working in teams, a result which is consistent with the generalisations regarding technical learners that were noted in the section "Role of LML in Engineering Curriculum." The students in Categories I and III, on the post-survey, still did not prefer to work in teams but gave more neutral responses (3.0 and 2.6). On all of these matters, students in Categories II and IV showed no significant change between the pre- and post-surveys.

Table 14.5 Comparison of survey results given to students before (Pre) and after (Post) project. boldface italics indicate that the difference between pre- and post-project response is statistically significant (p , 0.05) for that cohort on that question).



Question (5 = Strongly Agree; 1 = Strongly Disagree)	Time	Category I LCI-Training Only	Category II Structured Writing Only	Category III Both LCI and Writing	Category IV Neither LCI nor Writing
Number of students		8	6	10	9
I would like more training in dealing with team dynamics	Pre	2.25	2.33	***2.60***	2.25
	Post	3.25	3.00	***4.10***	2.50
I have received training in working effectively in teams	Pre	***1.25***	1.66	***1.60***	1.66
	Post	***3.75***	2.33	***4.00***	1.33
Learning to work effectively in teams is important	Pre	3.50	3.33	***3.40***	3.00
	Post	4.25	3.66	***4.40***	3.33
I prefer working with a team to working alone	Pre	***1.75***	2.00	1.80	2.33
	Post	***3.00***	2.66	2.60	2.33
Personality conflicts are a major problem with teams	Pre	4.00	3.66	3.60	3.66
	Post	3.50	3.66	3.00	3.33
Working on teams has helped me learn things about myself	Pre	***2.25***	2.66	***2.00***	2.33
	Post	***3.50***	3.00	***3.60***	2.00
I felt more comfortable working in teams this semester	Post Only	4.75	4.00	4.75	3.33

Despite the small sample size, the results were in some cases statistically significant. A series of paired sample t-tests applied to the responses showed that for the students in Categories I and III, the differences in responses to the pre- and post-semester surveys were statistically significant (p, 0.05) for some questions, including "working on teams has helped me learn things about myself," and "I have received training in working effectively in teams," for both cohorts. Category I and III students also responded more positively to the question "I felt more comfortable working in teams this semester" than did their classmates in Categories II and IV.

The students in Category II, who received structured writing assignments but no LCI training, demonstrated some improvement in their attitudes toward teaming in the post-semester survey, though this improvement was less dramatic than that of the category I and III teams, and not statistically significant. Category IV teams that received neither LCI instruction nor structured writing exercises showed no changes in their opinions during the semester.

At the end of the semester, each person was also asked the following series of questions:

1. What progress are you making in your learning as a result of being on this team?
2. How is the team helping you overcome problems with the project?
3. How is the team contributing toward your progress on this project?
4. What personal qualities are you developing as a result of being on this team?
5. How is the team impeding your progress on this project?
6. What problems are you having as a result of being on this team?
7. In what ways are you finding it difficult to work on this project?
8. What have you found helps you follow through despite difficulties you are encountering?
9. In what ways are you contributing to or promoting effective teamwork?

Most of the responses to this survey were cursory. The most notable outcome was that although students reported few problems when answering these questions, they did show evidence of having developed the vocabulary to address issues in teaming. Responses to questions 8 and 9 included, "Even though I am not very sequential, I worked hard to meet deadlines and meet the expectations of the more sequential members of my group," and "Our group functioned well. Student X was high in precision and I was not, but student Y fell in between and helped keep us moving when it was time to write." Many students reported feeling more confident about working in teams.

Student teams in Categories II and III were also surveyed to determine their opinions of the targeted writing exercises (team charter, bi-weekly memos) used to improve their teaming skills. Nearly 75% of the students indicated that writing the team charters was a useful experience, though over 90% also said that they never referred to them again during the year. The most straightforward interpretation of these facts is that once all of the members agreed to a set of rules, they largely followed them. Most of the team charters focused on logistics: how frequently teams would meet, processes for notification if a meeting would be missed, and a process for resolving conflict (in which "go to the professor" would generally be regarded as a last resort.) Few really examined the responsibilities of the team to the individual or the individual to the team beyond saying all members must show up and do their assigned tasks.

In the year-end survey, the students expressed unanimously negative opinions of the bi-weekly memos, indicating they were a waste of time and not helpful. This was a somewhat surprising result in that during the semester, the authors had received anecdotal feedback indicating that the memos were valuable. An examination of the content of the students' writing suggests that, contrary to their views, the writing serves the important function of prompting students to externalise and articulate perceptions of and reactions to teaming issues, thereby providing explicit identification of pattern-based barriers and making it possible to reflect on and address those barriers. Indeed, faculty members indicated that the memos were a useful tool in identifying problems before they got out of hand. Further, the supervisors of all but one team from Categories I, II and III reported that their projects had been more successful this year than last, and both faculty and students indicated that there were no significant team dynamics problems in any of the teams in Categories I, II or III.

The LCI itself offers an explanation for the disparity between student opinion of the bi-weekly memos and the apparent value of the memos. The technical learner's aversion to writing was noted in the introduction. Affinity for writing is usually associated with the precise learning pattern, because of the preference for a high level of accuracy and detail, for which writing is well suited. The engineering student population at Rowan consistently has a mean score in the high "use first" range for technical learning and the low "use as needed" range for precision. From this combination, we would expect the majority of students to have a negative affective perception of writing, even if they had a rational or practical appreciation of its importance. Unfortunately, the category III teams disliked the bi-weekly memos just as uniformly as the category II teams did. This means that students who were aware of their own preferences for using the technical pattern and/or avoiding precision, and thus had an explanation for their instinctive aversion to writing, did not view the bi-weekly writing activity any differently from their classmates with no LCI training. Future studies will investigate whether the bi-weekly memos are necessary to articulate, reflect on, and address teaming issues and if so, by what mechanisms they do so. This understanding would provide a stronger rationale for the memo-writing, and potentially enable us to persuade more students to "buy into" it.

Summary and Conclusions

In an attempt to teach students to take a metacognitive approach to team projects, two activities were integrated into a Junior/senior project-based course: use of the LCI to teach students about their own learning patterns, and targeted writing exercises intended to promote focused reflection throughout the semester. A design experiment was employed to assess the impact of these two activities used individually or together. The results indicated that teams receiving the LCI training performed better than teams that did not, though sample sizes were insufficient to draw statistically significant conclusions concerning how the LCI and writing exercises affected team performance. A survey given at both the beginning and the end of the semester demonstrates that the use of the LCI had a clear positive impact on the attitudes of students toward teaming, and these results were statistically significant. The LCI training, however, had no measurable effect on student attitudes toward the writing exercises. The impact of the targeted writing exercises on team performance is unclear: The bi-weekly memos were not popular with students, and while there were some indications that the exercises had value for the team projects, the results were not statistically significant.

This paper describes an experiment which the Rowan Chemical engineering department graciously agreed to support on a one-time basis. Project managers have complete autonomy in project administration beyond a set of broad minimum guidelines (e.g., projects must include oral and written deliverables). Consequently, no uniform practice regarding use of the LCI in this course has been implemented as a result of the study described here. However, use of the LCI and Let Me Learn at Rowan has grown considerably since this study. Rowan University now administers the LCI to all incoming students and includes seminars on the Let Me Learn process in freshman orientation activities. Within the College of engineering, Let Me Learn has now also been implemented in the Freshman and sophomore Clinics (Dahm & Harvey, 2008; dahm & Harvey, 2007).

The model described here is readily adaptable to other schools and other team settings because the Let Me Learn activity consisted of a single day session with no further intervention. While the people leading the one-day activity were fluent with the LCI and the four learning patterns it measures, the supervisors of the individual projects needed no previous experience with LML, and in most cases had none.

References

Angelo, T.A. & Cross, K.P. (1993). *Classroom Assessment Techniques: A Handbook for College Teachers*, 4th edition ed. san Francisco: Jossey-Bass, Inc.

Austin, W. (1993). What Matters in College: Four Critical Years Revisited. San Francisco: Jossey-Bass Publishers.

Bernold, L.E., Bingham, W.L., McDonald, P.H., & Attia, T.M. (2000). Impact of Holistic and Learning-oriented Teaching on Academic Success. *Journal of Engineering Education,* **89** (2). Available at: http://soa.asee.org/paper/jee/paper-view. cfm?pdf=272.pdf

Brown, L., Bransford, J.D., Ferrara, R.A.& Campione, J.C. (1983). Learning, Remembering, and Understanding, in *Handbook of Child Psychology, Volume 3. Cognitive Development*, 4th edition ed. New York: John Wiley and sons.

Byrd, J.S. & J.l. Hudgkins, J.L. (1995). Teaming in the Design Laboratory. Journal of Engineering Education, vol. 84, pp.335. Available at: http://soa.asee.org/paper/jee/paper-view.cfm?pdf=535.pdf

Dahm, K.D. & Harvey, R. (2007, June). Using Awareness of Learning Processes to Help Students Develop Effective learning strategies. *Proceedings of the ASEE Annual Conference and Exposition*, Honolulu, Hi. Available at: http://soa.asee.org/paper/conference/paper-view.cfm?id=4394

Dahm, K.D. & Harvey, R. (2008, June). Using Let Me Learn® To Promote Metacognition and Foster Teaming Skills. *Proceedings of the ASEE Annual Conference and Exposition*, Pittsburgh, Pa. Available at http://soa.asee.org/paper/conference/paperview.cfm?id=8981

Elbow, P. (1983). Teaching thinking by teaching writing. *Phi Delta Kappan*, pp. 37.

Felder, R.M. (1993). Reaching the Second Tier: Learning and Teaching styles in College science education. *Journal of College Science Teaching,* **23** (5). Available at: http://www4.ncsu.edu/unity/lockers/users/f/felder/public/Papers/ secondtier.html

Felder, R.M. & Brent, R. (2005). Understanding student Differences. *Journal of Engineering Education*, **94** (1) Available at: http://soa.asee.org/paper/jee/paperview.cfm?pdf=243.pdf

Felder, R.M. & Silverman, L.K. (1988). Learning and Teaching Styles in Engineering Education. *Journal of Engineering Education,* **78** (7). Available at: http://www4.ncsu.edu/unity/lockers/users/f/felder/public/Papers/ls-1988.pdf

Guzzo, R. A. & Dickson, M.W. (1996). Teams in Organizations: Recent Research on Performance and Effectiveness. *Annual Review of Psychology*, Vol. 47, pp. 307.

Hirt, D. (1995). Student Journals: Are They Beneficial in Lecture Courses? *Chemical Engineering Education*, 29 (62).

Johnston, C.A. (1998). *Let Me Learn,* Corwin Press Inc., London.

Johnston, C. *Let Me Learn website.* Center for Advancement of learning, http://www.letmelearn.org

Katzenbach, J.R. & Smith, D.K. (1993). *The Wisdom of Teams: Creating the High Performance Organization*. Boston, MA: Harvard Business School Press.

Korgel, B.A. (2002). Nurturing Faculty-Student Dialogue, Deep Learning and Creativity Through Journal Writing Exercises. Journal of Engineering Education, vol. 91, pp. 143. Available at: http://soa.asee.org/paper/jee/paper-view.cfm?pdf=695.pdf

Kranzber, M. (1993). Educating the Whole Engineer. ASEE Prism, Vol. 28.

Latucca,L.R, Terenzini, P.E. & Volkwein, J.F. (2006). Engineering Change: A study of the Impact of EC2000. ABET, Inc., Baltimore, MD.

Ludlow, D.K. & Schulz, K.H. (1994). Writing across the chemical engineering curriculum at the University of north Dakota. Journal of Engineering Education, vol. 83, pp. 161. Available at http://soa.asee.org/paper/jee/paper-view.cfm?pdf=547.pdf

McCaulley, M.H., Godleski, E.S., Yokomoto, C.F., Harrisberger, L. & Sloan, E.D. (1983). Applications of Psychological Type in Engineering Education. *Journal of Engineering Education,* 73(5).

McCaulley, M.H., Macdaid, G.P., & Granade, J.G. (1985).

ASEE-MBTI Consortium: Report of the First Five Years. *Proceedings of the ASEE Conference and Exposition,* Washington, D.C.

National Institute of Education (1984). Study Group on the Conditions of excellence in American Higher Education. *Involvement in Learning*. Washington, D.C.

Newell, J.A. Dahm, K.D., Harvey, R. & Newell, H.L. (2004). Developing Metacognitive Engineering Teams. *Chemical Engineering Education*, 38(4), pp.316–320.

Newell, J.A., Farrell, Hesketh, R. & Slater, C.S. (2001). Introducing Emerging Technologies into the Curriculum Through a Multidisciplinary Research Experience". *Chemical Engineering Education*, vol. 35, pp. 296.

Newell, J.A., Ludlow, D.K. & Sternberg, S.P.K. (1997). Progressive development of oral and written communication skills across and integrated laboratory sequence. *Chemical Engineering Education*, vol. 31, pp. 116–119.

Newell, J.A., Newell, H.L. & Dahm, K.D. (2004). Rubric Development for Assessment of Undergraduate Research: Evaluating Multidisciplinary Team Projects. Chemical Engineering Education, 38 (1), pp. 68–73.

Pittenger, D.J. (1993). The Utility of the Myers-Griggs Type Indicator. *Review of Educational Research*, 63.

Schmalzel, J.L., Marchese, A.J. & Hesketh, R. (1998). What's Brewing in the Engineering Clinic? *Hewlett Packard Engineering Educator*, vol. 2, pp. 6,

Seat, E. & Lord, S.M. (1999). Enabling Effective Engineering Teams: A Program For Teaching Interaction Skills. *Journal of Engineering Education*, vol. 88, pp. 385. Available at: http://soa.asee.org/paper/jee/paper-view.cfm?pdf=264.pdf

Van Orden, N. (1990). Is Writing an Effective Way to Learn Chemical Concepts? *Journal of Chemical Education*, Vol. 67, pp. 583.

Wankat, P.C. (1999). Reflective Analysis of Student Learning in a Sophomore Engineering Course. *Journal of Engineering*

Education, vol. 88, pp. 194. Available at: http://soa.asee.org/paper/jee/paper-view.cfm?pdf=723.pdf

• CHAPTER 15 •

Intentional Learning as Transformational Learning: the Interactive Learning Model and Adult Learners

Kathleen M. Pearle

> *Real learning gets to the heart of what it means to be human.*
> PETER SENGE

Introduction

Almost two decades ago Ernest Boyer (1987) challenged the nation's colleges and universities to raise hard questions about the quality of their own work. Boyer's report warned of a gap – a "disconnect" - between the expectations and the realities of student learning, curricular coherence and academic standards. It found that institutions were ignoring important information on student achievement and retention. Most importantly, it set forth the basic tenet that excellence in higher education should be centred on student learning. Boyer saw student learning as the crucial link between student success and institutional success. Yet the culture of higher education did not explicitly promote student learning.

The underlying assumption of that culture was that instruction - but not necessarily learning - is the primary function of a college. In the culture of instruction delivery, the purpose of the college is to offer courses and degree programs. When students don't "get it", the systemic assumption is that they should change their major or institution. Typically in this culture, 56% of an entering student cohort fails to graduate with their

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This paper was first published in the American Educational Research Association Conference Proceedings, Chicago, Illinois; April 22, 2003.

class (Tinto, 1993). This is the crux of the "disconnect" that Ernest Boyer unmasked. The culture of instruction delivery does not imperatively link the college's success to the student's success.

Education's response has been catalogued in several national longitudinal studies and scores of task reports on educational reform (Boyer Commission, 1998; Joint Task Force on Student Learning, American Association for Higher Education, American College Personnel Association of Student Personnel Administrators, 1998; Kellogg Commission, 1997; Wingspread Group in Higher Education, 1993). A number of these studies have added to an emerging body of data on learning in higher education, which affirms the following: learners learn best by doing, by working on real problems in real environments; human ability is much more complex and diverse than one-dimensional measures of intelligence could suggest; there are significant differences in the learning patterns of individuals; and the natural functioning of the brain provides the best road map for the learning enterprise.

Such insights on learning have helped researchers and policy-makers to approach the most problematic of all the issues that Boyer raised: how to change higher education's state of endemic fragmentation by *intentionally* searching out connections, by finding a way to balance community and individualism. For example, the power of the contextual group in enhancing student persistence, achievement, and satisfaction in undergraduate settings has been outlined in the literature on learning organisations, learning communities and learning colleges (Shapiro & Levine, 1999; O'Banion, 1997; Cleveland and Plastrick, 1995; Matthews, 1994; Gabelnick, MacGregor, Matthews and Smith, 1990). Similar findings, framed in terms of the cultural context of student learning, are mirrored in research on student retention (Tinto, 1993; Astin, 1993; Pascarella & Terenzini, 1991). Likewise, the literature on collaborative teaching and learning models demonstrates that student engagement with other students on meaningful academic tasks makes a critical difference in their involvement in college (MacGregor, Cooper, Smith & Robinson, 2000; Grubb, 1999; Springer, Stanne, & Donovan, 1999; Stage, Muller, Kinzie, & Simmons, 1998; Barr & Tagg, 1997). In the field of adult education, extensive recent scholarship on transformational learning suggests that the concept of learning process "needs to recognise to a greater degree the significant influence of context, the varying nature of the catalyst of the process, [and] the interdependent relationship of critical reflection and affective ways of knowing" (Taylor, 2000, p. 322). From multiple perspectives, then, contemporary research affords theoretical models and empirical evidence that focusing on learning can have a positive impact both on course and program completion rates and on the reframing the mental models of higher education.

Since 1987, many colleges have adopted learning-centred mission statements but never succeeded in implementing them because they failed to achieve a cultural transformation from the model of instruction delivery to a model of *intentional* learning (O'Banion, 1997; Barr & Tagg, 1995). Intentionality means the deliberately and reflectively thoughtful exploration of a given discipline (Senge, 1999); in this case, the discipline is learning itself. Promoting student success means shifting the intended institutional outcome from teaching and course creation to learning (Merriam, 2001; Mezirow, 2000). Realising Boyer's vision requires a transformation at the primary level of connection: the classroom. The question to begin with is not how instruction is delivered but how learning occurs, and how to use understanding of learning with intention to reframe the culture of information delivery. At Foothill College, these questions provided a lever for transformational learning that promoted *real* student success.

Description of the Study

Foothill College is a community college with 17,000 students, 600 faculty members, and two campuses, located in Los Altos Hills, California. At Foothill, degree completion and transfer readiness figure prominently in the institution's statement of goals. Yet the college's institutional data told another story. In 1996-1997, for example, an average of 68% of students completed courses and 35% persisted from Fall quarter to Spring quarter. These figures may have been consistent with national data (Astin, 1993; Tinto, 1993), but they were inconsistent with a mission statement that calls Foothill College a "learning organisation best described as a large community classroom" (Foothill College 1998-1999 Course Catalogue, p. 7).

Facing the apparent disconnect between goals and reality, the college's leadership had to ask hard questions about the quality of education at Foothill. How strong and successful is a community of learners when only 68% of them remain enrolled in courses each quarter? How can the college create communities of students who continue to achieve? How can those successes be measured and improved upon? How can faculty be enlisted in the change process?

Foothill's leaders began with the assumption that student engagement in meaningful academic and non-academic dialogue, with both faculty and other students, makes a critical difference in the development of their sense of self efficacy (sense of self as learners) and involvement in college (sense of belongingness). Both factors contribute significantly to the student's success in completing courses (retention) and programs or degrees (persistence). In 1998, the college's leaders decided to adopt Johnston's Interactive Learning Model (ILM) as a tool for promoting student success because the model's active engagement of all learners - including faculty - in the intentional construction of knowledge had led to increased self-efficacy and belonging in previous studies.

The ILM is a brain-based learning model that uses a reporting instrument, the Learning Combination Inventory (Johnston & Dainton, 1997), and a metacognitive process (Johnston, 1996) to frame and facilitate individual and group learning. The theoretical basis of the ILM is a set of constructs establishing cognition, conation, and affectation as the touchstones of the brain's synchronisation of the learning process. The ILM suggests that how an individual learns manifests itself observably in four learning patterns: Sequential, Precise, Technical and Confluent. These patterns represent how the learner sees the world, takes in stimuli, integrates the stimuli and formulates a response to it. An individual can begin his or her learning with a particular pattern or patterns, use patterns as needed, or avoid them. Table 15.1 summarises the basic indicators of each pattern.

Table 15.1 ILM Learning Pattern Characteristics

	Cognitively	Conatively	Affectively
Sequential	I organise information I mentally analyse data I break tasks down into steps	I make lists I organise I plan first, then act	I thrive on consistency and dependability I need things to be tidy and organised I feel frustrated when the game plan keeps changing I feel frustrated when I'm rushed
Precise	I research information I ask lots of questions I always want to know more	I challenge statements and ideas that I doubt I prove I am right I document my research and findings I write things down I write long e-mail messages and leave long voice mail messages	I thrive on knowledge I feel good when I am correct I feel frustrated when incorrect information is accepted as valid I feel frustrated when people do not share information with me
Technical	I seek concrete relevance – what does this mean in the real world? I only want as much information as I need – nothing extraneous	I get my hands on I tinker I solve the problem I do	I enjoy knowing how things work I feel good that I am self-sufficient I feel frustrated when the task has no real world relevance I enjoy knowing things but I do not feel the need to share that knowledge

	Cognitively	Conatively	Affectively
Confluent	I read between the lines I think outside the box I brainstorm I make obscure connections between things that are seemingly unrelated	I take risks I am not afraid to fail I talk about things – a lot I might start things and not finish them I will start a task first – then ask for directions	I enjoy energy I feel comfortable with failure I do not enjoy having my ideas criticised I feel frustrated by people who are not open to new ideas I enjoy a challenge I feel frustrated by repeating a task over and over

The Learning Combination Inventory (LCI) is a 28-item self-report instrument that quantitatively and qualitatively captures the degree to which an individual uses each of the four learning patterns. Nationally and internationally validated, the LCI has test-retest reliability as well as content, construct, and predictive validity. It has a track record as an effective learning tool in K-12 classrooms and for building teams in industry in the United States and abroad.

The assumed base of the ILM is that every individual's combination of learning patterns is unique, *and* that every person has a unique approach to learning that is interconnected with the way he or she thinks and feels during the task. So, for example, when Johnston's model of interactive learning patterns is used to inform Gardner's work on multiple intelligences (Gardner, 1993, 1999), it provides an explanation for the range and diversity with which all learners exercise those intelligences (Both Winton Marsalis and John Cage express their musical intelligence through a combination of learning patterns that is unique to each artist). Equally important, the ILM assumes that, through reflective practice (Osterman & Kottkamp, 1993), the conscious understanding of every individual's unique actions, thoughts, and feelings can be used with intention by both the student and the instructor (Mezirow & Associates, 2000; Taylor, 2000). Rather than being acted upon as a passive recipient of information, the learner takes control of the responsibility for making learning work, for co-constructing knowledge. For example, the ILM helps the instructor to become conscious of the degree to which the delivery of instruction, the construction of assignments and the assessment of student work are driven by the instructor's own combination of patterns (Our tendency is to represent our knowledge and to teach through our pattern combinations. For example, an instructor, whose high confluence and avoidance of sequence leads her to shift gears frequently, is not likely to stick to a syllabus or a lecture outline). The ILM affords the student a process for deconstructing instruction delivery and assignments, strategies for helping him or her succeed in formatting and completing assignments, and a vocabulary to use when asking an instructor or peer for assistance. Using the ILM, the instructor and the students gain insights into the subtext of classroom discourse and are able to communicate about the construction of meaning and knowledge by the diverse community of learners in a given discipline.

The Research Design

Over the course of the first year at Foothill College, from 1999 to 2000, a group of twenty-six faculty members volunteered to implement the ILM as part of their classroom instruction. During the second year of the study, another fourteen faculty members were recruited and mentored by the first faculty cohort. Before the ILM was implemented, a research team collected baseline data on the faculty using the following tools: a questionnaire that captured information about expectations, mental models of learning, teaching, students, and Foothill culture; samples of course construction & evaluation standards.

Likewise, at the beginning of each quarter, baseline data was established on student sense of self as learner and sense of belongingness using the following tools: a survey that collected information about mental models of higher education, learning experiences, the faculty as deliverers of instruction, other students as co-constructors of learning, collective learning, sense of self-efficacy, and commitment to retention or persistence.

Faculty participants and the students in their classes took the Learning Combination Inventory. Facilitators used data on individual learning patterns to build collective class learning profiles and to construct teams if the specific course required group projects. The profiles became tools for launching a dialogue about how to communicate and collaborate, based on the diversity of learners in the room. Students learned to decode the patterns that informed lectures and assignments. They learned to use knowledge of the learning patterns as tools to approach and complete course work. As instructors and students gained insights about learning, they cooperated in developing individual and collective strategies to help them navigate course requirements with intention.

During the first year, as the faculty engaged in 33 hours of professional development workshops and classroom activities focused on the ILM, a research team monitored and measured their interactions and reflections. Likewise, the research team periodically monitored and measured the students' sense of self as learners and sense of belongingness as they used metacognition to approach and master learning tasks. These were the primary questions that the research addressed:

1. How does the implementation of the ILM affect the student's perception of his or her competency to learn? Or motivation to learn? Or responsibility to learn?
2. How does the implementation of the ILM affect the student's perception of his or her value as a member of the class? Or motivation to learn from and teach others in the class?

Using both the framework and the dialectics of an on-going discussion about metacognition, faculty also engaged in reflective practice (Ostermann & Kottkamp, 1993), examining the process of teaching and intentional learning in their classes with the goal of fostering the construction and practice of a learning community. The research intention, based on an action research approach, was to capture and record the change as it evolved and to use the data as part of a reflective feedback loop.

Through interviews and participant-observation in meetings and classrooms, researchers gathered data on student-faculty interactions in creating classroom learning communities. They triangulated data with information from the following work by faculty and students: reflections on strategies for the effective use of the ILM in the classroom; reflections on assignments which did and did not measure up to expectations; learning portfolios that contained sample assignments, student work product, assessments, faculty and student reflections on assessments, and student self-assessment of knowledge construction. The data were used to help the learning community assess and improve learning (Taylor, 2000).

At the end of each quarter, the researchers generated data on student course completion and student intention to persist in degree or program completion. These were additional questions that the research addressed:

1. How did the rate of retention in the pilot group compare with institutional data on retention?
2. What reasons did students who had considered dropping out have for staying in courses? Were the reasons linked to changes in measures of self-efficacy, sense of connection with the instructor, sense of connection to other students, sense of personal growth or value as a member of a class?
3. Had the students begun to use metacognitive processes outside of the pilot courses? In other courses? In their professional or personal lives?

Findings

While the ILM was implemented to promote student success, its successful integration in the classroom was far more difficult and complex than anyone had imagined. The culture of instruction delivery has powerful structural barriers, such as the time constraints of a twelve-week academic quarter, as well as attitudinal barriers, such as the mental model that faculty is responsible for expertise but not learning. Where faculty succeeded, they often found themselves outside of their level of comfort, confronting issues of the relationship of traditional course requirements and assessments to learning. If, for example, there was a strong positive correlation between the learning patterns of the instructor and the "good" students in the course, what exactly was the instructor assessing? What could be done about the "disconnect" between two learners whose patterns were near opposites?

Understanding themselves as learners and using reflective practice to study and guide their teaching enabled faculty to reframe their concepts of successful teaching and learning. Faculty who successfully implemented the ILM reported that they "couldn't go back", that their teaching had been changed not only because of their understanding of metacognition but also because of their students' responses to their teaching. The students less vested in the culture of instruction delivery than the faculty "got it" more quickly. Student success fuelled faculty success. And – just as frequently – faculty success fed student success. Faculty and students represent inseparable components of a cultural change from instruction delivery to intentional learning. Together they co-constructed the transformation.

Year I of the ILM

During the first year of the project, 50% of the original group of faculty members did not complete the pilot project. Faculty retention rates were worse than Foothill student retention rates. The majority of those who did not succeed were adjunct faculty who reported that structural factors had contributed to their lack of success: it was too difficult to balance their fragmented existence (teaching more than four courses at more than one college) with the additional work required to implement the model in the classroom. On the other hand, 50% of the original group of faculty members successfully implemented the ILM in the classroom. In those classes, faculty introduced the ILM in incremental steps. For example, to introduce the ILM, a photography course used an assignment for a self-portrait-as-learner that integrated knowledge of learning patterns with requirements for mastery of photographic techniques. The instructor added her self-portrait to the metacognitive critique. After modelling the assignment with their own personal reflections, professors in several ESL and English Composition courses asked students to utilise knowledge of themselves as learners in a range of writing assignments. In a Spanish II class, the instructor and her students completed written and oral assignments about how their learning pattern combinations affected their ability to learn and speak a foreign language. The instructor reported that the assignment created trust and a level of engagement and productivity unknown in the same group's Spanish I class.

In 1999-2000 in courses where the ILM was successfully implemented, 88% of the 469 students enrolled completed the courses; 89% of that group received a grade of A, B, or C (transfer-ready grades). In addition, 8% in the pre-survey, as compared to 60% in the exit survey, reported that an increased sense of self-efficacy was critical to succeeding in the course (Survey questions elicited multiple measures of self-efficacy to capture data on sense of self as learner). For example, in this quote from a pre-survey, the locus of control for student success lies with the instructor: "A helpful instructor doesn't give up on me because of the way I learn." In the exit survey, the same student said: "Understanding patterns is an opportunity for growth, not an excuse for lack of performance." Here, the locus of control for student success has shifted from instructor to student. For students and their instructor, the culture in this course shifted from that of instruction delivery to intentional learning. Student surveys from Year I also demonstrated a shift in student sense of belongingness in the classroom (7% in the pre-survey, as compared to 26% in the exit survey claimed that being able to learn from others in the learning community - in addition to the instructor - was critical to succeeding in the course). An example of this shift in student attachment to the learning community appears in the exit survey of one previously disconnected student: "Lately I have been studying with a partner and that has been very helpful. I am able to learn more with the help of other people's patterns."

Among students there was also a realisation that the ILM had transferability, both to other courses and to work situations. Students reported that in courses where the instructor had no apparent awareness of the ILM, they were able to get good grades because they had learned how to use metacognition to "decode" the lectures and the course assignments. Dental Hygiene students developed strategies for educating patients based on their understanding of learning patterns.

Among faculty, the experiences of the first year were useful for revising the second year's recruitment and training processes, as well as for creating a core of 6 "veterans" who agreed to mentor new participants. More importantly, some faculty members took the risk of talking about how reluctant and frightened they had been to change established methods of teaching ("I, who need to be perfect, have learned to put the material out there and let the students take it"). Others spoke of similar breakthroughs happening in faculty-student interactions ("Once it's clear for you, you can make it more clear to the students... I tell them that we are all learning together. It is OK to take risks".)

The shift in learning capabilities among the faculty occurred unevenly and individually, as they gained insight, confidence, and a sense of their own capacity to shape some of the changes. It happened more often – and certainly more powerfully - as a result of their experiences and interactions with the students. Faculty evaluated their learning experiences in the ILM training sessions as useful (Author's journal, May 23, 2000), but they never called it transformative. I believe that was because the learning was largely academic and time-bound. Faculty learning in the classroom, on the other hand, was experiential, frequent and immediate. Letting go of control in the classroom (which is how many of the participants first framed the implementation of the ILM, was unsettling and even not quite imaginable, but in other respects it was the safest venue as well. The classroom was the turf of each faculty participant. For example, one instructor reported learning behaviour that she found highly uncharacteristic of her usual teaching style. She began to ask her students to debrief on, and sometimes to deconstruct, their learning, recognising that it was a struggle for her to allow the students to frame their reflections within their own learning patterns: "I'm so used to thinking that you can only reflect on paper. I find it hard to let go, let them reflect in their own way" (TH, Personal communication, March 1, 2000).

Year II of the ILM

During the second year of the pilot, fourteen additional faculty members, recommended or recruited by the first year faculty, joined the project. Nearly 70% of the faculty succeeded in implementing the model in the classroom. Those 30% who did not succeed were new faculty who felt overwhelmed by first-year responsibilities; the ILM was an added burden for them. In courses in which the ILM was successfully implemented, the students reported an increased sense of self-efficacy (12% in the pre-survey, as compared to 70% in the exit survey) and sense of belongingness in the classroom (6% in the pre-survey, as compared to 34% in the exit survey). Both were linked to student retention. Of the 769 students enrolled in the second year of the pilot, 87% completed their courses, and 92% received transfer-ready grades. Student exit interviews affirmed the transferability of the ILM, both to other courses and to work and life situations. Adult students in Life Skills courses in Foothill's Transition to Work Program were able to identify and prepare applications and interviews for jobs that were suitable to their "use first" patterns.

Faculty recognised the individual and collective benefits of several, cumulative experiences with the ILM. The important function of the ILM, quite apart from its utility in promoting student sense of belonging and competence as learners, was that it provided a focus, a common sense of purpose (a potential platform from which to formulate a vision) and a shared vocabulary about learning. Just as the ILM enabled students and faculty to examine and explore learning as a diversity issue, so too did the model enable faculty to engage in conversations and reflection about an issue which transcended the individuating structures of academic disciplines and their discrete bodies of knowledge.

I believe this questioning of pedagogy represents a major shift in this instructor's understanding of the culture of higher education:

> *Now, however, with my understanding of learning patterns I am questioning the validity of this pedagogy: Am I really helping students by modelling the steps? Or am I imposing my own Sequential sense of order onto students? Are Technical and Confluent students feeling as if they have to follow these steps for success even if they do not make sense to that learner? My instincts still tell me that it is important to model the critical thinking, especially at this level, but not to pigeonhole learners into following these steps, offering them as suggestions. Regardless of their learning patterns, students do need to learn how to analyse and synthesise information which may mean that they have to adapt their own learning patterns for success. So, for the next project I will focus more on what learning patterns are involved in critical thinking so that each learner can adapt and use their own strategies to become a critical thinker. Any suggestions for my dilemma? (EG, Personal reflection, May 2000).*

Here is her final communication with the LML team:

> *I feel more confident experimenting in the classroom and trying new assignments. I have made this very great shift. I think it's due to the ILM. I am letting go the sequence a bit. I have been present for the student like I haven't been before. I'm into a new phase. I am able to react to what's in the classroom, to what my students give me. In the winter quarter I was just moving through the course. We have to stay on schedule; let's go. The student felt the disconnect and a couple of students even said it to me. But this quarter I am really present and I can react to what's happening in the classroom. I still have an agenda and I still have my plans. So that has been the most successful thing. It's a big step for me. I think the ILM (I'm pretty sure) was the catalyst. I really had to step back and look at my sequence because it serves me well but it can also hold me back. (EG, Personal communication, May 24, 1999).*

In one notable case, student success could be measured in terms of national achievement. The cohort/learning community of Dental Hygiene students who had been using the ILM for two years with the same instructor ranked 2nd in the entire nation on National Board Exams. The instructor credited the ILM, among other factors, for the excellent outcomes:

"I wanted you to know that the 2nd year just graduated. They took their National Board Exams & were ranked 2nd in the entire nation, including several dental hygiene programs that are based in Universities. This was the first class I introduced the ILM model to. Of course, the excellent outcomes were a result of many factors, including the ILM. Thank you all for the opportunity to participate in this research project."

Conclusions and Recommendations

The ILM process requires and promotes intentionality, which in turn leads to the development of components that foster retention and persistence. While change and growth are shaped by the way in which both faculty and students achieve mastery in individual and organisational learning, intentional faculty commitment to the process is crucial to the initial and the sustained success of the ILM. At Foothill College, the faculty learning curve moved from academic information accumulation about the ILM (consistent with the culture of instruction delivery) to individual metacognition (understanding the use of patterns in one's own learning) to organisational meta learning which engaged faculty and students in a dialogue about the use and meaning of the learning process in their classroom communities. These are the hallmarks of cultural change.

Yet, some significant challenges lie ahead, similar to ones that Ernest Boyer raised in 1987. They are the challenges of remaining intentional and reflective throughout a continuing change process. The transformational learning shift fostered by the ILM remains circumscribed within the college as a whole. The challenge awaits to scale up the ILM as part of developing a larger culture of intentionality at Foothill College.

References

Astin, A. W. (1993). *What matters in college: Four critical years revisited.* San Francisco: Jossey-Bass.

Barr, R. & Tagg, J. (1995). From teaching to learning: New paradigm for undergraduate education. *Change*. November/December, pp.13-25.

Boyer Commission on Educating Undergraduates in the Research University (1998). *Reinventing undergraduate education: A blueprint for America's research universities*. Stony Brook: State University of New York at Stony Brook.

Boyer, E. (1987). *College: The undergraduate experience in America*. New York: Harper & Row.

Grubb, W. N. (1999). *Honored but invisible. A n inside look at teaching in community colleges*. New York: Routledge.

Johnston, C. (1996). *Unlocking the will to learn*. Thousand Oaks, CA: Corwin Press.

Johnston, C. & Dainton G. (1997). *The learning combination inventory*. Thousand Oaks, CA: Corwin Press.

Joint Task Force on Student Learning, American Association for Higher Education, American College Personnel Association of Student Personnel Administrators. (1998). *Powerful partnerships: A shared responsibility for learning.* Washington, D. C.

Kellogg Commission on the Future of State and Land Grant Universities. (1997). *Returning to our roots: The student experience*. Washington, D. C.: National Association of State Universities and Land Grant Colleges.

MacGregor, J., Cooper, J. L., Smith, K. A., & Robinson, P. (2000). *Strategies for energizing large classes: From small groups to learning communities*. San Francisco: Jossey-Bass.

Matthews, R. (1994). Enriching teaching and learning through learning communities. In T. O'Banion (Ed.). *Teaching and learning in the community* college. Washington, D. C.: American Association of Community Colleges.

Merriam, S. (2001). *The new update on adult learning theory.* San Francisco: Jossey-Bass.

Mezirow, J. & Associates (2000). *Learning as transformation*. San Francisco: Jossey-Bass.

O'Banion, T. (1997). *A learning college for the 21st century.* Phoenix: American Association of Community Colleges/Oryx Press.

Osterman, K., & Kottkamp, R. (1993). *Reflective practice for educators: Improving schooling through professional development.* Newbury Park, Ca.: Corwin Press.

Pascarella, E. & Terenzini, P. (1991). *How college affects students.* San Francisco: Jossey-Bass.

Senge, P., Kleiner, A., Roberts, C., Ross, R. B. & Smith, B. J. (1994). *The fifth discipline fieldbook*. New York: Doubleday.

Senge, P., Kleiner, A., Roberts, C., Ross, R. B. & Smith, B. J. (1999*). The dance of change*. New York: Doubleday.

Schneider & Schoenberg, (1998). *The academy in transition: Contemporary Understandings of Liberal Education.* Washington, D. C.: Association of American Colleges and Universities.

Shapiro, N. & Levine, J. (1999). *Creating learning communities: A practical guide to winning support, organizing for change, and implementing programs*. San Francisco: Jossey-Bass.

Springer, L., Stanne,M. & Donovan, S. (1999). Effects of small-group learning on undergraduates in science, mathematics, engineering, and technology: A meta-analysis. *Review of Educational Research*, 69: 1, pp. 50-80.

Stage, F., Muller, P., Kinzie, J. & Simmons, A. (1998). Creating learning centered classrooms: What does learning theory have to say? *ASHE-ERIC Higher Education Report* Volume 26, No. 4. Washington, DC: The George Washington University.

Svinicki, M. (1999). *Teaching and learning on the edge of the millennium: Building on what we have learned.* San Francisco: Jossey-Bass.

Taylor, E. W. (2000). Fostering transformational learning in the adult education classroom: A critical review. In C. A. Weissner, S. R. Meyer, & D. A. Fuller (eds), *The third international transformative learning conference: Challenges of practice: Transformative learning in action*. New York: Columbia University.

Tinto, V. (1993). *Leaving college. Rethinking the causes and cures of student attrition.* Second Edition. Chicago: The University of Chicago Press.

Wingspread Group in Higher Education. (1993). *An American imperative: Higher expectations for higher education.* Racine, Wisconsin: Johnson Foundation.

• CHAPTER 16 •

Concept Mapping, Vee Heuristics and Let Me Learn: a Model of Teaching and Learning in Higher Education

Jacqueline Vanhear

Introduction

We are living in a world which is changing relentlessly at a breathtaking rate. In order to address these rapid changes, Malta is at the moment going through a wide-ranging reform in education. It is calling for a paradigm shift from a situation where teachers are disseminators of information and students are passive recipients to a scenario where teachers facilitate and empower students to become active lifelong learners by equipping them with the necessary tools to embark upon a meta-learning journey leading to success. We are, however, facing a huge dilemma; a dilemma mirrored in Fullan (1993) "On the one hand, schools are expected to engage in continuous renewal, and change expectations are constantly swirling around them. On the other hand, the way teachers are trained, the way schools are organised, the way the educational hierarchy operates, and the way political decision makers treat educators results in a system that is more likely to retain the status quo" (p.3).

Prevalent literature (Moon, 2010; Fullan, 1993) suggests that one way of bringing change within an educational system is through teacher education. According to UNESCO "teacher education institutions serve as key change agents in transforming education and society." Nonetheless, having pursued the Bachelor of Education course besides recently mentoring student teachers during their teaching practice,

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This chapter was first published in the Proceedings of the Fifth International Conference on Concept Mapping – Concept Maps: Theory, Methodology, Technology held in Malta in 2012.

I have observed that often, after a four year course at University, student teachers end up teaching the way they were taught therefore reproducing the status quo in our educational system. This situation is apparently not novel or unique to Malta (Hartman, 2001). One of the reasons for this perpetuation may be because student teachers are adopting ineffective and inappropriate learning practices during their training and "thus, existing misconceptions about learning are perpetuated through automatic adoption" (Gamache, 2002, p. 279). Another reason could be that teachers are not aware of developments in pedagogical tools which now vary from those they encountered while they themselves were being taught and educators need the tools to engage in change productivity (Fullan, 1993). However, if the 'new' teachers are not going through a change themselves how shall this change be brought about in our educational system? If four years of Higher Education are not producing reflective and innovative teachers, how can we expect teachers to change their vision towards teaching and learning? How can we expect the change many stake holders are calling for in our educational system to take place? If educators are to be agents for meaningful change, then this must be initiated in initial teacher education (Senge, 1990).

This study will investigate and present a model of the integrated use of Concept Maps and Vee Heuristics, paired with an awareness of the students' own learning processes, in teaching and learning in Higher Education. The implication is that students are encouraged to go through a process of reflection and to embark on a journey of transformative learning. Mezirow & Taylor assert that to promote transformative learning, education should be a practice "predicated on the idea that students are seriously challenged to assess their value system and worldview and are subsequently changed by the experience" (Quinnan, 1997, p.42 in Mezirow & Taylor, 2009, p.3). Similarly, Gamache believes "that what struggling university students need are practical, specific activities that will lead them toward an alternative conceptual framework within which they can **re-create themselves as active learners**. [My emphasis] Rather than just absorbing theory, students actually engage it through a process of active self-reflection and self-direction" (Gamache, 2002, p. 291).

Gow & Kember suggest that "Tertiary education must challenge students enough to develop their powers of independent reasoning. Teachers[Teacher trainers- my addition] need to develop in their students an academic approach to their study, that is, an interest in what is learnt for its own sake and an active attempt to understand what is being studied" (Gow & Kember,1990, p. 320). Learning meaningfully is crucial within any educational sector, let alone in Higher Education. Kinchin (2001) identified **dialogue** as a fundamental contributing component to meaningful learning. Similarly, Richards (2007) reveals that **student/teacher interaction** is an important factor affecting the level of learning and not just in primary and secondary education.

Ramsden (2003) suggests that separating learning and teaching within Higher Education is a myth: Various authors propose that in order for students to become agents of their own learning they need metacognitive strategies (Gamache, 2002; Bruer, 1993). Active self-reflection and self-direction are two kinds of metacognition (Gage & Berliner, 1998).

With this in mind, Concept Maps and Vee Heuristics will be explored in this study as two tools which a wide body of theoretical evidence is confirming as being intrinsically metacognitive. (Vanhear, 2008). Concept Maps and Vee Heuristics will be presented as two entirely innovative tools to our educational system, which, without any pretensions to being a quick fix, sure tool, can definitely serve as a stepping stone to challenging the prevailing transmission model of education. Using them in initial teacher training will hopefully lead to the use of these tools in our school classrooms.

Therefore, the innovative Vee Heuristics, Concept Mapping were merged with my prior knowledge and experience of Let Me Learn advanced learning system for use in this research mainly because they have the following common features:

a. they are considered as metacognitive tools
b. they are created upon constructive epistemology
c. they build on prior knowledge and experiences
d. they are grounded on theories of how people learn
e. they take into consideration that learning is affected by thinking, doing and feeling
g. they are tools which are used with intention to support the learner in developing personal structures of meaningful knowledge.
i. they have been empirically tested and used for a number of years yielding positive results on student learning achievement.

Research Question and Methodology

The path that this study pursues is not to seek absolute truths or promote the pedagogical tools as sure quick fix learning tools but rather to shed light upon a pedagogical process which captures personal structures of knowledge and their development so as to generate meaningful learning. This study will also explore whether the use of these tools could lead to enhancing student/teacher interaction which goes on within the context of Higher Education. The main focus question will therefore revolve around the question **"In what ways can teacher-student interaction influence meaningful learning?"**

Using students' productions from the Bachelor of Education course at the University of Malta, this study traces the effect of learners' mental operations on the learners' use of Concept Mapping and Vee Heuristics as the learners embed and retrieve new and scaffolded knowledge. By analysing productions constructed by the students before and after the learning programme, as explained hereunder heading 4, this study will reveal a tangible transformation in the ideas held by students about a specific issue which is: What is Education for Sustainable Development? This question will be the vehicle through which data will be collected so that the learning development of the students can be observed and recorded.

The nature of this study calls for a qualitative research since qualitative researchers "often espouse a commitment to demonstrating the viability of truly alternative educational approaches" (Schulman in Jaeger, 1997, p.18). In line with one of Dewey's principles about educational research, this research is experimental and conducted within a natural setting. Furthermore, "If we can create and sustain a particular instructional innovation in a real school, we have demonstrated the possibility that it can exist" (Schulman in Jaeger, 1997, p.19).

In this scenario, the tradition which best suits this qualitative research is Action Research. Corey argues that action research "is a process in which practitioners study problems scientifically so that they can evaluate, improve and steer decision-making and practice" (Corey, 1953, as cited in Cohen, Manion & Morrison, 2000, p. 227). Action research allows educators to systematically and empirically address topics and issues that affect teaching and learning in the classroom. McNiff regards action research "as an approach to education that encourages teachers to be aware of their own practice, to be critical of it and to be prepared to change it" (McNiff, 1992 in Rearick & Feldman, 1999, p. 345).

An in-depth study of specific case studies is one of the overwhelming approaches in Action Research. The productions of case stories show how researchers improved their own learning and situations for the benefit of themselves and others. They provide undeniable evidence that Action Research is a form of learning that has insightful implications for the future society and that it could lead to transformation (Mcniff, Lomax & Whitehead, 1996).

In this light, Action Research can also be called a form of self-reflective practice. It is also concerned with 'praxis' – the process of reflection and action, with the aim to emancipate; "the claim is made that action research is strongly empowering and emancipatory in that it gives practitioners a 'voice'" (Cohen, Manion & Morrison, 2000, p. 30). Moreover, since Action Research is built upon collaboration between the professional researcher and the local stake holder, it integrates praxis with theory (Denzin & Lincoln, 2005).

Merging metacognitive tools for use in Higher Education

Learning is about change and changing oneself (Ramsden, 2003; Zull, 2002). Higher Education must nowadays highlight the quality of education and not just certification. Learning should be about "changing the ways in which learners understand, or experience, or conceptualise the world around them" (Ramsden, 2003, p. 6). This research is intended to clarify the mechanisms by which Concept Maps and Vee Heuristics support meaningful learning. It will also raise awareness of how students' mental processes work most effectively leading to conceptual transformation for both the teacher and the student. These tools merged together present a process of praxis which is "an activity that combines theory and practice, thought and action for emancipatory ends" (Kincheloe, 2005, p. 22).

More importantly, these metacognitive tools lay open what is going on in the learners' mental processes so as to empower them to embark upon a meta-learning journey. Consequently, it is anticipated that they will be better equipped and trained in decision making, reflective and problem solving skills (Ramsden, 2003; Biggs & Tang, 2009 Novak & Gowin, 1984; Gamache, 2002). Furthermore, these tools do not occur in a vacuum but they build on the learner's prior knowledge (Novak & Gowin, 1984). They take into consideration the diverse and personal experiences therefore making learning more meaningful. This is manifested in the following paragraphs which present the students' responses in the Vee Heuristics, their Concept Maps along with their preferred way of learning and their written reflection about this reflective educational journey.

The choice of setting – the Bachelor of Education course at the University of Malta – was dictated by the fact that this happened to be the only Higher Education Institution in Malta which caters for teacher training. Lectures took place at the University of Malta and were held once a week for seven consecutive weeks during the first semester of the academic year. Each lecture had a duration of two hours. The programme was offered as an optional credit to B.Ed students who were in their second, third or fourth year of the course. As a result, the group of participants in this pilot study is self-selected since they attended at their own free will. It is also worth mentioning that in this way the students participating were following different subject specialisations.

Data Analysis and discussion

The following paragraph includes the whole process of the Vee Heuristics along with Concept Maps that were generated throughout the whole credit. It also presents the students' combination of learning patterns as revealed through the Learning

Connections Inventory (LCI). This paper shall be presenting a sample of only two different learners. During the first lecture the students were asked to reflect, answer and write about the three steps found on the left hand side of the Vee (Figure 16.1). Their responses were collected at the end of this lecture, analysed and the learning programme was planned so as to accommodate the learners' different learning preferences exposed in their LCIs. All the lectures were presented through Concept Maps where prior knowledge and new knowledge construction was negotiated through active discussion and participation. During the last lecture the students were asked to complete the right hand side of the Vee (Figure 16.2). Finally, they were asked to organize and compare and contrast all the steps in the Vee Heuristic by presenting, as an assignment, the left and the right hand side of the Vee, the first Concept Map

Figure 16.1 Vee Heuristic presented before the learning programme

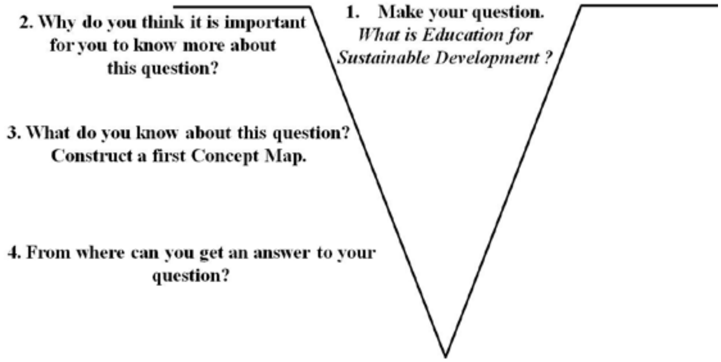
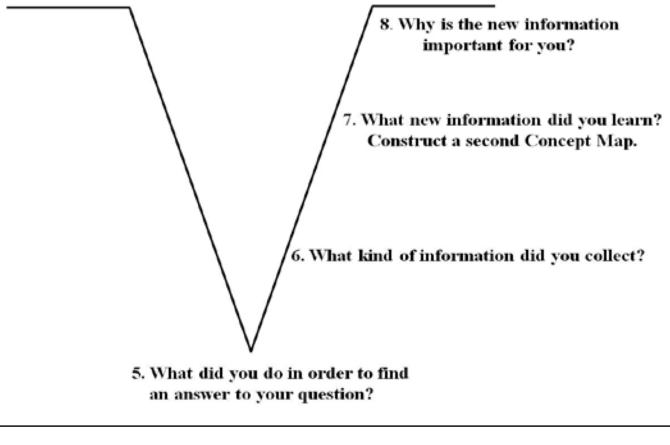

2. Why do you think it is important for you to know more about this question?
1. Make your question. What is Education for Sustainable Development ?
3. What do you know about this question? Construct a first Concept Map.
4. From where can you get an answer to your question?

Figure 16.2 Vee Heuristic presented after the learning programme


8. Why is the new information important for you?
7. What new information did you learn? Construct a second Concept Map.
6. What kind of information did you collect?
5. What did you do in order to find an answer to your question?

depicting their prior knowledge and the second Concept Map illustrating their new knowledge construction. They were also asked to write a final reflection about their own personal growth during the programme, if any, and how they thought that this process had helped them to become more effective teachers, if they considered that it had done so at all.

Learner 1 Maryanne

This learner in the Let Me Learn lexicon is a dynamic learner (Johnston, 2005) since she Uses First two patterns and she uses the other two patterns As Needed (see Figure 16.3). From the high score in Sequence one can say that this is her dominant schema therefore this learner needs clear step-by-step directions, she prefers to see a sample of the work she is required to do since she feels more secure when knowing what is exactly expected from her. She needs time to plan, to present neat work and to double check her work. The Precise learning pattern is also within the Use First range therefore this reveals that this learner feels the need to be accurate and correct when answering questions and she attends to details especially through various readings. The Confluent pattern scores high also, however it falls in the Use As Needed range, therefore when the need arises this learner is not afraid to be different and is willing to take risks. There are only certain aspects that this learner uses from the Technical Reasoning pattern. As a result, when looking at this learner's learning pattern combination one can deduce that this learner feels comfortable to express her ideas in words in an organized way, may be creative when needed and she may also learn from real life experiences when needed.

Figure 16.3 Maryanne's combination of learning patterns as exposed in her LCI

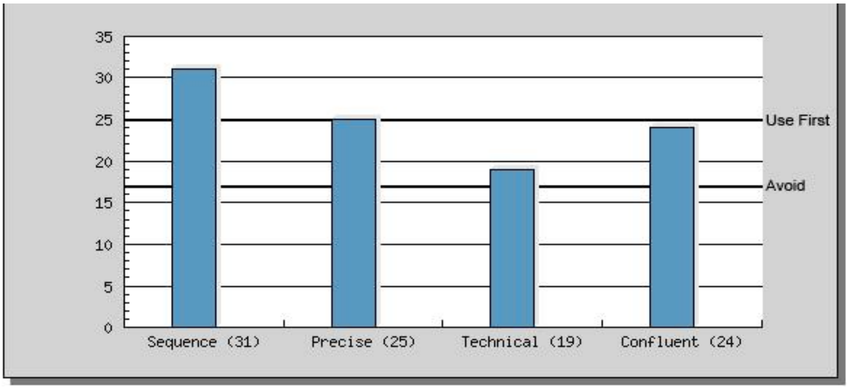
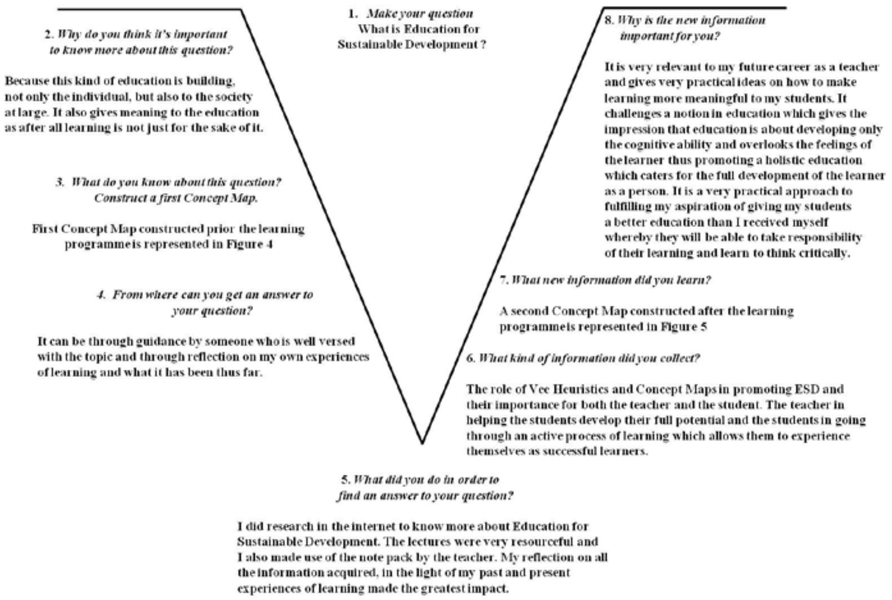


Figure 16.4 Maryanne's Vee Heuristic



1. *Make your question*
What is Education for
Sustainable Development ?

2. *Why do you think it's important*
to know more about this question?

Because this kind of education is building,
not only the individual, but also to the society
at large. It also gives meaning to the education
as after all learning is not just for the sake of it.

3. *What do you know about this question?*
Construct a first Concept Map.

First Concept Map constructed prior the learning
programme is represented in Figure 4

4. *From where can you get an answer to*
your question?

It can be through guidance by someone who is well versed
with the topic and through reflection on my own experiences
of learning and what it has been thus far.

5. *What did you do in order to*
find an answer to your question?

I did research in the internet to know more about Education for
Sustainable Development. The lectures were very resourceful and
I also made use of the note pack by the teacher. My reflection on all
the information acquired, in the light of my past and present
experiences of learning made the greatest impact.

6. *What kind of information did you collect?*

The role of Vee Heuristics and Concept Maps in promoting ESD and
their importance for both the teacher and the student. The teacher in
helping the students develop their full potential and the students in going
through an active process of learning which allows them to experience
themselves as successful learners.

7. *What new information did you learn?*

A second Concept Map constructed after the learning
programme is represented in Figure 5

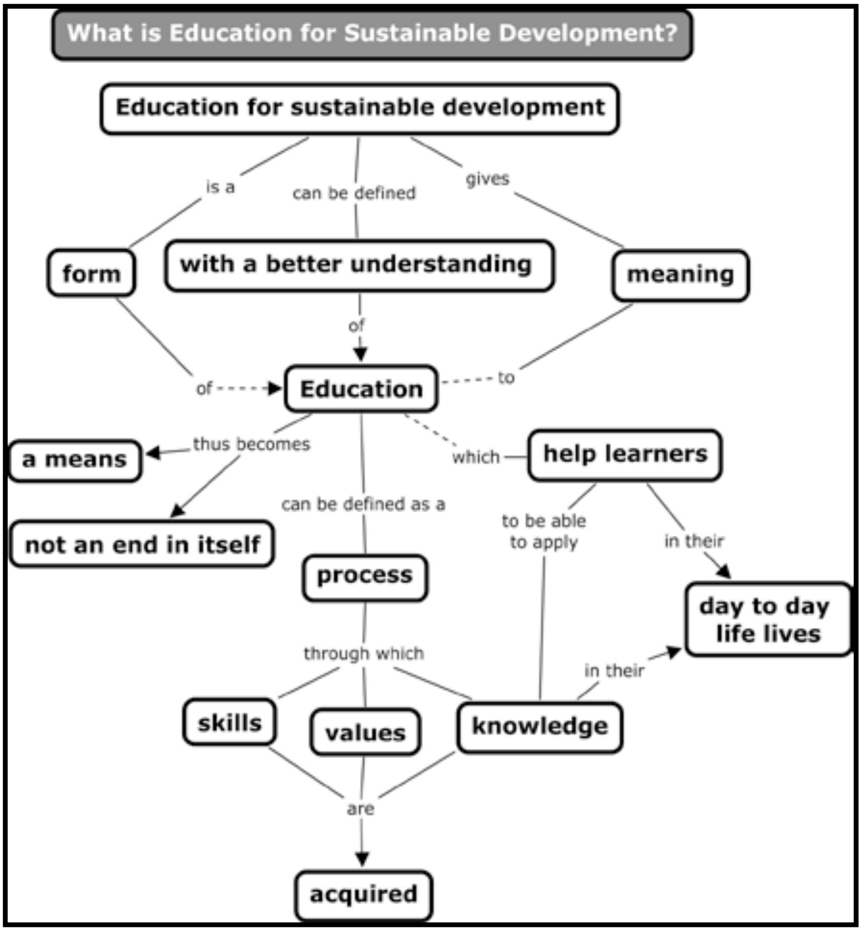
8. *Why is the new information*
important for you?

It is very relevant to my future career as a teacher
and gives very practical ideas on how to make
learning more meaningful to my students. It
challenges a notion in education which gives the
impression that education is about developing only
the cognitive ability and overlooks the feelings of
the learner thus promoting a holistic education
which caters for the full development of the learner
as a person. It is a very practical approach to
fulfilling my aspiration of giving my students
a better education than I received myself
whereby they will be able to take responsibility
of their learning and learn to think critically.

This Vee Heuristic illustrated in Figure 16.4 reveals this learner's development in her thinking, feeling and doing process. There is clearly a difference between the left hand side of the Vee, which was completed during the first lecture, that is, prior to the learning programme, and the right hand side of the Vee, which was completed during the last lecture, upon completion of the learning programme. The information given for question No.2 reveals that this learner had few ideas of what ESD is all about and this is corroborated by the first Concept Map she constructed before the learning programme, as represented in Figure 16.5. It is worth noting that this question also tries to capture the learner's feelings about the issue in question and one can deduce from the learner's response that this learner was very much interested in wanting to know more about the focus question. The reply to question No. 2 reveals Maryanne's level of motivation and interest in studying this topic and one can observe that this learner found this topic interesting and relevant to what she was studying.

The replies given to questions No. 4 and 5 illustrate how this learner planned to learn more and what this learner actually did to learn more. This learner planned to learn through "guidance by someone who is well versed with the topic" (Sequence) and she carried out research on the internet and read the reading pack (Precision) which was given so as to have more information and all of this reflects the learner's high score in Sequence and Precision. However, it is worth noting that she also planned to learn through reflecting on her experiences and this is where the Technical Reasoning pattern in the Use As Needed range emerges. From the responses given on the right hand side of the Vee one can easily observe how this learner developed her knowledge related to both ESD and the learning process. This learner gave specific details to answer questions No. 6 and 8 and the new knowledge constructed is also illustrated in her second Concept Map constructed after the learning programme as represented in Figure 16.5.

Figure 16.5 Maryanne's first Cmap, constructed before the learning programme



When observing the first and second Concept Map represented in Figures 16.5 and 16.6, one can easily note that the number of concepts and propositions has increased, revealing that learning has taken place. The first Concept Map clearly depicts a linear way of thinking and it contrasts with the second Concept Map showing a change even in the way of thinking. Furthermore, Maryanne not only increased the number of concepts but also changed and developed the original concepts constructed in the first Concept Map.

The fact that this learner was eager to expand her knowledge reflects that she enjoys having more detailed information about what she is learning. This is present not only in her Vee but also in her four page detailed reflection where clear references to related literature were made. In this reflection she discusses how she looked at herself as being "a product of a system of education which promotes transmission of knowledge regardless of the process of learning" and how she changed and developed herself throughout this credit: "This has opened my eyes and mind to a way of teaching and learning which are new to me and which I have found to provide a better teaching and learning as compared to other traditional methods of teaching which feed students with information rather than allowing them to go through a process of learning."

Her confluent pattern in the Use As Needed range emerged both in her response to question No.2 in the Vee (Figure 16.4) where one can easily note that this learner tends to look at the big picture. This is corroborated in her reflection where she also refers to the 'bigger picture' when discussing teaching and learning: "I will make use of Concept Maps in my teaching. This is because they give learners the opportunity to be active participants in the learning process." She also suggests that the Vee Heuristics helped her to "give a true picture of who the students really are as learners. This will help me to cater for the needs of the students' in my classroom, appreciate them more with their diversity and help them to develop to their fullest potential. The Vee Heuristics and the Concept Maps build on the students' prior knowledge. As proposed by the constructivist theory, students learn best when information is based on what they already know."

She also indicated how she could eventually implement all that she had learnt in her own classroom and finally she described the relevance of this credit to her experiences as a University student and as a future educator: "My experience during this unit was a very positive one. I feel that this unit was helpful to me beyond my expectations when I chose it as an optional credit. I have found it to be one which touches my present life as a student and my future career as a teacher. I feel that I have been challenged and encouraged at the same time." This depicts the learner's Technical Reasoning in the Use As Needed Range (Figure 16.3).

Figure 16.6 Maryanne's second Concept Map constructed after the learning programme

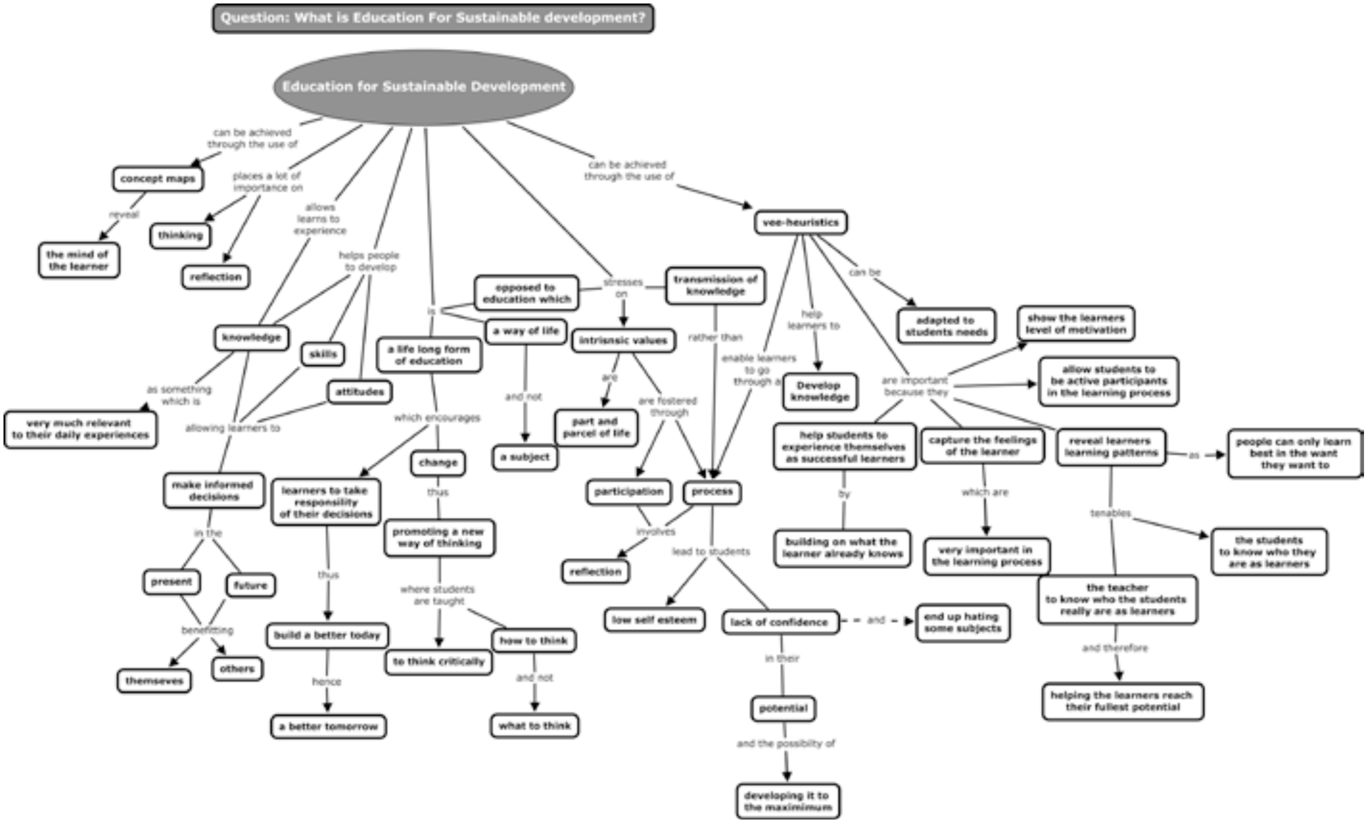
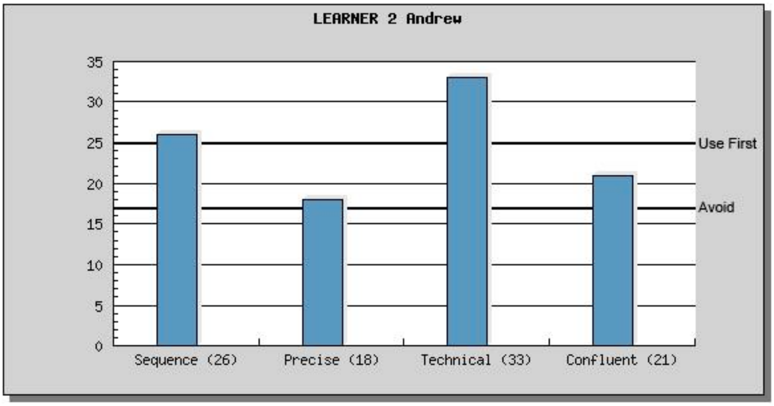

Question: What is Education For Sustainable development?
Education for Sustainable Development
can be achieved through the use of
concept maps
reveal
the mind of the learner
places a lot of importance on
thinking
reflection
allows learns to experience
helps people to develop
knowledge
skills
attitudes
as something which is
very much relevant to their daily experiences
allowing learners to
make informed decisions
in the
present
future
benefitting
themseves
others
is
opposed to education which
a way of life
and not
a subject
a life long form of education
which encourages
change
thus
promoting a new way of thinking
where students are taught
to think critically
how to think
and not
what to think
learners to take responsility of their decisions
thus
build a better today
hence
a better tomorrow
stresses on
intrisnsic values
are
part and parcel of life
are fostered through
participation
involves
reflection
transmission of knowledge
rather than
process
lead to students
low self esteem
lack of confidence
and
end up hating some subjects
in their
potential
and the possibility of
developing it to the maximimum
can be achieved through the use of
vee-heuristics
can be
adapted to students needs
help learners to
Develop knowledge
enable learners to go through a
are important because they
show the learners level of motivation
allow students to be active participants in the learning process
help students to experience themselves as successful learners
by
building on what the learner already knows
capture the feelings of the learner
which are
very important in the learning process
reveal learners learning patterns
as
people can only learn best in the want they want to
tenables
the students to know who they are as learners
the teacher to know who the students really are as learners
and therefore
helping the learners reach their fullest potential

Figure 16.7 Stefan's combination of learning patterns as revealed in his LCI



Learner 2 Stefan

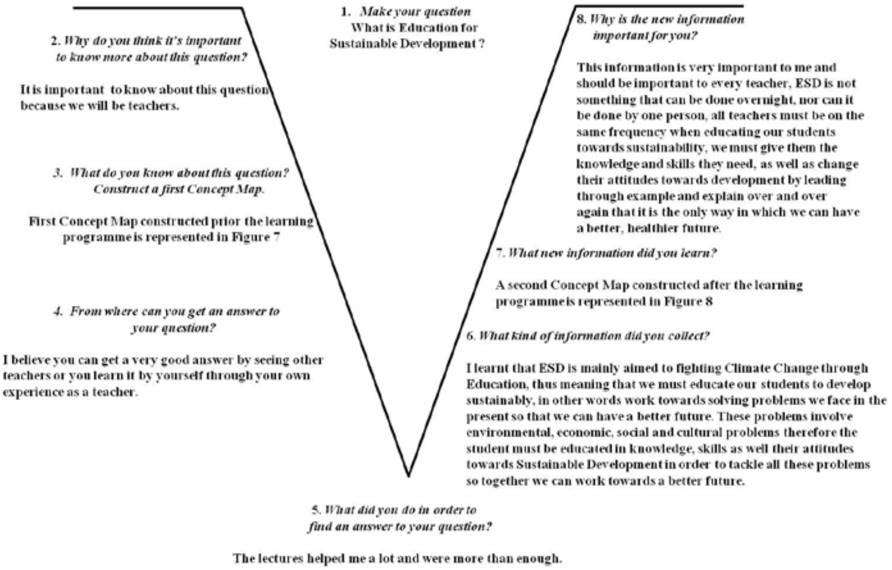
The Learning Connections Inventory (LCI) score represented in Figure 16.7 exhibits another dynamic learner (Johnston, 2005) who makes use of Technical Reasoning and Sequential processing at a Use First Level. This learner uses Confluent and Precise processing As Needed. From this kind of learning pattern, one can deduce that this learner does not like to read or write in detail, he makes use of very few words to express his ideas; he prefers to work by himself and needs to see the purpose of what he is doing. However, he also finds himself comfortable when having step-by-step directions and when given to see a sample of what he is requested to do. He is willing to be different and take risks when necessary and he feels uncomfortable if not frustrated when given lots of details or books to read.

From this learner's Vee Heuristic, presented in Figure 16.8, one can easily observe a significant difference between the left hand side of the Vee which was constructed during the first lecture before the learning programme and the right hand side of the Vee which was compiled after the learning programme. It is also worth noting the response given to question No. 2 in the Vee. This response is quite vague and surely reveals the low level of motivation which the student had for this credit. Actually, during discussions with this learner, he confessed that he had registered for this credit simply because it was the only one which did not clash with his time-table. This is also manifested in response No.4 where we see this learner's uncertainty in going through this programme. This learner was not at all planning to learn from the lectures. However, it is important to note that he planned to do his learning only through real life experiences and this reflects his high score in Technical Reasoning pattern whereas his plan to observe other teachers is also mirroring the sequential pattern in the Use First level. Nowhere did he mention that he planned to read or do research to find more information and this conveys his low score in Precision.

The information gathered from Stefan's Vee was very important to me as the teacher: I took it into consideration when planning the credit and I ensured that the student's preference for learning from real life experiences, as well as his avoidance of detailed information, was taken into account. This analysis of the Vee is critical if the teacher expects meaningful learning to take place. Coffield (2004, p.17) states that "teachers who understand their own styles and those of their learners can reduce the harm they may otherwise do" and consequently they will develop more effective skills to interact with and respond to students.

The reply to question No. 5 "The lectures helped me a lot and were more than enough" suggests a few things. First, that this learner found the lectures helpful and interesting but on the other hand the latter part of the comment indicates that I must have overdone it with information from this learner's point of view. It also tells me that this learner did not feel the need to go and look up more information because what I delivered in the lecture was 'more than enough.' This contrasts sharply with the Vee Heuristic as presented by Maryanne since that learner thoroughly enjoyed the extra information I provided.

Figure 16.8 Stefan's Vee Heuristic



1. *Make your question*
What is Education for Sustainable Development ?

2. *Why do you think it's important to know more about this question?*

It is important to know about this question because we will be teachers.

3. *What do you know about this question? Construct a first Concept Map.*

First Concept Map constructed prior the learning programme is represented in Figure 7

4. *From where can you get an answer to your question?*

I believe you can get a very good answer by seeing other teachers or you learn it by yourself through your own experience as a teacher.

5. *What did you do in order to find an answer to your question?*

The lectures helped me a lot and were more than enough.

6. *What kind of information did you collect?*

I learnt that ESD is mainly aimed to fighting Climate Change through Education, thus meaning that we must educate our students to develop sustainably, in other words work towards solving problems we face in the present so that we can have a better future. These problems involve environmental, economic, social and cultural problems therefore the student must be educated in knowledge, skills as well their attitudes towards Sustainable Development in order to tackle all these problems so together we can work towards a better future.

7. *What new information did you learn?*

A second Concept Map constructed after the learning programme is represented in Figure 8

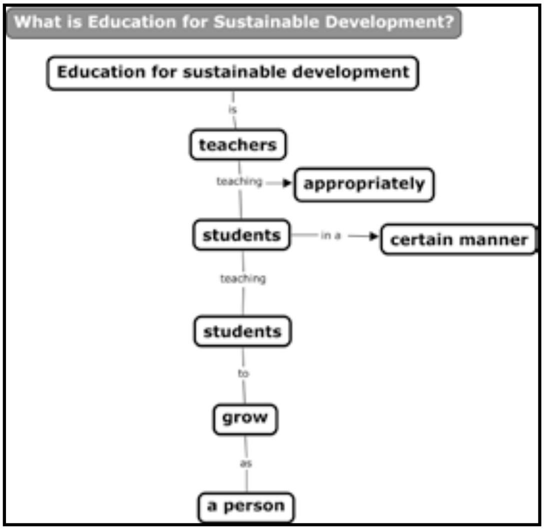
8. *Why is the new information important for you?*

This information is very important to me and should be important to every teacher, ESD is not something that can be done overnight, nor can it be done by one person, all teachers must be on the same frequency when educating our students towards sustainability, we must give them the knowledge and skills they need, as well as change their attitudes towards development by leading through example and explain over and over again that it is the only way in which we can have a better, healthier future.

The responses given on the right hand side of the Vee clearly contrast with the responses given on the left hand side. This reveals that through the learning programme this learner's motivation to learn increased, he also found this unit quite meaningful as his answer to No.8 reveals: "This information is important to me and should be important to every teacher." As we can observe from the first Concept Map represented in Figure 16.9, this learner did not have a clue of what ESD meant, however, the response given to question No.6 reveals that he has grasped the meaning behind ESD and this is also corroborated in his second Concept Map illustrated in Figure 10. In the response given to question No.8 one can note a sense of determination and commitment in this learner's tone revealing once again that this programme left its mark on this learner who initially found himself doing this credit just by chance. It is worth noting that this learner's preferred way of learning through real life experiences is also mirrored in question No. 8 where he suggests a change of attitude towards sustainable development "by leading through example and explain over and over again." This reflects his Use First learning patterns (Figure 16.7). Actually, one finds more information in the Vee Heuristic and Concept Maps than in the ten line short paragraph presented as the written reflection. Although all the information given in these ten lines was correct, the sentences were very short and straightforward.

From the first Concept Map generated during the first lecture as presented in Figure 16.9, one can easily observe a Concept Map presented as a chain revealing little or no knowledge about ESD. This kind of Concept Map also reinforces the

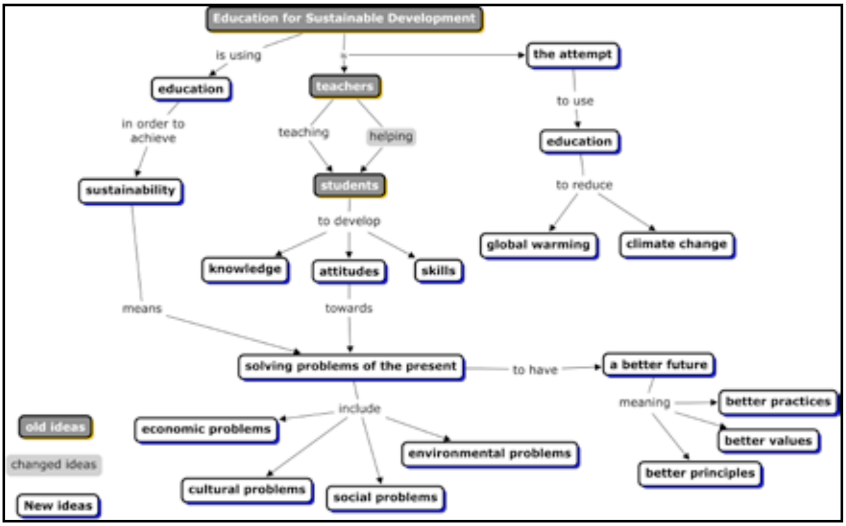
Figure 16.9 Stefan's First Concept Map created before the learning programme



answers given to question No.2 and No.3 in the Vee illustrated in Figure 16.8. In the second Concept Map (Figure 16.10) constructed after the learning programme one can observe a change from a linear train of thought to a net of thoughts and ideas. Although this Concept Map may have a few flaws in Concept Mapping skills, what is more important is that it reveals how this learner's knowledge has developed. There is a marked increase in concepts and propositions and therefore learning has taken place.

Stefan's Concept Maps differ from the other Concept Maps presented in this study because they lack details and this could be related to the fact that the dominant learning schema of this learner is typical to this learner who avoids details and likes to go straight to the point. However, the most salient points relating to what ESD is all about are present: the differences between Stefan's two Concept Maps reveal that this learner has learned meaningfully although he started off on this programme with a lack of interest and motivation. It also stands to be said that although this learner purportedly avoids details, his second Concept Map exhibits more details than the paragraph he presented as a reflection. Therefore Concept Mapping facilitated this learner's expression of thoughts. It is also worth noting the way in which the first Concept Map (Fig. 16.9) was constructed and the way in which the second Concept Map (Fig.16.10) was created. There is a difference in colours and even in the arrowed lines showing that this learner enjoyed constructing the second CMap more than the first one and put more time and effort into the process. The way in which this learning programme was presented and experienced may have helped in increasing this learner's interest and motivation.

Figure 16.10 Stefan's second Concept Map constructed after the learning programme.



Concept Maps

One of the main focuses of this research revolves around the learning process as an interaction of thinking, feeling and acting. Although Concept Maps in themselves do not reveal the affective side of learning, the actual process of constructing a Cmap does involve these three mental processes. In contrast with "traditional" teaching and learning where the students are asked to represent their knowledge through ways which rely mainly on memory, in order to regurgitate chunks of information (surface learning), when students are asked to represent their knowledge by constructing Concept Maps, they are going through a process of metacognition (deep learning). Metacognition entails mulling, connecting, rehearsing, expressing, assessing, reflecting, revising and learning (Johnston, 2010). Actually, when one is constructing a Concept Map, one goes through these processes and this is the reason why Concept Maps facilitate meaningful learning and challenge rote learning. Furthermore, when one is constructing a Concept Map one is not simply reproducing chunks of information which are totally irrelevant to one's own experience (because it would have been studied by heart). When the learner is constructing a Cmap, since he/she is presenting knowledge according to his/her own cognitive structure, the learner is creating knowledge according to his/her own perspective and this will automatically be related to the individual's own personal experience. This is why learning becomes more meaningful.

Vee Heuristics

Novak (1998) reveals that the shape of a Vee was chosen above other shapes because by using this format, one can clearly recognize and differentiate that both thinking (concepts and theories) and doing (methodology) are implicated in the process of constructing knowledge. The right hand side of the Vee, reports the action part of knowledge construction taking place. One can, in fact, visually see what the learner is doing to develop his/her own knowledge. In addition, the learner can reflect and observe the development of the new knowledge taking place as opposed to his/her prior knowledge on the left hand side of the Vee. In this way, prior knowledge has been developed; misconceptions have been altered while new knowledge has been constructed. It is in this way that the transmission model of education is being challenged, since the learner is learning on autonomously, with the teacher only facilitating this process by providing the necessary tools. If rote learning does not impart meaningful learning, the way forward must lie in the use of metacognitive learning. Research in this study and elsewhere prove that Vee Heuristics promote metacognitive skills. Similarly, Novak argues that "giving learners the correct information does not displace their faulty conceptions! It takes a lot of negotiation of meanings, a lot of shared experience to help learners reconstruct their internal concept Maps to be congruent with the expert's knowledge" (Novak, 1998, p. 118). Therefore, this process facilitates more teacher/student interaction. An added value is that this whole process makes the teacher stop and reflect on his/her own practice. In order to bring about transformation one must be ready to transform oneself first and foremost and the starting point should be to reflect critically for "If we want pupils to learn meaningfully and reflectively, then their teachers ought to first learn how to learn meaningfully and reflectively" (Åhlberg in Cañas et al, 2004, p. 39).

Let Me Learn: An Advanced Learning System

The Learning Connections Inventory (LCI) is a validated instrument developed by Johnston & Dainton to profile an individual's learning patterns. The theoretical basis for the LCI posits that learning occurs through the interaction of three mental processes: Cognition (thinking), Affectation (feeling) and Conation (doing). Each of these components is taken into consideration and through their interaction learning patterns are formed and each pattern is distinguished by a number of features. Unlike other learning styles the Let Me Learn (LML) does not place the learner into one single quadrant but instead it reveals that all the learning patterns are used by all the learners but to varying degrees. In this way, by being aware of how the learners prefer to learn, the learning patterns are used with intention by both teacher and student for the successful completion of any task. Consequently, LML is value added to this whole process. Through the first Concept Map, the teacher can at a glance observe the valid, invalid and missing ideas about the topic under study. Then, by taking into consideration how the students prefer to learn, the teacher can build a learning programme which directly responds to the students' needs and therefore learning will make more sense to the students.

Conclusion

The integrated use of Vee Heuristics and Concept Maps along with an awareness of how students prefer to learn may promote the reflection and action that is required to stimulate change in education, in this case Higher Education. Implementation of these teaching and learning tools will hopefully lead to the development of creative and reflective practitioners in our society, empowered to become agents of transformation.

References

Fullan, M. (1993). Why Teachers Must Become Change Agents. *Educational Leadership* 50, p. 6.

Gage, N.L. & Berliner, D.C. (1998) (6th Ed.) *Educational Psychology*. USA: Houghton Mifflin

Gamache, P. (2002). University Students as Creators of Personal Knowledge: an alternative epistemological view. *Teaching in Higher Education* 7(3).

Gow, L. & Kember,D. (1990). Does Higher Education Promote Independent Learning? *Higher Education* 19(3).

Hartman, H.J. (2001). *Metacognition in Learning and Instruction: Theory, Research & Practice*. Netherlands: Kluwer Academic Publishers.

Jaeger,R.M. (1997). (2nd Ed.) *Complementary Methods for Research in Education*. Washington, DC:American Educational Research Association.

Johnston, C.A. (2005). *Learning to Use My Potential: A catalogue of resources*. Thousand Oaks, CA: Sage.

Johnston, C.A. (2010). *Finding your way: Navigating life by understanding your learning self.* Glassboro, NJ: Let Me Learn Inc.

Johnston, C., & Dainton, G. (2005) *The Learning Connections Inventory* (Manual). Thousand Oaks, CA: Corwin.

Kinchin, I. M. (2001). Can a Novice Be Viewed as an Expert Upside-Down? *School Science Review*, 83(303).

Mezirow,J. & Taylor, E.W. (2009). *Transformative Learning in Practice: Insights from community, workplace and Higher Education*. USA: John Wiley & Sons.

Moon, B. (2010). Time for Radical Change in Teacher Education. *Connections*. Feb. Vol.15, No.1

Novak, J. D. (1998). *Learning, creating, and using knowledge: Concept Maps as Facilitative Tools in Schools and Corporations.* Mahweh, NJ: Lawrence Erlbaum Associates.

Novak, J. D., & Gowin, D. B. (1984). *Learning How to Learn.* New York: Cambridge University Press.

Ramsden, P. (2003). (2nd Ed.) *Learning to Teach in Higher Education*. London:RoutledgeFalmer.

Senge, P. (1990). *The Fifth Discipline*. USA: Doubleday.

Vanhear, J. (2008). *Concept Mapping, Vee Heuristics and the Learning Process: Towards a Metalearning Experience*. Third International Concept Mapping Conference, Tallin, Estonia/Helsinki, Finland.

Zull, J.E. (2002). *The Art of Changing the Brain: Enriching the practice of teaching by exploring the biology of learning*. USA: Stylus Publishing LLC.

• CHAPTER 17 •

Learner Autonomy in Modern Language Learning: Find your Bearing and Pick Your Way

Antoinette Camilleri Grima

Introduction

This presentation is about how, as a lecturer of language students, I have tried to guide them to find their own preferred ways of study in a context of learner autonomy. Teachers in Malta undergo their initial training by reading for a four-year B.Ed. (Hons.) degree or a one year postgraduate certificate in education P.G.C.E.) at the University of Malta. As part of the course requirements they must follow a specified number of courses, which we call 'units', each of which consists of a fixed number of lectures and tutorials amounting to 14 hours. Each student is assessed at the end of each unit by test or written assignment. I offer a unit on learner autonomy, and what I describe here was undertaken by B.Ed. students on a voluntary basis.

I have been offering this unit for a number of years now, but this was the first time that it was offered as a choice and not as a required course. The unit has two aims. The immediate aim is 'the development of student-teachers' autonomy as learners' since they come with little background of autonomous learning. The long-term aim is 'the development of learner autonomy in the classroom'.

I normally start the unit by introducing the concept of 'learner autonomy' on a theoretical level and then slowly give students more and more opportunity to identify one or more learning needs, and to choose their own method of study, to decide on an assignment, project or oral presentation as required at the end of every unit. I also guide them to evaluate their own performance and accept the grade they give themselves.

With every group of students I found that learner autonomy improves learning and student motivation IF it is introduced slowly, and the students are prepared for it as a new approach and willing to try it out. I like to emphasise that learner autonomy is a social process in the sense that interaction with colleagues and others is essential. The affective aspect plays a central role. Learner autonomy is important because it encourages each learner to find their own way of learning.

However, I also keep noticing that learners need a lot of guidance first of all to be able to identify their learning needs, and also to find the method that best suits them.

Having come to the realisation that, as someone who wanted to promote autonomous learning I needed to find more and better means of guiding learners to find their own learning routes, I was intrigued by the theory of learning patterns. I felt that students needed a learning environment that helped them identify their own needs and specify their own learning objectives. In order to do this effectively, and to benefit to the utmost from their course of study, they needed to know what sort of language learners they were so that they establish their own personal learning programme (even if they worked in groups).

I observed how students learn differently from each other, how their performance is related to how each individual does, in fact, learn, and that, when students are taught through the methods each prefers, they learn more effectively.

> *However, I lacked systematic ways to identify individual preferences for learning and hence to be able to make suggestions to students with varying learning patterns develop on the basis of individual diagnosis.*

At this point I'd like to clarify that my research does not fall within the area of learning or teaching style research. My concern is not how to improve teaching styles, or to find out to what extent teaching styles that match learning styles will get students to obtain better results. It has arisen from the need to help students identify their own needs, and find their own learning paths. It is based on action research, qualitative in nature, and its validity weighed according to any improvement it brings in the life of individual students. For instance, at the end of each unit, student teachers have reported back that what they found most useful was the opportunity to develop a line of communication with the tutor. What follows is about how this line of communication has been enhanced, has brought understanding, and given a bearing and lit the path for participants.

The Learning Connections Inventory

I slowly started to discover that there are ways of helping students discover their learning patterns through Christine Johnston's Learning Connections Inventory (LCI). I became familiar with the LCI during a week's Summer Institute at Rowan University, New Jersey, in June last year. I would like to say that I was particularly attracted to it because it is not simply another test, questionnaire or inventory that one takes to place oneself in a category or on a point of a continuum (for more on learning styles, see Reid ed. 1995). It is about a process. It involves the teacher in action research. The LCI is a means by which the teacher and the learner in coming to appreciate each other's teaching/learning preference. The teacher is naturally responsible for understanding and accepting the student's own learning pattern so that she is able to give more varied opportunity for learning. At the same time, she will know what kind of effort the learner has to do when expected to perform within a learning pattern that he does not normally prefer.

The LCI is based on the Interactive Learning Model (Johnston 1996, 1998), which reflects an interaction of cognition (information processing), conation (the action-behaviour centre), and affectation (self-esteem and self-confidence). Johnston (1996, p. 38) describes it in this way:

> *"The first thing to recognise is that the interactive process does not occur on a random basis. It occurs as a pattern of behaviours. These behaviours are formed from the combination of our cognitive, conative, and affective tendencies. These tendencies converge to form the basis of our thought processes, mode of action, and feelings about ourselves. This convergence also forms our patterns of learning behaviour."*

The Interactive Learning Model reveals itself in the form of 4 discrete patterns:

> *The* ***sequential*** *portion of our interactive learning patterns causes us to perform a learning task by following a plan. This aspect of the learner seeks to follow step-by-step* ***directions;*** *organise and plan work carefully; and complete the assignment from beginning to end with as few interruptions as possible.*

> *The* ***precise*** *portion of our interactive learning patterns causes us to seek detailed information and to process information carefully and accurately. The learner listens to the teacher and takes detailed notes; asks questions to find out more; knows exact answers; and reads and writes using detailed information.*

The ***technical*** *portion of our interactive learning patterns has us feel success when given the opportunity to work out autonomously, 'hands on', unencumbered by paper and pencil requirements. The learner uses technical reasoning to figure out how to do things; works alone without interference; displays knowledge by physically demonstrating skills; and learns best from real world experiences.*

The ***confluent*** *portion of our interactive learning patterns precipitates our avoidance of conventional approaches and, instead, embraces unique ways of completing any learning task. This part of our patterns gives us permission to take a risk, fail and start again; use imaginative ideas and unusual ideas and improvise.*

Having embarked on a journey of discovery of these interactive learning patterns, I wanted to find out whether I could apply it more specifically to language learning. I started to suspect that learners who would normally use a particular pattern first, would correspondingly prefer to study language in certain ways and not others, as follows:

Sequential processors	The need to work through meticulous grammatical exercises.
Precise processors	The need to look for the right words and expressions trying hard to avoid mistakes.
Technical processors	Emphasise the technical detail of language such as pronunciation and intonation.
Confluent processors	Like to practise language in conversation with native speakers.

The Experiment

I worked with a group of student teachers between January and April 1999. After an unsuccessful call for volunteers in October 1998, shortly after the beginning of the academic year, I decided, in January 1999, to ask each subject co-ordinator in my department to schedule an hour for me during which I could meet the students and explain my project. In this way, during the first week in February I held four one hour meetings with students taking German, Spanish, Italian and French.

At this meeting I gave some brief information about the Learning Connections Inventory, asked them to fill it in, and to then introspect a little bit and write their thoughts on a sheet of paper on:

> *What do I think about myself? What do others say about me? What kind of learner am I? What kind of language learner am I?*

Then I explained that those who were interested in discovering more about themselves, and about learning patterns, could volunteer to meet me regularly every fortnight, to keep a learning diary, and to reflect on their language learning process. Thirty-four students filled in the LCI, and nineteen of them volunteered to participate more fully.

I did not work with all nineteen students to the same extent. With the students taking German and Spanish I had a few meetings to discuss their LCI scores, had general discussions about their learning experiences, kept a journal but they did not keep a diary. With five first year students taking French, and five second year students taking Italian I had continual communication not only in plenary but also on an individual basis. Below I talk in some detail about five of them.

The aim of the project could be described as "an exploration into the students' learning patterns (using the LCI) combined with their reflections on language learning, to try to identify corresponding patterns between learning patterns and language learning preferences".

Two major difficulties were encountered. The first was that at the time they worked with me they were required to do very little 'conscious' language learning, as the focus was more on literature, linguistics, and teaching methodology.

The second major problem was that students had never before been asked to either reflect on their learning or to keep a reflective journal and, therefore, found it difficult to get used to the idea, and as one of them said, "to put my thoughts into words".

> *"I find it difficult to write up my thoughts and what actually happens. I am afraid that what I am thinking does not reflect in what I write. That's why I stay back from writing my thoughts. Just right now I do not feel like writing, even though I feel like talking to someone, thus sharing my problems with him. In this period I'm passing through a difficult time. I'm feeling a bit confused. I just want to cry." (Edwina 25.3.99).*

This reflection was written in pen after an entry in pencil on the same page. I will come back to this case.

The most successful aspects of the project were:

- Almost all participants reported that as a result they felt their self-esteem rise and experienced an improvement in their self-confidence, not only as learners, but as people;

- They came to a better understanding of themselves and of their peers, and as a result felt better able to offer help, and also felt better prepared to face a classroom of different individuals;
- They felt better able to take necessary decisions relating to their career.

I shall now turn to a small sample of participants, refer to their LCI results, and to their diary entries. I would like to emphasise that the most rewarding aspect of this work for me, and also for the students, was that they came to a better understanding of themselves, not only as students, but as individuals; they appreciated having a member of staff interested in them as people with their own personalities; and the fact that in the end we learned a lot more about how they came to be student teachers and how this was affecting their motivation. In one special case, that of Edwina, it lead to a major decision in the choice of subject. Let me take each case at a time.

Violet

French. First year student.
LCI score: Sequential 34, Precise 31, Technical 20, Confluent 16.

The fact that Violet prefers a highly sequential pattern is very evident in her diary. The very first entry (on 11.2.99) states

> *"As far as I can remember, I always had a timetable in which I write everything that I plan to do. Without a timetable I end up wanting to do a lot of things in one day and then at the end do nothing at all".*

Similarly, her very last entry (on 16.4.99) in reply to my question on what she's learned in this project, says:

> *"It has enabled me to understand myself and the way I learn more. I now know the reason why I do certain things in certain ways, e.g. the need for me to have a study time-table or otherwise I will feel lost".*

As someone who is highly sequential and precise, Violet's normal practice is the usual one of "grouping all the information…read the chapter and then write notes". In one of her diary entries dated 5.4.99, she explains her frustrations:

> *"…by the end of the day I had only covered one book and had not even looked at the newspapers and the other information. This meant that I was going to fall behind in my timetable and I was very frustrated".*

Moyra

French, First year.

LCI score: Sequential 33, Precise 24, Technical 25, Confluent 19.

Like Violet, in her first diary entry, in answer to my question "What do others say about you?", she wrote:

> *"I like to be precise, perfect and tidy in my own things, e.g. I don't want a dog-eared page or a line not straight or a word crossed out with a pen".*

For each diary entry Moyra started a fresh page, and on each and every page she used bullets. This has made her diary look like one list of idea after another. On the 26.3.99 she admitted that:

> *"This pattern (the sequential) expresses well what type of language student I am. I want clear directions which I usually follow step by step. I organise and plan work carefully, and I like to end a task when I begin it without interruptions...Whatever I do, I always plan it before...I am very angry when I skip an instruction.*

The precise pattern

Yes, I do want information as much as possible and I need the right one. With detailed information I can process carefully and I am convinced of what I am doing. I like to take detailed notes...Generally the teacher will just beat around the bush rather than give you an accurate answer...When this happens I become frustrated."

Edgar

Italian, second year.

LCI pattern: Sequential 32, Precise 22, Technical 15, Confluent 23.

Edgar was immediately labelled 'sequential' by his peers from the very first contact with the LCI. After comparing each of their scores, Ingrid told the class about Edgar, "He nearly killed me when the sequence of lectures for a particular course was changed". ("Dan qatilni daqskemm għamel għaġeb meta biddlulna s-sekwenza tal-lectures".)

When asked to comment about his preferred course, he dedicated a page to "glottodidattica". He explained:

"This consists in a series of lessons during which we learn how to help school students approach grammar through the use of 'authentic' texts that interest them. In these lessons we analyse a text and develop exercises that could be used with learners..."
-Edgar 30.4

"Dawn jikkonsistu f'lezzjonijiet li jindikawlna modi ta' kif irressqu l-grammatika lejn l-istudenti bi sfond ta' 'texts' attwali li għandhom jinteressaw lit-tfal. Fil-lezzjonijiet aħna nanalizzaw 'text' u noħorġu diversi 'exercises' li nistgħu nużaw mat-tfal..."
-Edgar 30.4

Soon after, he also wrote as the last entry in his diary:

"In terms of learning, I think that the best I have found to work with were:
the internet
various books from the library and the reading of novels"
-Edgar 1.5

"Bħala tagħlim naħseb li għal dan ix-xogħol, l-aħjar li sibt kienu:
l-internet
kotba varji mil-librerija u l-qari ta' novelli"
-Edgar 1.5

Edgar stated early on in his diary that he "wants everything in its sequence, one step after another. I learn most of the time by heart...and I think that I can learn only by reading the packs given to us" (18.02). I noticed that he used to take down detailed notes during my meetings with him and his peers, making sure that he has all the information to follow 'my directions' with regard to diary keeping etc. – typical of highly sequential people.

An interesting event in the case of Edgar was that he asked for an extra copy of the LCI to give to his girlfriend. He admitted that they were having too many disagreements lately about everything but especially about how to go about doing things, and he was now convinced that this is because they have a different learning profile. While he was mainly sequential, he was convinced that she was mainly technical (also being the only lady studying technical subjects in her group). In the diary, he wrote: "I feel that others don't understand me, especially my girlfriend". I gave him a copy for her and he reported that in fact she scored high on all four processes and was therefore a 'strong-willed learner'. He did not, however, mention this incident again.

Edwina

Italian, second year

LCI score: sequential 12, precise 23, technical 33, confluent 17.

Edwina was an interesting participant, especially from my point of view, since she has a learning pattern that is quite different from mine. Being a sequential person myself, I found it a bit difficult to cope with Edwina who simply seemed always reluctant to follow my directions! I was sure that she was willing to participate and collaborate, but in her own way. We worked hard in getting to know each other, and Edwina, after a period of self-discovery, in the end, came to an important decision regarding her career. Listen to her own self:

> *"I am a person that is always angry at herself. Even though I am willing to do various things, I never fulfil them…the fact that I want to do things perfectly leads me to take a long time before I start really doing them, and often I leave them incomplete" (precise but not sequential) (5.2)*

> *"I prefer doing things in practice rather than writing long essays. I like to be creative in my technical inventions. My way of learning is very technical and also precise. In fact the thing that always causes me to leave things to be done is because I want to do them precisely, but I am not sequential to find the time to accomplish my work. I am always trying to start planning my work so that I feel more calm and happy but it is very difficult for me…that's why I feel angry about myself" (5.2)*

During a counselling session that I specifically asked for, it came out that Edwina had been given the wrong advice as to which career to choose. She had always known that she performed better in Mathematics, a subject she liked and that she wanted to excel in. For some reason, the school counsellor had advised her against such a choice, and so she went in for Italian. She continually felt frustrated because, although she liked to speak the language with its native speakers, she was very unhappy about the course itself. Furthermore, she reported that during her first teaching practice at primary school, she dedicated a lot of time and energy to the teaching of mathematics, to the detriment of language subjects. This brought her to the realisation that she is in the wrong track, and luckily was still on time to move the primary track, although she could not become a maths. specialist at this stage. In April she wrote:

> *"Thanks to this learning patterns research now I know what I am, what I want, and in which way I have to achieve it. I am going to choose primary teaching instead of Italian. I cannot imagine myself teaching a language. During my teaching practice I really enjoyed teaching maths and science, inventing interesting and motivating methods...I am always feeling not in the right place because I had to choose Maths."*

At our first meeting, Edwina was described by her friend as a 'confused person' ('imħawda'). Eventually it transpired that her confusion was the result of having decided to follow a course which did not suit her learning patterns and this made her continuously frustrated and guilty. She wrote in her diary: "I prefer doing things in practice than writing long essays. I like to be creative in my technical inventions". Luckily she was on time to remedy the situation partially, although she still felt that after her degree she might start all over again with Maths!

Richard

Italian, second year
LCI score: sequential 17, precise 23, technical 30, confluent 28

Richard avoids sequential processing. He says he "lacks any kind of organisation regarding any item...I never follow an agenda...I believe this is the joy of life". He likes to consider himself as being "original" and always tried "to invent my own idea about something. For the Italian assignment I chose a title no one else chose". Richard likes to be different.

He, in fact, presented the most interesting, varied and colourful diary. Each page had a different design and colour, and was decorated with photographs depicting him in his bedroom, most of the time working on his 'art and crafts', or 'simply doing nothing'!

He is happy about himself. The very first sentence in his diary was "Thinking about myself is rather enjoyable" (5.2). Towards the end he admitted, "Thank God I am confluent. In my opinion being confluent enhances your enjoyment in life. I believe...the world is in our hands and we can change it...we should not do it on a pattern or copy – So get up and change your environment!" (n/d).

Richard did badly in exams, especially when he was at school, and this resulted in a poor self-image for some time. According to him he did badly since exams are based on memory work and he hates studying by heart. In fact his "most fruitful language learning activity was the oral exam. for Advanced level", and at university "during a tutorial when we had an informal dialogue it was very interesting" (18.2). He offers some advice to lecturers and suggests that instead of giving the same task to all students they should give a different exercise to each student: "Even lecturers themselves would find it more pleasant to correct fifteen different translations"!

With regard to my original hypothesis, I feel I can talk about trends that I noticed, which are, of course, in no way conclusive given such a small sample. I noticed that:

Those whose preferred pattern is sequential and/or precise but not technical and/or confluent prefer written to oral work

> *"I learn better through writing rather than hearing only."*
> *--Violet p.3*

> *"I prefer that the teacher gives us detailed notes covering all possibilities and then we study them. After studying I prefer to apply what I have studied by doing some exercises in order to test my knowledge".*
> *-Violet p.4*

> *"I can learn only by reading the packs given to us."*
> *-Edgar 18.2*

Enjoy working on grammatical exercises, looking for and understanding language patterns

> *"...I conjugated each verb in all the tenses and then checked for corrections..."*
> *-Violet 30.3*

> *"However, I was quite disappointed to find that there are still more stumbling blocks. I referred to another grammar book in which the explanation is put in very simple terms. I do not seem to be able to decipher any pattern or rule. I still have the difficulty and it makes me feel uncomfortable..."*
> *-Violet 31.3*

> *"(I think I learn by studying) glottodidattica/grammar"*
> *-Edgar 18.3*

Those whose preferred pattern is technical and/or confluent but not sequential and/or precise prefer to speak rather than to write. They like to participate.

"We did spontaneous translations…from English to Italian. I felt I did very well…hearing the Italian language being spoken by a native always helps me more than ever to think more in Italian…"
-Ingrid 18.2

"I don't learn much from one-sided teaching lessons."
-Ingrid 26.2

"I love to attend seminars/talks/forums etc."
-Ingrid 7.3

"The best way I learn is going abroad and being motivated to use a foreign language in the practical way"
-Edwina 5.2

"My most fruitful language learning activity was during the oral exam of the A level…an activity that provides for self-interests really does work"
-Richard 11.2

"It is more important, I believe, that you know how to speak a language than knowing grammatical tenses"
-Richard 18.2

Dislikes study and preparing for exams.

"I always tend to leave everything to be done at the end, especially in doing an assignment"
-Edwina 5.2

" I started to study on the day of the exam."
-Edwina n/d

"I am dead calm…I don't have all university files and notes classified, not up-to-date…I affirm my hatred towards exams. I like practical assignments"
-Richard n/d

Conclusion

After admitting that the sample used here was very small, and after having eliminated strong-willed learners, I would still like to draw some conclusions. These are by no means intended as generalisations but as stepping stones for further research. Another important proviso is that, as it happens, the learners identified above happen to prefer either both sequential and precise processing, or technical and confluent processing. In my conclusion below I only refer to that which is specific to language learning, and not to learning generally.

- Learners who prefer sequential and precise processing feel happier (as they are where they belong) about their language learning than those who prefer technical and confluent processing.
- Learners who prefer sequential and precise processing like to study grammar and prefer written to oral work.
- Learners who prefer technical and confluent processing feel unsure about their choice of career as language teachers.
- Learners who prefer technical and confluent processing like oracy best as part of their language learning and dislike preparing for written work, especially examinations.

A facile inference from this could be that technical and confluent processers are not ideal language students. Or would it be more accurate to say that the methods being used in language teaching are not suitable or attractive enough to technical and confluent processers?

I feel that this project was worth it for the simple reason that at least one student had come to understand her frustration and was able to remedy her situation. Following Professor Christine Johnston's motto, working with the LCI is about **Making a Difference, Each Day, All Year, One Student at a Time.**

References

Camilleri, A. (1997). "Introducing Learner Autonomy in Initial Teacher Training". In Holec, H. & Huttunen, I. (eds.) *Learner Autonomy in Modern Languages*. Strasbourg: Council of Europe.

Fenstermacher, G. (1990). "Some considerations on teaching as a moral profession". In Goodlad, R. & Sirotnik, K. (eds.) *The Moral Dimensions of Teaching*. San Francisco: Jossey-Bass.

Johnston, C. (1996). *Unlocking the Will to Learn*. California: Corwin Press, Inc.

Johnston, C. (1998). *Let Me Learn*. California: Corwin Press, Inc.

Reid, J.M. (ed.). (1995). *Learning Styles in the ESL/EFL Classroom*. New York: Heinle & Heinle Publishers.

PART IV

The Let Me Learn Process Applied to a Pedagogy of Difference and Student Achievement

• CHAPTER 18 •

An Examination into the Learning Pattern Preferences of Students in Special Education

Jaime L. Thone

Introduction

The overarching purpose of this study is to compare the learning pattern preferences as outlined by the Let Me Learn Process® across student groups. One purpose of this study is to compare learning preferences of learning patterns across two student groups: (a) students in general education and (b) students in special education. Another purpose of this study is to assess learning pattern preferences across two categories of students in special education: (a) students classified for special education under the disability category of Other Health Impairment (OHI); and (b) students classified for special education under the disability category of Specific Learning Disability (SLD). Students' learning pattern preferences were measured via the Learning Connections Inventory (LCI) which is the corresponding assessment to the LML theory. The LCI is used to determine four identified student learning patterns: (a) the sequential pattern, which seeks order and consistency; (b) the precision pattern, which wants to know details and exactness; (c) the technical reasoning pattern which processes using stand alone, independent reasoning; and (d) the confluence pattern, which pulls together all areas of experience and forms them into new ideas and thoughts. If a determination can be made that certain student pattern preferences of learning exist based on a particular group, it may give educators insight into the learning, academic, and educational needs of these particular groups of students to best assist students to reach their optimum learning potential. This determination may also provide educators with a greater understanding about how these student learning pattern preferences exist within their current education system.

Participants

In this study, archival data collected from January 2008 to December 2012 on 251 students in general education and special education extracted from a national dataset provided by the Let Me Learn Process® organisation was used. The specific criteria for the archival sample data were that data come from students in middle and high schools in New Jersey who were in 6th through 12th grades. Moreover, data was from students in general education or students classified for special education but only with the classification categories of OHI or SLD. The OHI special education classification refers to having limited strength, vitality or alertness, including a heightened alertness to environmental Due to the shortcomings of learning styles assessment tools – and the theories on which they were developed - Johnston and colleagues developed the Let Me Learn Process® (LML), a theory which integrates cognitive, conative, and emotional learning into a metacognitive system. Learners identify their learning pattern preferences (i.e., sequential, precision, technical reasoning, confluence) and then utilise them to learn (Johnston, 2006; Jorgenson, 2006; Osterman & Kottkamp, 2004). stimuli, that results in limited alertness with respect to the educational environment, and that (a) is due to chronic or acute health problems and (b) adversely affects a child's educational performance. Students who have, for example, attention deficit hyperactive disorder, epilepsy, asthma, or diabetes would be classified as OHI. The SLD special education classification refers to a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, that may manifest itself in the imperfect ability to listen, think, speak, read, write, spell, or to do mathematical calculations. Students who have brain injuries, perceptual disorders, developmental aphasia, or dyslexia would, for example, be classified as SLD. Students who had visual, hearing, or motor, disabilities, mental retardation, or emotional disturbances were not included in the study dataset, per required criteria.

In addition to the education classification of the student, the dataset also included the students' LCI learning pattern preference scale scores. The data was based on location. Specifically, schools were chosen based on proximity, classification and grade range sought by the examiner. This particular area was chosen in order to preserve the most consistency among classifications for special education. By utilising data from one particular area, there is less chance to have different classification criteria due to the fact that each of these schools were under the New Jersey state special education guidelines. Once the LCI scores with the outlined criteria were requested, student data was compiled and then coded to preserve student confidentiality.

Power Analysis

A power analysis was completed with the G*Power 3.1 software in order to determine the minimum sample size needed to detect statistical significance. Power analyses were conducted for a one-way multivariate analysis of variance (MANOVA). Significance for this analysis was established at .05 (α = .05). Effect size was determined to be f =. 30, as this is considered to be an appropriate level within social science research that is necessary to yield a moderate effect (Cohen, 1992). Power was determined to be at the level of .80 and was considered a reasonable value within current research (Cohen, 1992). After completing the analysis with the G*Power 3.1 program, a total sample size of 46 was determined to be necessary overall which means that a minimum of 23 subjects were necessary within each group ($F(4,41)=2.5997$, $\lambda = 13.80$).

Research Design

In this study, a quantitative non-experimental correlational research design was used. A quantitative method is selected due to its rigour in establishing statistical relationships between ordinal, interval, and ratio variables (Muijs, 2010). A non-experimental correlational design was required as the study's focus is on pre-existing intrapersonal factors that cannot be manipulated by the researcher (Muijs, 2010). This study utilised archival data on 251 students collected between January 2008 and December 2012 through the LML organisation.

Independent and Dependent Variables

Independent Variables. The independent variables in this study were categorical variables of student education classification type. For research questions one through four, students were classified into two education and three education groups for the two sets of analyses. For the two-group coding, the student classification categorical variable was coded as 1 = students in general education and 2 = students in special education. For the three-group coding, the student classification categorical variable was coded as 1 = students in general education, 2 = students in special education classified as OHI, and 3 = students in special education classified as SLD. For research questions five through eight, the student classification categorical variable was coded as 1 = students in special education classified as OHI and 2 = students in special education classified as SLD.

Dependent Variables. The four dependent variables in this study were the four learning preference (i.e., sequence, precision, technical, and confluence) scale scores as measured by the Learning Connections Inventory (LCI). Each preference scale yields scores from 7 to 35, with a higher score denoting a higher preference for that learning pattern.

Learning preference scale scores from 7-16 indicate a learning preference that the person avoids; scores from 17-25 indicate a learning preference that the person uses as needed; and scores from 26-35 indicate a learning preference that the person uses first and most often.

Statistics were conducted for this study using SPSS 20.0. Descriptive statistics were calculated for frequency and percentages of students in the education classification categories. The statistical analyses for hypothesis testing utilised included several one-way MANOVAs in order to assess potential differences and similarities of the constructs being studied. Prior to hypothesis testing, data will be tested for assumptions of MANOVA. A one-way MANOVA is the preferred analysis when there are independent variables that are categorical and the dependent variables are ratio or interval coded variables that measure a similar construct (Muijs, 2010). An alpha level of .05 was used in order to determine statistical significance.

Assumptions and Data Analysis of Research Question One

The first research question investigated the relationship between those students in special education and those students in general education in terms of preference for the LCI construct of sequence learning. It was hypothesised that students in special education have less preference for sequence learning when compared to students in general education students. Two one-way MANOVAs were conducted to (a) assess the potential differences between those students classified for special education and those students in general education; and (b) those students classified for OHI special education, those students classified for SLD special education, and those students classified as general education.

Assumptions and Data Analysis of Research Question Two

The second research question investigated the relationship between those students in special education and those students in general education in terms of preference for the LCI construct of precision learning. It was hypothesised that students in special education have less preference for precision learning when compared to students in general education. Two one-way MANOVAs were conducted to (a) assess the potential differences between those students classified for special education and those students in general education; and (b) those students classified for OHI special education, those students classified for SLD special education, and those students classified as general education.

Assumptions and Data Analysis of Research Question Three

The third research question investigated the relationship between those students in special education and those students in general education in terms of preference for the LCI construct of technical learning. It was hypothesised that students in special education have more preference for technical learning when compared to students in general education. Two one-way MANOVAs were conducted to (a) assess the potential differences between those students classified for special education and those students in general education; and (b) those students classified for OHI special education, those students classified for SLD special education, and those students classified as general education.

Assumptions and Data Analysis of Research Question Four.

The fourth research question investigated the relationship between those students in special education and those students in general education in terms of preference for the LCI construct of confluence learning. It was hypothesised that there was no difference in a preference for confluence learning when comparing students in special education and students in general education. Two one-way MANOVAs were conducted to (a) assess the potential differences between those students classified for special education and those students in general education; and (b) those students classified for OHI special education, those students classified for SLD special education, and those students classified as general education.

Assumptions and Data Analysis of Research Question Five.

The fifth research question investigated those students in special education, specifically those who were classified in one of two categories, OHI or SLD, and their preference for the LCI construct of sequence learning. The hypothesis was that students classified under the disability category of OHI have more preference for Sequence when compared to students classified under the disability category of SLD. A MANOVA was utilised to assess the potential differences in preference when comparing those students classified for special education under the disability categories of OHI and SLD.

Assumptions and Data Analysis of Research Question Six

The sixth research question investigated those students in special education, specifically those who were classified in one of two categories, OHI or SLD, and their preference for the LCI construct of precision learning. The hypothesis was that students classified under the disability category of OHI have more preference for precision learning when compared to students classified under the disability category of SLD. A MANOVA was utilised to assess the potential differences in preference when comparing those students classified for special education under the disability category of OHI and those students classified under the disability category of SLD.

Assumptions and Data Analysis of Research Question Seven

The seventh research question investigated those students in special education, specifically those who were classified in one of two categories, OHI or SLD, and their preference for the LCI construct of technical learning. It was hypothesised that students classified under the disability category of OHI have less preference for technical learning when compared to students classified under the disability category of SLD. A MANOVA was utilised to assess the potential differences between those students classified for special education under the disability category of OHI and those students classified under the disability category of SLD.

Assumptions and Data Analysis of Research Question Eight

The eighth research question investigated those students in special education, specifically those that were classified in one of two categories, OHI and SLD, and their preference for the LCI construct of confluence learning. It was hypothesised that there is no difference in preference when comparing students classified under the disability category of OHI and students classified under the disability category of SLD. A MANOVA was utilised to assess the potential differences in preference when comparing those students classified for special education under the disability category of OHI and those students classified under the disability category of SLD.

Results-Assumptions

Testing for Violations of Assumptions for MANOVA

Prior to hypothesis testing, data were reviewed and/or analysed to test assumptions for MANOVA. One assumption for MANOVA is the assumption of independence, that is, that dependent variable scores for each participant are independent of other participants' scores (Grice & Iwasaki, 2007). This assumption was not violated as all participants' LCI learning preference scores were independently obtained from individual students. A second assumption for MANOVA is that the sample size in each cell is at least $n = 30$ and is greater than the number of dependent variables (Grice & Iwasaki, 2007). This assumption was not violated. There were four dependent variables, and the cell sizes for each group were $n = 63$ GE students and $n = 188$ SE students, further delineated into 107 SLD students and 81 OHI students.

A third assumption, the assumption of multivariate normality, is that the dependent variable scores are normally distributed in each sample category. Normal distribution of scores can be determined by computing the skewness and kurtosis values of each dependent variable for each student category (see Table 18.1). Skewness values of > +/-1.00 indicates significant violation of a normal distribution of scores (Vogt, 2007). Kurtosis indicates the peakedness or flatness of the distribution of scores. The kurtosis value is computed by dividing the kurtosis statistic by the kurtosis standard error (SE): $\frac{\textit{Kurtosis Value}}{\textit{Kutosis SE}}$ (Vogt, 2007). If the kurtosis value is >= +/- 2.00, there is significant peakedness (i.e., the distribution is leptokurtic) or flatness (i.e., the distribution is platykurtic) of the distribution of scores around the mean score (Vogt, 2007). In addition to the skewness and kurtosis values as indicators of a normal distribution, Kolmogorov-Smirnov goodness-of-fit chi-square ($\chi.$) tests were conducted. Kolmogorov-Smirnov $\chi.$ statistics determine normality in consideration of both skewness and kurtosis.

The LCI sequential, precision, technical reasoning, and confluence learning preference scores did not display significant skewness or kurtosis overall and across most student categories (see Table 18.1). The LCI confluence learning preference variable for OHI students had a computed kurtosis value of 2.90. However, the Kolmogorov-Smirnov test statistic, used to test the assumption of normality, was not significant, $\chi.$ (81) = .92, p = .37. Thus, the confluence learning pattern variable for OHI students had a normal distribution. The sequential learning pattern preference variable for GE students had a kurtosis value of 2.91. However, the Kolmogorov-Smirnov test statistic was not significant, $\chi.$ (81) = .88, p = .42. As such, the sequential learning pattern scores were normally distributed for GE students.

Note. aKurtosis value = $\frac{\textit{Kurtosis Value}}{\textit{Kutosis SE}} = 2.90$;

Kurtosis value = $\frac{\textit{Kurtosis Value}}{\textit{Kutosis SE}} = 2.91$.

To test for multivariate normality of the distribution of scores, a Mahalanobis distance was computed. The critical value of a Mahalanobis distance chi-square ($\chi.$) with four degrees of freedom (i.e., four dependent variables) at p < .001 is 18.47 (Grice & Iwasaki, 2007). No outliers were identified via the Mahalanobis distance computation. As such, the assumption of multivariate normality was not violated.

A fourth assumption for MANOVA is homogeneity of covariance, that is, covariance is equal across groups (Grice & Iwasaki, 2007). To test for equality of covariance matrixes across groups, a Box's M statistic was computed for the three

Table 18.1 LCI Learning Pattern Preferences: Descriptive Statistics across Student Categories

	N	M	SD	Min	Max	Skewness	Kurtosis
ALL STUDENTS							
Sequential	251	4.74	4.44	9.00	35.00	-.38	.06
Precision	251	3.13	5.04	10.00	33.00	-.10	-.38
Technical Reasoning	251	5.63	6.00	9.00	35.00	-.57	-.18
Confluence	251	2.86	4.42	10.00	34.00	.11	.09
SE STUDENTS							
Sequential	188	24.40	4.37	11.00	35.00	-.20	-.25
Precision	188	22.04	5.18	10.00	33.00	-.09	-.46
Technical Reasoning	188	26.40	5.67	10.00	35.00	-.56	-.17
Confluence	188	22.93	4.38	10.00	34.00	.01	.11
OHI STUDENTS							
Sequential	81	24.04	4.21	15.00	32.00	-.24	-.76
Precision	81	23.15	5.06	10.00	33.00	-.20	-.13
Technical Reasoning	81	26.67	5.79	10.00	35.00	-.55	-.16
Confluence	81	23.28	4.20	10.00	34.00	-30	1.54[a]
SLD STUDENTS							
Sequential	107	24.67	4.48	11.00	35.00	-.20	.07
Precision	107	21.21	5.13	11.00	33.00	-.00	-.59
Technical Reasoning	107	26.20	5.60	10.00	35.00	-.59	-.12
Confluence	107	22.65	4.51	13.00	33.00	.22	-.54
GE STUDENTS							
Sequential	63	25.76	4.55	9.00	33.00	-.96	1.73[b]
Precision	63	22.38	4.62	10.00	33.00	-.08	-.06
Technical Reasoning	63	23.33	6.41	9.00	35.00	-.45	-.48
Confluence	63	22.68	4.59	12.00	34.00	.38	.17

MANOVAs computed for this study. The recommended significance value for a Box's M statistic is p = .001, as this test is very sensitive to normality (Grice & Iwasaki, 2007). For the MANOVA analysis for the first set of research questions to determine whether there were any SE and GE student category differences on LCI learning pattern preferences of sequential, precision, technical reasoning, and confluence, the Box's M statistic was significant, M = 21.81, F = 2.13, p =.02. However, this statistic was not significant at the p = .001 level, the significance level used for Box's M due to its sensitivity to normality (Grice & Iwasaki, 2007). Therefore, the assumption of homogeneity of covariance was not violated for this analysis. A one-way MANOVA was also conducted to assess group differences when SE students were further delineated into SLD or OHI groups and then compared with GE students on preferences for sequence, precision, technical reasoning, or confluence learning. The Box's M statistic was not significant, M = 27.30, F = 1.33, p =.15; the assumption of homogeneity of covariance was not violated for this analysis. For the MANOVA analysis for the second set of research questions to assess whether SLD students and OHI students differed from one another on LCI sequence, precision, technical reasoning, and confluence learning preference mean scores, the Box's M statistic was not significant, M = 6.41, F = .63, p =.79. The assumption of homogeneity of covariance was not violated for this analysis.

A fifth assumption for MANOVA is that the dependent variables should be linear and should be moderately related to one another but should not display multicollinearity (Vogt, 2007). It is recommended that multicollinearity between dependent variables be tested via Pearson bivariate correlations for each independent variable group; an r > .80 signifies multicollinearity (Grice & Iwasaki, 2007). Pearson bivariate correlations between the dependent variables were conducted with the sample of 188 SE students (see Table 18.2), further delineated into OHI and SLD student categories (see Tables 18.3 and 18.4), and with the sample of 63 GE students (see Table 18.5).

Pearson bivariate correlations were conducted on the four LCI learning pattern preferences for the special education group of n = 188 students (see Table 18.2). Although precision learning pattern preference was significantly correlated with sequential learning pattern preference, r(188) = .42, p < .001, and confluence learning pattern preference was significantly correlated with technical reasoning, r(188) = .39, p < .001, the correlations were not greater than .80. As such, the LCI learning preference variables did not display multicollinearity in the sample of SE students (n = 188).

Table 18.2 Pearson Bivariate Correlations between LCI Pattern Preference Scores: SE Students (n = 188)

	Sequential	**Precision**	**Technical Reasoning**	**Confluence**
Sequential	1.00			
Precision	.42***	1.00		
Technical Reasoning	.06	-.03	1.00	
Confluence	.13	.04	.39***	1.00

Note. ***p < .001

Pearson bivariate correlations between the dependent variables of LCI learning pattern preferences were conducted with the sample of 81 OHI students (see Table 18.3). The precision learning pattern preference was significantly correlated with sequential learning pattern preference, r(81) = .41, p < .001. In addition, the confluence learning pattern preference was significantly correlated with technical reasoning, r(81) = .40, p < .001. As the variables were not correlated with one another at the r > .80 level, the LCI learning pattern preference variables did not display multicollinearity for the sample of OHI students.

Table 18.3 Pearson Bivariate Correlations between LCI Pattern Preference Scores: OHI Students (n = 81)

	Sequential	**Precision**	**Technical Reasoning**	**Confluence**
Sequential	1.00			
Precision	.41***	1.00		
Technical Reasoning	.17	.09	1.00	
Confluence	.12	.15	.40***	1.00

Note. ***p < .001

Pearson bivariate correlations between the dependent variables of LCI learning preferences were conducted with the sample of 107 SLD students (see Table 18.4). The precision learning pattern preference was significantly correlated with sequential learning pattern preference, r(107) = .47, p < .001. Results also showed that the confluence learning pattern preference was significantly correlated with the technical reasoning learning pattern preference, r(107) = .38, p < .001. As the variables were not correlated with one another at the r > .80 level, the LCI learning pattern preference variables did not display multicollinearity for the sample of SLD students.

Table 18.4 Pearson Bivariate Correlations between LCI Pattern Preference Scores: SLD Students (n = 107)

	Sequential	Precision	Technical Reasoning	Confluence
Sequential	1.00			
Precision	.47***	1.00		
Technical Reasoning	-.01	-.13	1.00	
Confluence	.14	-.06	.38***	1.00

Note. ***p < .001

Pearson bivariate correlations between the dependent variables of LCI learning pattern preferences were conducted with the sample of 63 GE students (see Table 18.5). For this group of students, the sequential learning pattern preference was significantly and positively correlated with the precision learning pattern preference, r(63) = .58, p < .001, and was significantly and negatively correlated with the technical reasoning learning pattern preference, r(63) = -.37, p = .003, and the confluence learning pattern preference, r(63) = -.30, p = .02. The precision learning pattern preference was significantly and negatively correlated with the technical reasoning learning pattern preference, r(63) = -.40, p < .001. Finally, the technical reasoning learning pattern preference was significantly and positively correlated with the confluence learning pattern preference, r(63) = .38, p = .002. As the variables were not correlated at the r > .80 level, multicollinearity was not evident.

Table 18.5 Pearson Bivariate Correlations between LCI Pattern Preference Scores: GE Students (n = 63)

	Sequential	Precision	Technical Reasoning	Confluence
Sequential	1.00			
Precision	.58***	1.00		
Technical Reasoning	-.37**	-.40***	1.00	
Confluence	-.30*	-.15	.38**	1.00

Note. ***p < .001; **p < .01; *p < .05

Testing Hypotheses

The first purpose of this study was to determine whether there were student group differences in learning pattern preferences based on sequence, precision, technical reasoning and confluence mean scores when comparing students in general education and students in special education, specifically with classifications of SLD or OHI.

Research question one
Is there a difference in preference when comparing students in special education and students in general education in the category of Sequence based on their LCI scores?

Hypothesis one
Students classified for special education demonstrate less preference for Sequence based on their LCI scores more often when compared to students in general education.

Research question two
Is there a difference between students classified for special education and students in general education in the category of Precision based on their LCI scores?

Hypothesis two
Students classified for special education show less preference for Precision based on their LCI scores more often when compared to students in general education.

Research question three
Is there a difference between students classified for special education and students in general education in the category of Technical Reasoning based on their LCI scores?

Hypothesis three
Students classified for special education demonstrate more preference for Technical Reasoning based on their LCI scores more often when compared to students in general education.

Research question four:
Is there a difference between students classified for special education and students in general education in the category of Confluence based on their LCI scores?

Hypothesis four:
There is no difference in preference for Confluence when comparing LCI scores of students in special education and students in general education.

A one-way MANOVA was first conducted to determine whether there were any SE and GE student category differences on LCI learning pattern preferences of sequential, precision, technical reasoning, and confluence. The overall MANOVA model was significant, $F(4,246) = 4.57$, Wilks $\lambda = .93$, $p = .001$, with a small effect size, $\varepsilon 2 = .07$ (Steyn & Ellis, 2009). When examining the univariate results, it was found that student groups significantly differed on preferences for sequential learning, F(1, 249) = 4.50, p = .035. Specifically, SE students (n = 188) reported a significantly lower preference for sequential learning (M = 24.40, SD = 4.37) than did GE students (n = 63, M = 25.76, SD = 4.55). Student groups also significantly differed on preferences for technical reasoning learning, F(1, 249) = 12.90, p < .001. SE students (n = 188) reported a significantly higher mean preference score for the technical reasoning learning pattern (M = 26.40, SD = 5.67) than did GE students (n = 63, M = 23.33, SD = 6.41).

Table 18.6 One-Way MANOVA Table: Comparisons of SE Students (n = 188) and GE Students

Dependent Variable	Df	Mean Square	F	p
Sequential	1, 249	87.66	4.50	.035
Precision	1, 249	5.40	.21	.645
Technical	1, 249	443.46	12.90	.000
Confluence	1, 249	2.79	.14	.707

(n = 63) on LCI Learning Pattern Preferences

A one-way MANOVA was also conducted to assess group differences when SE students were further delineated into SLD or OHI groups and then compared with GE students on preferences for sequence, precision, technical reasoning, or confluence learning (see Table 18.7). The overall MANOVA model was significant, F(8,490) = 4.11, Wilks λ = .88, p < .001, with a small effect size, ε2 = .06. When the univariate results were examined, it was found that student groups significantly differed on precision learning preference mean scores, F(2, 248) = 3.61, p = .03. Specifically, Tukey post hoc tests showed that students who were OHI (n = 81) had a significantly higher mean preference score for the precision learning pattern (M = 23.15, SD = 5.06) than did students who were SLD (n = 107, M = 21.21, SD = 5.13) and students who were GE (n = 63, M = 22.38, SD = 4.62). Results from univariate analyses also demonstrated that student groups significantly differed on the technical reasoning learning pattern preference mean scores, F(2, 248) = 6.58, p = .002. Specifically, Tukey post hoc tests showed that students who were OHI (n = 81) had a significantly higher technical reasoning learning pattern preference mean score (M = 26.67, SD = 5.79) then students who were GE (n = 63, M = 23.33, SD = 6.41). Furthermore, there was a trend towards significance on the sequential learning pattern mean score differences across student groups, F(2, 248) = 2.73, p = .067. Tukey post hoc tests showed that GE students (n = 63) had a higher sequential learning pattern mean score (M = 25.76, SD = 4.55) than did SLD students (n = 107, M = 24.67, SD = 4.48) and OHI students (n = 81, M = 24.04, SD = 4.21).

Table 18.7 One-Way MANOVA Table: Comparisons of SLD Students (n = 107), OHI Students (n = 81), and GE Students (n = 63) on Learning Pattern Preferences

Dependent Variable	Df	Mean Square	F	*p*
Sequential	2, 248	106.30	2.73	.067
Precision	2, 248	179.36	3.61	.029
Technical	2, 248	453.66	6.58	.002
Confluence	2, 248	21.07	.54	.585

The second purpose of the study was to determine whether there were differences in sequence, precision, technical, and confluence learning pattern preferences when comparing SLD students and OHI students.

Research question five

Is there a difference between students classified for special education under the disability category of Other Health Impairment (OHI) and students classified for special education under the disability category of Specific Learning Disability in the category of Sequence based on their LCI scores?

Hypothesis five

Students classified under the disability category of Other Health Impairment demonstrate more preference for Sequence based on their LCI scores more often than students classified under the disability category of Significant Learning Disability.

Research question six

Is there a difference between students classified for special education under the disability category of Other Health Impairment (OHI) and students classified for special education under the disability category of Specific Learning Disability in the category of Precision based on their LCI scores?

Hypothesis six

Students classified under the disability category of Other Health Impairment demonstrate more preference for Precision based on their LCI score more often than students classified under the disability category of Significant Learning Disability.

Research question seven

Is there a difference between students classified for special education under the disability category of Other Health Impairment (OHI) and students classified for special education under the disability category of Specific Learning Disability in the category of Technical Reasoning based on their LCI scores?

Hypothesis seven

Students classified under the disability category of Other Health Impairment demonstrate a less preference for Technical Reasoning based on their LCI score than students classified under the disability category of Significant Learning Disability.

Research question eight

Is there a difference between students classified for special education under the disability category of Other Health Impairment (OHI) and students classified for special education under the disability category of Specific Learning Disability in the category of Confluence based on their LCI scores?

Hypothesis eight

There is no difference in preference for Confluence when comparing students classified under the disability category of Other Health Impairment and students classified under the disability category of Significant Learning Disability.

A one-way MANOVA was conducted to assess whether SLD students and OHI students differed from one another on LCI sequence, precision, technical reasoning, and confluence learning preference mean scores (see Table 18.8). The overall MANOVA model was significant, $F(4,183) = 3.46$, Wilks $\lambda = .93$, $p = .009$, with a small effect size, $\varepsilon 2 = .07$. When examining the significant univariate results, however, only one significant result emerged, and that was precision learning mean scores, $F(1, 186) = 6.69$, $p = .01$. Students who were OHI ($n = 81$) had a significantly higher precision learning pattern mean score ($M = 23.15$, $SD = 5.06$) than did students who were SLD ($n = 107$, $M = 21.21$, $SD = 5.13$).

Table 18.8 One-Way MANOVA Table: Comparison of SLD Students (n = 107) and OHI Students (n = 81) on Learning Pattern Preferences

Dependent Variable	Df	Mean Square	F	*P*
Sequential	1, 186	18.64	.98	.324
Precision	1, 186	173.96	6.69	.010
Technical	1, 186	10.20	.32	.575
Confluence	1, 186	18.28	.95	.330

Discussion

As educational professionals strive to help students become efficient and effective learners by assisting in the development of student learning strategies, a greater understanding of the learning process is necessary. The purpose of this study was to analyse and compare the learning pattern preferences of middle and high school students in general education and special education settings. The results of this study are intended to help guide teachers and other education professionals to make informed decisions about differentiating instruction in a way to reach more, if not all, students in their classroom. The results could furthermore assist educators in fostering greater self-knowledge and self-advocacy in students, which can assist them to become active participants of their own learning experiences.

A review of the literature has demonstrated that there have been a vast number of studies based on the theory of learning styles and their utilisation via learning style assessment tools within the education system. Unfortunately, research has shown that many if not all of these associated learning styles instruments based on theoretical models fall short in regards to their reliability and validity (Coffield et al., 2004; Slotnick & Maher, 2008). The use of learning styles assessments, therefore, is limited in its utility in the current American education system. There have been multiple critical evaluations of learning style assessment tools (Bedford, 2004; Cassidy, 2004; Coffield et al., 2004; Calleja, 2010; Slotnick & Maher, 2008). In each of these in-depth studies, the researchers noted great concern regarding learning style assessment tools' psychometric properties as well as their utilisation within the American education system.

Due to the shortcomings of learning styles assessment tools – and the theories on which they were developed - Johnston and colleagues developed the Let Me Learn Process® (LML), a theory which integrates cognitive, conative, and emotional learning into a metacognitive system. Learners identify their learning pattern preferences (i.e., sequential, precision, technical reasoning, confluence) and then utilise them to learn

(Johnston, 2006; Jorgenson, 2006; Osterman & Kottkamp, 2004). The LML Process® theory (Johnston, 2006) was developed in order to enhance the basic theoretical learning principles beyond the identification of types of learning, by increasing the utility within education, by incorporating a means of self-understanding and self-advocacy and then allowing for active participation of the learner in their own individual learning process.

In this study, student learning patterns as identified by the LCI were analysed to determine if there were particular pattern preferences across different groupings of students, specifically those in general education compared to special education and those classified for special education under the disability category of Specific Learning Disability and those classified for special education under the disability category of Other Health Impairment. Pattern scores were analysed based on the student's scores on the Learning Connections Inventory, which, as mentioned above, is the instrument that is utilised to identify the learning patterns associated with the LML Process. Aligned with the foundation of the LML Process, each student received scores on each of the four identified learning patterns identified as (a) sequential, (b) precision, (c) technical reasoning, and (c) confluence. The purpose of this study was to examine whether preferences for each of the four different individual learning patterns differed across general education and special education groups of students.

Summary of Results

In the first set of analyses, comparisons were made between special education students and general education students in the grades of 6-12, on each LCI learning preference pattern scores. Learning preference pattern scores were first examined between two groups of students, students in general education and students in special education. The special education group of students was further delineated into students who were identified as Other Health Impaired (OHI) and students who were identified as Specific Learning Disability (SLD), and were compared to students in general education.

In the second set of analyses, the two special education groups of students, namely those classified under the disability category of Other Health Impairment and those classified under the disability category of Specific Learning Disability were compared in regard to their four LCI learning pattern scores.

Students who are classified for special education under the disability category of Specific Learning Disability (SLD) have some similar characteristics as a group. This group should not be considered to have a single specific learning impairment, but they share a collection of deficits that involve difficulties involving language, namely listening, speaking, reading, writing, reasoning or mathematical abilities. These students may demonstrate weaknesses in organisational skills, social skills, and reading skills. Those students with their primary weakness in reading can have confusion over words, a slow reading rate, difficulty with comprehension, and difficulty with the retention of material that is being read. Those students with their primary weakness in writing can have difficulties with sentence structure, spelling, difficulty copying from the board and poorly formed letters. Those students with their primary weakness in oral language may have difficulty with basic facts, confusion or reversals of numbers in a number sequence, difficulty reading or comprehending word problems as well as difficulty with reasoning and abstract concepts. Those students with a weakness in study skills may have poor organisation, poor time management, difficulty following directions, poor organisation of notes and printed materials, and need more time to complete assignments. These deficits can be compounded for students with a SLD due to the fact that there is a significant increase of academic demands encountered as they transition to middle and high school (National Joint Committee on Learning Disabilities, 2008).

Students that are classified for special education under the disability category of Other Health Impairment (OHI) have some similar characteristics as a group but can be considered to be one of the most varied categories within special education identification. Characteristics of students classified with an OHI may have difficulty staying on task or paying attention to important aspects for a long period of time, may be impulsive, have a need to move around more frequently, easily distracted, have problems breathing, easily infected, energetic, and difficulty paying attention when not feeling well. Many of these outlined characteristics have many parallels to the Let Me Learn LCI's four identified patterns.

Students that qualify for special education services may have considerable difficulty as a whole. As they move to middle and high school there are increased demands in curriculum and a greater expectation for independent learning (National Joint Committee on Learning Disabilities, 2008). As these students enter the secondary, grades research by the National Joint Committee on Learning Disabilities (2008) identifies the several examples of the increasing demands of school specifically, (a) there are greater complexity of tasks, (b) increasing amounts of information, (c) a need for comprehension of complex linguistic forms and abstract concepts, (d) high states testing and graduation requirements, (e) greater demand for working memory for on the spot problem solving, (f) an increased focus on specific content with tightly scheduled time slots for acquisition of knowledge tied to high stakes testing, (g) an increased reliance on print, (h) increased expectations for greater output within shorter amounts of time requiring rapid and accurate retrieval of information and consolidation of learning into long term memory, (i) increased demands of digital literacy proficiency, and (j) an increased need for self-advocacy and individual responsibility. As a student in special education encounters these increased demands there is a need to examine assessment and instruction to assist students in meeting such requirements.

Preference for Sequential Pattern

Those students who demonstrate a preference for the sequential pattern on the LCI need clear and specific instructions and directions; and adequate time for planning, practice, and completion of school work (Johnston, 2006). These students think in terms of goals, objectives, and steps to reach these goals and objectives (Johnston, 2006). In this study, it was hypothesised that students in special education (i.e., SLD and OHI) would have less of a preference for a sequential learning pattern than would students in general education. This hypothesis was supported by the results of the analyses. The special education group of students demonstrated less of a preference for the sequential learning pattern as compared to the general education group of students. This finding was furthermore consistent in the second set of analyses when the special education group of students was delineated into OHI and SLD groups. Students in general education demonstrated more preference for the sequential learning pattern than did students in special education, both as the group as a whole and when delineated into OHI or SLD student groups.

There are several possible explanations for these findings. Those students who prefer the sequential learning pattern tend to (a) review and revisit directions repeatedly; (b) take time to develop goals, plans or outlines, and processes to reach these goals and plans; (c) utilise rehearsal and repetition when studying; and (d) perform best in an organised and neat environment (Johnston, 2006). As such, the sequential learning pattern is dependent on strong language and organisational skills (Johnston, 2006). Students identified as requiring special education are more likely to have difficulty with language, either expressive or receptive, or both. Beyond strong language skills, other skills attributed to this particular pattern include organisation, planning, and order. Students classified with a significant learning disability are often identified as having trouble organising thoughts, difficulties in written language, difficulty with order and sequence of different tasks, and not knowing where to begin a task and then how to follow through with that task (Pierangelo & Giuliani, 2007).

The overall lack of a sequential learning pattern preference in the special education group as compared to the general education group combined with lack of differences between special education groups suggests a distinct difference between general education and special education on the sequential learning preference. In contrast, special education groups of students identified as OHI or SLD were similar in their shared lack of preference for sequential learning. There are a limited number of research studies (for an exception, see Egeland, Nordby, & Ueland, 2010) that have examined learning pattern preferences across general education and specific special education groups of students. Egeland et al's (2010) research study was conducted with 67 children, ages 9 to 16 years, diagnosed with ADHD versus a matched group of 67 children, ages 9 to 16, without the diagnosis of ADHD adolescents. Egeland et al. (2010) found that the students diagnosed as having ADHD reported significantly lower preferences for sequential organisation learning than did students without the diagnosis of ADHD, even after controlling for IQ scores. This finding was further supported in a study with 4th and 5th grade conducted by Brand, Dunn, and Greb (2002), who found that students who were diagnosed with ADHD were less likely to prefer a sequential learning pattern. While results from this study correspond with the results from Egeland et al. (2010) in that the special education student groups differed from the general education student group, there were not specific differences between the OHI students, of who students having a diagnosis of ADHD were placed, and general education students. Results from this study also aligned with studies conducted with adolescents (e.g., Honigsfeld & Dunn, 2009) and college students (Lehman, 2011) that have documented that students without disabilities prefer sequential type learning.

These findings have significant applied importance, especially in relation to traditional instructional and teaching practices and outcomes on standardised testing (Honigsfeld & Dunn, 2009). Honigsfeld and Dunn (2009) found that students who perform well on standardised tests were students who tended to prefer sequential learning. This finding suggests that the standardised testing environment may be counter to the learning patterns most preferred by students diagnosed as needing special education students, which would likely influence these students' testing abilities and scores. As such, students whose preference for learning is not sequential would benefit from instructional practices that can help remediate their weakness in this area. Johnston (2006) recommended that teachers can encourage sequential learning among students by (a) working within a learning environment that is neat, free of clutter, and organised; (b) providing clear instructions with step-by-step directions; (c) helping students develop and follow learning activity lists, which include steps involved in the activity; and (d) offering students immediate clarification of tasks and feedback and verbal and written examples of the required learning activity outcome.

Preference for Precision Pattern

Those students who demonstrate a preference for the precision learning pattern are seekers of knowledge and information. These students often ask many questions and may become frustrated if they perceive explanations to be incomplete or ambiguous. They are detailed and meticulous and require accuracy, consistency, and perfection in the learning patterns. In this study, it was hypothesised that students in special education (OHI and SLD) would have less preference for precision learning when compared to students in general education. There was no significance found between the special education group as a whole and general education group. It was also hypothesised that students classified, as OHI would have more of a preference for precision learning compared to students classified as SLD. The statistical results did support this hypothesis: students classified for special education as OHI had a significantly higher preference for the precision learning pattern than did those students classified for special education under the disability category of SLD. When the three student education groups were compared, it was furthermore found that students in the OHI special education group had a significantly higher preference for precision learning than did students in the SLD special education group. However, students in the OHI group were similar to students in general education on having a preference for precision learning. In fact, the students in the OHI group had a higher precision preference mean score than students in the general education group. The finding that students identified as OHI had the highest mean preference for precision learning as compared to SLD and general education students was unexpected.

There are several possible explanations for the findings on student education group preference for precision learning. Precision learning entails engaging in learning patterns that involve a considerable amount of language learning. The students in the SLD group would be more likely than both the general education and OHI special education groups of students to avoid a learning pattern heavily laden with language learning due to the fact that their primary disability is based on a difficulty with the processing of language (Johnston, 2010; Schirduan, Case, & Faryniarz, 2002). The students in the OHI group, in contrast, may show a preference for precision learning more so than students identified as SLD and students in general education. Students identified as OHI have neurological and/or physical disorders that often require a structured and scheduled environment and accuracy and consistency in the treatment of their disorder (Atkins, Hoagwood, Kutash, & Seidman, 2007). Students identified as OHI may also engage in precision learning pattern behavior, such as asking numerous questions and having a desire for accuracy, but may not have the ability to utilise these skills effectively. For example, Reaser, Prevat, Petscher, and Proctor (2007), in a study examining learning and study strategies of college students with ADHD, SLD, or no disabilities found that while these three groups of students were similar in regard to attitudes about learning, the students identified as having ADHD had significant poorer concentration and time management skills. Students identified as OHI may therefore differ from students in general education and students identified as SLD in regard to precision learning in that, while they may prefer this pattern, they may "not always follow through on the approach due to their motivation and concentration difficulties" (Reaser et al., 2007).

The precision learning pattern is effective in learning tasks that require great attention to detail, accuracy in work, and substantial amounts of information (Johnston, 2006). Johnston (2010) suggested that teachers could enhance precision learning patterns among students who have less preference for precision learning through a variety of means. Teachers can enhance students' attention to detail by allowing for sufficient time for the student to finish the learning task and providing clear and consistent communication and guidance. Teachers can furthermore promote students in their use of precision learning patterns by having students "grade" their own work, focusing on missed details, vague words or phrasings, and incorrect information. The use of graphs and diagrams to enhance understanding of content information may also enhance students' preference for precision learning (Johnston, 2010).

Preference for Technical Reasoning Pattern

Those students who demonstrate a preference for the technical reasoning pattern are autonomous and "hands-on" learners who need to see a practical purpose to the learning activity (Johnston, 2006). These students are interested in how things work and function and they often enjoy using tools and instruments as part of their learning process (Johnston, 2006). It was hypothesised that students in special education (OHI and SLD) have more of a preference for Technical Reasoning when compared to students in general education. Results from the data analyses showed that the special education group had a significantly higher preference for technical learning when compared to the general education group. It was also hypothesised that students classified under the disability category of OHI would have less preference for Technical Reasoning when compared to students classified under the disability category of SLD. After completing this analysis, there were no significant differences found between the two groups.

There are several possible explanations for these findings. Those students who have a preference for the technical reasoning learning pattern (a) work well independently, (b) communicate better one-on-one rather than in writing, (c) prefer to construct things to demonstrate skills or knowledge, and (d) are excellent with hands-on learning. Results from this study were similar to those found by Johnston (1998), who documented that those students that demonstrated a pattern preference for technical reasoning "are more likely to be off grade level or referred to the Child Study Team" as compared to those students who lead with the patterns of sequence or precision (p.88). The significant differences between students in special education as a whole and students in general education is likely a result of language skills and learning: the technical reasoning can be considered the learning pattern with the least emphasis on language of the four patterns. It would be logical that students who have poor language abilities would prefer a learning pattern wherein language is not often utilised. As argued by Reaser et al. (2007) and Schirduan et al. (2002), students in special education may "possess a pattern of intelligence whereby they learn ... different than the language-logical profile typically valued in schools and society" (Reaser et al., 2007, p. 635). Both the OHI and SLD special education categories of students demonstrate weaknesses within their abilities to progress in the general education system which has been seen as very language driven with emphasis on information gathering of fact and details and writing (Reaser et al., 2007). That there was no difference found between the two classification categories of special education may indicate that the non-traditional approach to learning – one that is more hands-on and multi-sensory - is preferred for both groups.

Special education students may prefer the technical reasoning learning pattern due to the more hands-on assistance they would more likely receive in school than would general education students; in other words, as stated by Reaser et al. (2007), these students have been "accommodated" towards this learning preference (p. 635). In order to enhance the language skills of students who prefer technical reasoning learning, Johnston (2010) recommended that teachers can integrate hands-on and language learning by (a) engaging students in the ideas that a learning activity is something that requires tools and logical steps; (b) incorporating arts activities during language learning (e.g., having students illustrate a story they wrote); and (c) providing activities that are more information or technical based (e.g., having students write about how to perform a certain activity).

Preference for Confluence Pattern

Those students who demonstrate a learning preference for the confluence pattern are "out-of-the-box" intuitive thinkers who need to use their own ideas and imagination as part of their learning process (Johnston, 2006). These students prefer to start tasks first over asking direction and do not like following rule; they often learn best, however, by making mistakes and do not become frustrated if they do make mistakes (Johnston, 2006). It was hypothesised that there would be no difference in preference when comparing students in special education (OHI and SLD) and students in general education students in the learning pattern of confluence based on their LCI scores. After conducting analyses on these groups to determine preference of the confluence learning pattern, there were no significant differences between the special education groups and the general education group. It was also hypothesised that there would be no difference in preference for the confluence learning pattern between students classified under the disability category of OHI and students classified under the disability category of SLD. After completing this analysis, there were no significant differences found between the two groups.

The results for the confluence learning preference supported the study hypotheses and were similar to Brand et al.'s (2002) finding wherein they found no differences between special education groups on the need for kinesthetic learning. Those students who prefer the confluence learning pattern tend to connect quickly to assignments, need freedom to take a unique approach to learning, and prefer speaking and public performance to writing. These are learning qualities that involve a high level of information processing, advanced language, abstract reasoning and time management skills, abilities that are not frequently present in children in special education or in younger children (Atkins et al., 2007). Indeed, the lack of significant differences between student groups may reflect that all students simply may not have reached the formal operational stage of cognitive development (Honigsfeld & Dunn, 2009). The confluence learning pattern preference may also be a learning pattern that, due to its non-traditional approach to learning, is a pattern that is typically not promoted and thus not preferred among students. Lehman (2011), for example, in a study conducted with college students, showed that only 26% of females and 9% of males preferred this type of learning. Due to the fact that the confluence learning pattern that requires language but in an alternate form from writing, there is less support for a difference in functioning between those learners who have more difficulty with language-based learning when compared to those who are in general education.

Conclusion

The current findings contribute to the understanding of learning preferences among students in special education and general education settings. Although this study did not ascertain that there was a significant difference as expected between the special education and general education population for all pattern measures, certain indicators emerged using the Learning Connections Inventory pattern identification and its usage with the special education population. This study begins to identify some common patterns among special education students, which can assist in creating a purposeful learning environment for those students as well as their general education counterparts.

This study substantiates that the Learning Connections Inventory measure can be a useful tool in helping students advocate for their own needs in learning. Although this study did not find considerable difference between students in special education and general education in regards to all patterns, its foundation and theory is strong for utility among all students. Once a student is able to understand their own learning patterns in terms of both strengths and weaknesses, they can begin to actively participate in their own learning process and success.

References

Atkins, M.S., Hoagwood, K.E., Kutash, K., & Seidman, E. (2007). Toward the integration of education and mental health in schools. *Administration Policy in Mental Health, 37*(1-2), pp. 40-47. doi 10.1007/s10488-010-0299-7.

Bedford, T. A. (2004), *Learning styles: a review of literature.* First draft, (August 2004), Toowoomba, OPACS, The University of Southern Queensland.

Brand, S., Dunn, R., & Greb, F. (2002). Learning styles of students with ADHD: How are they and how can we teach them? *Learning Styles, 75*(5), pp. 268-274.

Calleja, C. (2010). *The let me learn process: A robust theory with practical implications.* Retrieved from http://www.vegajournal.org/content/archivio/54-anno-vi-numero-3/180-the-let-me-learn-processr-a-robust-theory-with-practical-implications

Cassidy, S. (2004). Learning Styles: An overview of theories, models, and measures. *Educational Psychology, 24(4), pp.* 419-444.

Coffield, F., Moseley, D., Hall, E. & Ecclestone, K. (2004). *Learning styles and pedagogy in post-16 learning*. London: Learning and Skills Research Center.

Cohen, J. (1992). Quantitative methods in psychology: A power primer. *Psychological Bulletin*, *112*(1), pp. 155-159.

Egeland, J., Johansen, S.N., & Ueland, T. (2010). Do low-effort learning strategies mediate impaired memory in ADHD? *Journal of Learning Disabilities, 43*(5), pp. 430-440. doi: 10.1177/0022219909355473

Grice, J.W., & Iwasaki, M. (2007). A truly multivariate approach to MANOVA. *Applied Multivariate Research, 12*(3), pp. 199-226.

Honigsfeld, A., & Dunn, R. (2009). Learning-style responsive approaches for teaching typically performing and at-risk adolescents. *Learning Style Responsive Approaches, 82*(5), pp. 220-226.

Johnston, C., & Dainton, G. (1997). *The Learning Connections Inventory (Manual).* Turnersville, NJ: Learning Connections Resources.

Johnston, C. (1998). *Let me learn.* Thousand Oaks, CA: Corwin Press.

Johnston, C. (2010a). *Finding your way. Navigating life by understanding your learning self.* Charleston, South Carolina: CreateSpace.

Johnston, C.A. (2006). The Educational Maze. In Borg, C. and Calleja, C. (2006). *Understanding children and youth at risk: Narratives of hope.* Malta: Agenda Publishing.

Muijs, D. (2010). *Doing quantitative research in education with SPSS*. Thousand Oaks, CA: Sage Publications.

National Joint Committee on Learning Disabilities. (2008). *Adolescent literacy and older students with learning disabilities*. Retrieved from www.ldonline.org/njcld.

Lehman, M. E. (2011). Relationships of learning styles, grades, and instructional preferences. *NACTA Journal*, (June), pp. 40-45.

Pierangelo, R., & Giuliani, G. (2007). *EDM: The educator's diagnostic manual of disabilities and disorders.* San Francisco: Jossey Bass/John Wiley and Sons.

Reaser, A., Prevatt, F., Petscher, Y. & Proctor, B. (2007). The learning and study strategies of college students with ADHD. *Psychology in the Schools, 44*(6), pp. 627-639. doi: 10.1002/ptts.20252

Schirduan, V., Case, K., & Faryniarz, J. (2002). How ADHD students are smart. *The Educational Forum, 66, pp.* 324-328.

Slotnick, R.C. & Maher, P. M. (2008, January). *From learning styles to learning connections: Bridging the gap.* Presentation at the 2nd Annual American Let Me Learn (LML) Conference, Tampa, FL.

Vogt, W. (2007). *Quantitative research methods for professionals*. Boston, MA: Pearson.

• CHAPTER 19 •

Structured Multisensory Techniques in Reading and Learning Patterns - Some Considerations

Ruth Falzon and Colin Calleja

Introduction

It is common knowledge in the field of psychology that the motoric memory code is the most persistent and long term (Ormrod, 2007). Observing babies and little children, one can see that they access information and, therefore, learning, through extensive use of their senses. Structured multisensory techniques and approaches to teaching build on these observations to help students access the curriculum, in his case reading and making sense of print. This approach is beneficial to all children, and particularly essential for dyslexic students. This pedagogy is essential if students are to have easy and effective access to the curriculum and to the written text.

The multisensory programmes and techniques to early literary referred to in this paper have two common criteria, namely, Universal Design Learning (UDL) and the social model approach and beyond. The social model approach (Oliver, 1992; 1996) emphasises the issue of accessibility and focusing on abilities and skills rather than on labelling and diagnosing and the multisensory approach to reading, with its characteristic features of structure and sequence, respects this philosophy. Universal Design Learning (e.g. Turnbull et al, 2010) embraces the concept of accessing information for all, helping all students learn to become independent, self-reliant and self-sufficient learners, and removes barriers to access to learning.

This paper was first published in the Revista de Ciències de l'Educació published by Rovira i Virgili University. Tarragona. Spain. December 2011.

Structured multisensory techniques and programmes do this with regard to early literacy and breaking the code to reading (Moats, 2000). Thus, such techniques are positive inclusive strategies and complement the techniques developed by the Process advanced by Professor Christine Johnston and colleagues, namely, the Let Me Learn Process (Johnston, 2009). This process builds on knowledge of one's learning pathways captured by the Learning Connections Inventory (Johnston and Dainton, 1996) to develop personalised learning strategies. This study intended to explore if early educators in a local private school perceive the use and inclusion of the four Learning Patterns in the learning strategies employed by this local literacy programme - 'M-POW'R Programme (Muscat, unpublished) - they are using .

Multisensory Techniques - A brief History

The use of structured multisensory instruction dates back to the late 1930s. Orton's neurological research (Orton, 1937; Hornsby & Shear, 1980) on children struggling to learn how to read led him to identify the condition 'strephosymbolia'; to appreciate the work of Helen Keller and Grace Fernald who were using kinesthetic methods and modalities to reinforce visual and auditory associations; and to build on this concept. Orton proposed the use of all sensory methods and modalities to improve 'weak memory patterns' in teaching reading (Johnson, 1967). Orton's pioneering concept led to the Orton-Gillingham programme, put together by Anne Gillingham at the request of Orton himself. At this early stage, Orton understood the importance of multisensory techniques, the concept of metacognition in learning and to use these techniques when other processes are challenging to the reading situation.

Other programmes then started to be developed, particularly across the United States, such as the Hickey Method (Combley, 2000). Along the years, other structured multisensory programmes were developed. These multisensory programmes all are based on the original concept or the Orton-Gillingham programme (Orton, 1966). Examples of these programmes are Alpha to Omega (Hornsby & Frula, 1980), Bangor Dyslexia System (Miles & Miles 1983), Recipe for Reading (Traub & Bloom, 2000), Wilson Reading System (Wilson, 1996), Beat Dyslexia (Stone, Franks & Nicholson, 2008) and 'M-POW'R (Muscat – still unpublished). Multisensory programmes can be modified according to the specific needs of children. Each of these programmes offers varied tasks and therefore give teachers infinite opportunities and resources to suit learning preferences, strengths, weaknesses and speed of learning. The key to their success is their multisensory techniques and highly structured format. The three basic principles that underpin a multisensory approach to teaching reading are the use of as many senses as possible, linguistic knowledge and the element of structure involved. A structured multisensory approach helps children acquire knowledge by using their senses simultaneously - hear it, say it, see it, feel it, write it (e.g. Orton 1966; Miles & Miles, 1983; Anders, Hoffman & Duffy, 2000). This technique is simply a teaching strategy which seeks to actively stimulate all available senses simultaneously within a structure and using linguistic knowledge. It is also worth noting that all the programmes above, except for the Muscat programme, were planned for individual or small group teaching as they were geared as intervention programmes for dyslexic students. However, the resources in all the programmes, particularly the programmes published from 1970 onwards, are so varied that they can be adapted for inclusive classrooms teaching.

Multisensory Techniques – The most successful techniques to teaching Breaking the Code - An inclusive strategy

In every classroom, one can say that there is an average of 10-15% of children with possible specific reading difficulties. (Kenig & Wenar, 2000; Bender, 2001). These children benefit from a structured multisensory approach to literacy (Traub & Bloom 2000; Oakland, et al 1998). There is a whole body of research to conclude that such approaches and techniques are beneficial for all children (e.g. Adams 1990; Mather 1992; Pressley & Rankin 1994; Brady & Moats, 1997). Research findings would lead one to conclude that reading should be taught to all children through a multisensory approach (Falzon, 2010).

How best to teach reading has been the subject of great debate since the latter half of the 20th century (Chall, 1967). Earlier research has attempted to establish the nature of effective teaching of literacy by analysing the processes involved in the reading process and then putting forward a model to guide literacy instruction based on the analysis of these processes. Pioneer researchers such as Chall (1967), Liberman and Schankweiler (1979) and Goodman and Goodman (1979) presented different reading models based on the argument that effective teaching of reading produces effective reading behaviour from the learners. Historically, the problem was that numerous theories of reading were presented separately. The theories can in general be grouped in two distinct categories at the opposing end of a continuum - the Top Down/Inside-Out Approaches, promoting the notion that reading is a highly complex discriminatory process that begins with the brain and ends with selective attention to parts of the printed text; and Bottom-Up/outside-in Approaches where reading is perceived as a process that begins with the verbal visual print of the page and ends with representations inside the brain (Resnick & Weaver, 1979). Both groups of theories acknowledge the importance of different reading skills, but disagree on the importance given at the level of instruction and reading engagement (Smith & Goodman 1971).

Top-Down/Inside out approaches to reading were usually supported by psycholinguists such as Smith and Goodman, (1971), who followed a whole language approach. On the other hand, Bottom-Up/Outside-In approaches were generally followed by pedagogues (Elkonin, 1973) and, as the name of the approach implies, embraced the concepts and principles that students must know all the letters before they can read, proposed a hierarchy of skills starting from individual letters to words to meaning, emphasised that decoding needed to be automatised, such that decoding does not take up all one's energy at the expense of comprehension. These extreme views are now, of course, obsolete and have been surpassed by Interactionist models (Chall 1967; Goodman, 1999; Hall & Moats, 1999) and, better still, the Adams' Model to Reading (1990) who in essence values the importance of both ends of this continuum and provides very inclusive and comprehensive model.

Research findings show clearly that it is important that a fine balance be created so that students are exposed both to strategies to decode and to whole language approaches; such that they are stimulated to engage in a range of activities involving literacy and developing positive skills towards literacy and be equipped with the correct skills to address reading techniques (e.g. Adams 1990; Graham & Harris 1994; Moats, 2000; Rose, 2006). Vail (1991) notes:

> *Recent pressures have forced many administrators and teachers to choose whole language or phonics. This deprived students of the full range of experiences they need and deserve. When adults go to extremes, kids pay the price. One-sided teaching makes a lop-sided offering. In language, structure and texture create and operate within a symbiosis interdependent, each nurtures the other, each needs the other for strength, and each complements the other. Operating together, they form a handclasp of common purpose, an alliance for literacy, a friendship for children (pg. 3-4).*

Recent research findings conclude that explicit teaching of lower level skills, coupled with comprehension – upper level skills- instructions, are the most effective, particularly if carried out in the context of other components of reading activities. In other words, effective teaching should be multifaceted, rather than based on the choice of one approach (Adams, 1990; Fisher, Fox & Paille, 1996; Linnea, 2003) and teachers should 'abuse' approaches for the benefit of pupils.

There has been substantial evidence that, with regard to teaching lower level skills of reading, the use of structured multisensory techniques for teaching literacy are one of the best ways to introduce and develop literacy in the classroom (e.g. Hornsby &

Shear, 1980; Traub & Bloom 2000; Moats, 2000). Their positive effects are no longer a query any more in the literature. Although multisensory techniques originated from the field of Learning Disabilities/Specific Learning Difficulties (e.g. Thomson 2003; Snowling 2000; Augur 1982; Hornsby & Shear 1980; Orton 1976), its use in the classroom situation is increasingly being appreciated (e.g. O'Connor, et al., 2005; Joshi, Dahlgren, & Boulware-Gooden 2002; Moats, 2000; NICHD 2000; Adams & Bruck 1995). Traub and Bloom (2000) claim that teachers using structured multisensory reading programmes find the techniques effective when used not only with children with Specific Learning Difficulties (SpLD) but also with all children; resulting in children learning to spell and read more easily at an earlier age.

Moats (2000) notes that the scientific community has now reached a unanimous agreement that specific difficulties in literacy originate with a 'specific impairment of language processing, not with general visual-perceptual deficits, inability to construct meaning from context or other more general problems with attention and memory' (pg 1), in other words a core deficit in phonological processing, also linked with the visual verbal input. This implies that there is need for phonological and phonemic awareness of the language structure linked to the verbal visual input that represents these components of the language, so that one can become an accomplished and effective reader. Moreover, research in early intervention clearly indicates that the degree of awareness and skills in the phonological structure of language is the best predictor to reading success (Lunberg, Olofsson, & Walls, 1980; Elbro, Bornstrom & Peterson, 1998; Mauer & Kamhi, 1996). All research, whether philosophical, theoretical, experimental, empirical, qualitative or clinical, points to the necessity of helping unskilled readers and spellers learn explicit knowledge of language structure, the basic pedagogy used in multisensory approaches (e.g. Orton 1937; O'Connor, et. al., 2005; Schneider and Naslund 1993; Moats 2000; Snowling 2000; Thomson 2003).

With regard to reading, Daniel (1997) reports that in his study dyslexic students following a structured multisensory programme in literacy started to outperform children without dyslexia. Such results are possible because a structured multisensory programme includes the use of phonics, decoding, sight word reading, rule-learning, metacognitive approaches, blended together within a whole language approach (Moats 2000; Hornsby & Shear 1980). It is, therefore, clear in the literature that the use of multisensory techniques and structured multisensory progammes is conducive to successful reading for all, where the beneficial effects of multisensory teaching are not limited to students who have difficulty with reading (Adams & Bruck 1995; NICHD 2000). Moreover, multisensory techniques to reading also use scaffolding as a principle where the adult models and structures learning experiences as suggested by both Vygotsky and Bruner, as well as the concept or Constructivist concepts as proposed by Piaget and Montessori, where pupils are given the individualised attention needed and the classroom curriculum customised to address particular challenges.

The 'M-POW'R Programme (Muscat – unpublished)

The 'M-POW'R Programme (Multisensory Programme of Writing and Reading – Pronounced Empower) was developed by Ms. Carmen Muscat M.Ed. and is designed to address four to eight year olds. Ms. Muscat has over 30 years' experience working with children and adults with dyslexia. As from 1992, she switched from free-lancing to working in an independent school and had the opportunity to use her skills within a school setting. At the time, one of the authors was in the same school responsible for the 'Support Programme' and the inclusion philosophy of 'At Risk' and skills-based approaches was developing in the school. Ms. Muscat was given the responsibility to develop Early Literacy Programme and the 'M-POW'R Programme was created and started being introduced in classes.

The school supported the programme because it saw 'M-POW'R as 'successful for all children' and because the school needed a structured literacy programme. The aims of 'M-POW'R are: (a) success for all - 'catch them before they fail'; (b) addresses an inclusive classroom; (c) 'development for the child as a unique person' (San Anton School Ethos, 1993); (d) use of structure and appropriate and adequate Resources, (e) in-depth awareness of underlying literary skills (Moats 2000); (f) continuity and flow from one grade to another and from school to home (g) continuous teacher support for children experiencing difficulties, and (h) linguistic knowledge necessary for early literacy. The methodology adopted by the school insists that learning has to be a fun experience - learning through games, to use routine, multisensory techniques, memory enhancers, m etacognitive skills, self-monitoring skills and parental input and collaboration (Adams, 1990; Berninger et al, 1999; Tod, 1999; International Reading Association, 2001; Spear-Swetling & Bucker, 2004; Rose, 2006). This was incorporated in the 'M-POW'R programme.

This was the start of the programme. Its uniqueness is that it is developed as a programme for classroom teaching and is based on programmes usually designed for individual/small group tuition to children with dyslexia. Muscat developed her programme using her experience teaching dyslexic children, her review of other multisensory programme, and her passion to have whole classes of successful readers, least withdrawal of necessary intervention sessions and continuation of intervention programmes in the classroom. Ms. Muscat has not officially published this programme as 'I am always changing resources and developing classroom techniques' and the authors are continuously encouraging her to publish it. 'M-POW'R is a combination of Phonological awareness, whole word approach and synthetic phonics. It also includes a cursive handwriting programme. The 'M-POW'R Programme is based on the principles of structured multisensory techniques to teaching early literacy (Falzon, 2010; Moats, 2000). A 2001 research indicated that teachers at the school perceived this programmes as effective and efficient, and the end result was better and more effective early readers (Falzon & Muscat, 2001). As one Grade 3 teacher noted:

> *"The teaching techniques, those are beautiful, what she taught us, especially the rules of learning. I have been teaching for 21 years and I have always stressed on reading and spelling - iffissata (I am Obsessed). But I have never had a class that can really make out a work, reasoning, using the rules. Those are beautiful!"*

The Brain and Mind Connection

Multisensory programmes are successful because they are respectful of the different learners' pathways for taking in the world and making sense of it. Learners need to make sense of the world in order to understand and learn. We need to appreciate also that all learners have personalised means for doing so. Johnston (1994, 2002, 2006, & 2009) explains these phenomena through a simple representation explaining how four interactive learning patterns of sequence, precision, technical reasoning and confluence (see Appendix A for a detailed description of the characteristics of each learning pattern). According to Johnston (2009), these patterns act as channelling filters of sensory stimuli. According to this representation, the learning journey begins with the senses which serve as the first line receptors that initiate learning. It is they who gather and channel stimulus into the brain which channels it through its complex series of regions and its neuron-circuitry. Within the brain's electro-chemical processing, the stimulus is "handled" by a number of operations ultimately coming to a point where it meets up with our brain-mind interface where it is filtered by our individual learning processes, *i.e.*, blocked, welcomed, or given limited access to continue on its way to operate within our mind and memory. The stimulus which makes it through the interface is then translated into symbolic representation and passed to our working memory to become a part of our human consciousness (declarative memory) or sub-consciousness (non-declarative memory) (Johnston, 2009; Squire & Zola, 1996).

The Let me Learn Process proposed by Johnston starts by recognising the central role that these patterns play in forming and operating our learning system. A true understanding of the personalised learning connections of each learner guides learners and teachers how to 'handle' sensory stimuli and make sense of them. Achieving control is the key to learning. Thus, while the literature contends that it is important for all senses to be respected in channelling stimulus into the brain, it is equally crucial to have knowledge of learners' patterned combination to help each learner make sense of the task at hand. This knowledge is also crucial for intentional learners to be able to 'tether' or 'stretch' their learning patterns to make optimal use of their learning potential because, as Johnston puts it, 'Finding your way is about taking hold of how you learn and making it work for you so that you can navigate your daily life as well as your future' (Johnston, 2010, p. 10).

The Study

This study intends to explore whether early educators in a local private school perceived the structured multisensory early literacy programme they used ('M-POW'R) as embracing the four learning patterns. The school is an inclusive school within a Parent's Foundation for Education and has adopted a multisensory approach to teaching literacy in the early years based on Adams' model of reading (1990). This reading model was specifically chosen because it respects all reading systems in use, recognises aspects of the learning reader as well as the accomplished reader, gives importance to all four processes of reading and is in line with neurological functions. More recently, the school also adopted the Let me Learn Programme and so we could analyse both programmes.

Methodology

A questionnaire approach was employed and the questionnaires were distributed and collected personally by Ms. Carmen Muscat. One could have opted for interviewing this small population, but the school and Ms. Muscat felt that the teachers would be more receptive to a questionnaire. A copy of the questionnaire is available on request from the authors. A total of nine teachers spread equally over the first three grades of the school participated. These teachers had been teaching at this school using the Muscat 'M-POW'R literacy programme for at least two years. The research question of the study was: 'Do teachers perceive the learning strategies used in the 'M-POW'R Programme (Muscat, unpublished) as respectful of and utilising the four Learning Patterns? The authors expected the results to indicate that the teachers perceived the 'M-POW'R Programme as inclusive of the four learning patterns. The teachers were not told that the study was linked to the Let me Learn Patterns. In fact, no teacher commented on the connection between the two programmes, even though some of the teachers had been exposed to the Let me Learn Programme, given the school's development plan. Participants were presented with statements which represented the four learning patterns (Table 19.1). It was felt that this gave the answers more credibility, as no teacher could be biased for or against the Let me Learn patterns. The questionnaire involved close-ended questions using a 5-point Likert scale and reflected the 14 aspects employed in the 'M-POW'R Programme. These 14 themes used are indicated in the results below. For each theme, the teachers had to answer a series of 20 statements. Five statements for each of the four Learning patterns were used (Table 19.1). For each aspect of the 'M-POW'R Programme, a mean score was computed for every learning pattern by averaging the rating scores elicited for the corresponding statements. The One-Way ANOVA test was used to test whether differences among the mean scores for the learning patterns differed significantly at the 0.05 level of significance. Post hoc pair-wise comparisons were carried out using the Tukey method.

Table 19.1 Statements categorised by the four learning patterns

Statement	Space To Tick
Allows children to carry out free activities	Confluence
Understands the utility and relevance of what they are doing	Technical
Give space for the child to ask for details	Precise
Encourages the student to generate new ideas	Confluent
Respects the concept of sequencing	Sequential
Gives children the opportunity to direct their own learning	Confluent
Allows for possibility of self feedback	Precise
Gives space for the students' creativity	Confluent
Allow for expression in writing	Precise
Allows for precise directions	Sequential
Gives space for students to progress at their own rate	Precise
Allows the child to combine oral visual and motor movements	Technical
Provides a safety net for failure and starting again	Confluent
Allows the child to learn step by step	Sequential
Uses and refers to the child's real life experiences	Technical
Helps the child acquire metacognitive skills	Precise
Gives time for the child to finish assignments to the full	Sequential
Allows the child to work individually	Technical
Gives importance to presentation	Technical
Allows for possibility of feedback	Sequential

We would not want to be too forwarding and also classify this research as Grounded theory (Martin & Turner, 1986). Grounded Theory more often than not refers to systematic qualitative research focusing on the generation of theory from data collected. Moreover, Grounded Theory postulates that there needs to be a lack of hypothesis and total openness to results collected. We had developed a hypothesis from related research findings. However, given that such comparative research has to our knowledge never been published, we were able to propose a theory on inclusive learning and strategies based on the research findings.

Limitations

The use of a questionnaire always limits the richness of one-to-one personal contact. As researchers, we were aware that in our choice of data collection, we were forfeiting depth for expediency. We actually hope to be able to develop research in this area using qualitative techniques, where the school would hopefully understand the need for this. Secondly, we were always painfully aware that we needed to be totally objective, given that we are both so enthusiastic about the Let Me Learn Process and the 'M-POW'R Programme and were very careful to interpret the findings as objectively as possible.

Reflective Statement

This study is important to us because, on both a professional and a personal level, we experience the frustrations and sadness of students who, on a daily basis, feel that they are failures in a highly competitive and academic, local educational system. We feel that the celebration of inclusive practices needs to also be evidence-based in order to convince policy-makers. This gave us the motivation and energy to conclude the research.

Results and Discussion

These results present teachers' perceptions of the use of the four Learning Patterns in the literacy programme they were implementing in a local private school. This research yielded interesting findings. What is also very relevant is that, even though the research was carried out with a small group of teachers, some results could be generalised since the statistical test used yielded a p-value that is less than the 0.05 criterion. This is also complemented by graphical presentations since some of the

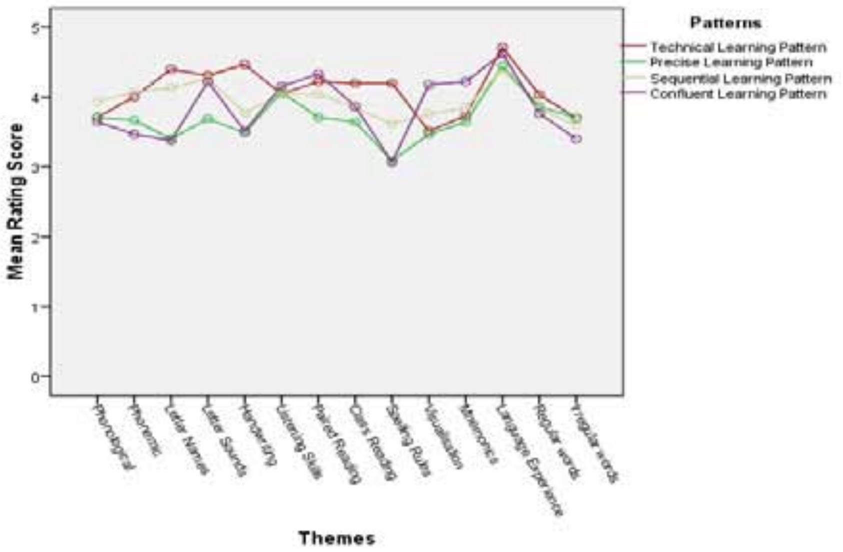
95% confidence intervals for the learning patterns are markedly disjoint. This is a very important inference for both the 'M-POW'R Programme and the four learning patterns (Table 19.2).

Table 19.2 Descriptive Statistics table for the 4 learning Patterns using 14 themes

The learning patterns	Mean	Standard. Deviation	Standard. Error	95% Confidence Interval for Mean	
				Lower Bound	Upper Bound
Technical Learning Pattern	4.10	1.280	0.052	4.00	4.20
Sequential Learning Pattern	3.95	1.387	0.057	3.84	4.06
Confluent Learning Pattern	3.86	1.269	0.052	3.76	3.96
Precise Learning Pattern	3.68	1.452	0.059	3.56	3.80

Figure 19.1 displays that for most themes technical reasoning pattern was the predominant learning pattern since it had the highest mean rating score. In other words, at any point in time during the programme, it is likely that the Learning Pattern which will be most dominant would be the Technical followed by the Sequential, Confluent, and then by Precise (Table 19.2). Although the Technical

Figure 19.1 Line graphs displaying mean rating score for each theme categorized by learning pattern

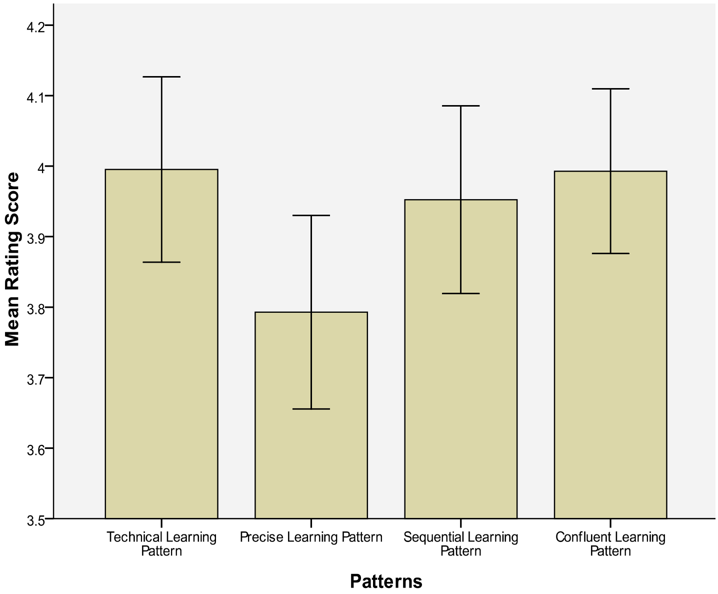


reasoning pattern was the one perceived as most dominant (Mean 4.10), each learning pattern was scored by the participants above the 2.5 threshold (Likert scale ranges from 1 to 5): Precise 3.68, Sequential 3.95, Confluent 3.86. From this, one can infer that participants also saw the relevance of the other three learning patterns in the learning process. One must remember that Breaking the Code to Literacy is a technical skill allowing one to exercise reading with meaning, and it is, therefore, expected that the technical reasoning pattern would be perceived as the one most used.

We expected the Technical and the Sequential to be high in use, given the nature and aims of the programme. With this reasoning, it is therefore surprising in these results that the Confluent learning pattern was perceived as more dominant than the Precise learning pattern. Even with a skills-based programme, confluence also has a place and students with a high confluent reasoning pattern would also have their needs addressed, such that the mundane task of breaking the code to literacy would be learnt in an interesting, challenging and fun way.

The results (Figure 19.2, Table 19.3 and Appendix B) also indicate that for ten out of the 14 themes that there is no significant difference between the mean scores for the four learning patterns. These include phonological awareness, phonemic

Figure 19.2 95% confidence intervals for the mean rating scores elicited for the 4 learning patterns using 10 themes



awareness, listening skills, paired reading, class reading, visualisation exercises, mnemonics, language experience, spelling techniques for regular and irregular words. For each of these themes, teacher-participants thought that the techniques reflected, respected and were compatible with the four learning patterns.

Table 19.3 Post hoc pair wise comparison of the four learning patterns using Tukey method for the group of 10

Learning Patterns	Mean Difference	P-value
Technical Reasoning and Precision	0.202	0.134
Precision and Sequential Learning	0.160	0.321
Technical Reasoning and Confluent Learning Pattern	0.002	1.000
Precision and Confluent Learning Pattern	0.200	0.141
Technical Reasoning and Sequential Learning Pattern	0.043	0.968
Sequential and Confluent Learning Pattern	0.040	0.973

The four themes where the mean rating scores differed significantly across the four learning patterns are letter names, letter sounds, handwriting and spelling rules (Table 19.4). As opposed to the other themes, these four themes are finite skills or knowledge. These four skills, rightly enough, tended to lean more towards the Technical learning pattern, as is their nature. With regard to these four themes as a group, the technical reasoning pattern (mean 4.34) had a significantly higher mean rating score, followed by the sequential pattern (mean 3.95); the Confluent (mean 3.54) and the Precise (mean 3.4). Given the nature of the learning and exercises carried out during the learning of these themes, this was not surprising and made sense. For example, there is nothing confluent and precise about learning the name or the sound of a letter: you either know it or you don't. On the other hand, it is a very hands-on practical activity which you learn sequentially until you know all the letter names of the alphabet. There can be nothing confluent about the learning of this fact. Notwithstanding, confluence still scored above the 2.5 threshold.

Table 19.4 Descriptive statistics table for four themes categorised by the our learning patterns

Themes	Patterns	Mean	Standard Deviation	N	P-Value
Letter Names	Sequential Learning Pattern	4.13	1.455	45	0.000
	Precise Learning Pattern	3.40	1.483	45	
	Technical Reasoning Learning Pattern	4.40	0.915	45	
	Confluent Learning Pattern	3.38	1.466	45	
Letter Sounds	Sequential Learning Pattern	4.27	0.963	45	0.020
	Precise Learning Pattern	3.49	1.456	45	
	Technical Reasoning Learning Pattern	4.47	0.815	45	
	Confluent Learning Pattern	4.22	0.963	45	
Handwriting	Sequential Learning Pattern	4.47	0.815	45	0.000
	Precise Learning Pattern	3.49	1.456	45	
	Technical Reasoning Learning Pattern	4.47	0.815	45	
	Confluent Learning Pattern	3.51	1.218	45	
Spelling	Sequential Learning Pattern	3.62	1.669	45	0.001
	Precise Learning Pattern	3.09	1.505	45	
	Technical Reasoning Learning Pattern	4.20	1.217	45	
	Confluent Learning Pattern	3.07	1.498	45	

The Post Hoc test is essential to identify which mean rating score differs significantly from another. The Tukey method was used on the merit that it is more sensitive in detecting differences and also provides homogeneous subsets of the four learning patterns above. Analysing the four learning patterns pairwise, Table 19.5 reveals that there is a statistical difference between the Technical and Precise, the Precise and Sequential, and the Technical and the Confluent, the Technical and the Sequential, and the Sequential and the Confluent patterns.

Table 19.5 Post hoc pair wise comparison of the 4 learning patterns using Tukey method for four technical themes

The Four Learning Patterns	Mean Difference	P-Value
Technical Reasoning and Precision	0.928	0.000
Precision and Sequential Learning	0.533	0.001
Technical Reasoning and Confluence	0.800	0.000
Precision and Confluence	0.128	0.791
Technical Reasoning and Sequential Learning	0.394	0.023
Sequential Learning and Confluence	0.406	0.018

Finally, when one compares the mean response of the 14 themes, the ten grouped themes and the four grouped most technical themes (Table 19.6), one observes that all means remain above the 2.5 threshold and the difference between the lowest score - 3.42 Precise for the group four themes - and the highest score - technical for the group of four themes - is less than 1 (0.92).

Table 19.6 Comparative mean response for the 4 learning patterns using 10 and 14 themes

Learning Patterns	Mean 14 themes	Mean 10 themes	Mean 4 themes
Technical Reasoning Learning pattern	4.10	4.00	4.34
Sequential Learning Pattern	3.95	3.95	3.95
Confluent Learning Pattern	3.86	3.99	3.54
Precise Learning Pattern	3.68	3.79	3.42

When comparing the four learning patterns of letter names, letter sounds, spelling rules and handwriting as one group with the 14 themes as a whole using a post hoc pair wise comparison through the Tukey methods, significant differences between the Technical and Precise (<0.005), Precise and Sequential (0.003), and Technical and Confluent (0.010) is observed. On the other hand, no significant difference is indicated between Precise and Confluent (p=0.101), Technical and Sequential (p=0.226) and Sequential and Confluent (p=0.628). When eliminating the four most 'technical' themes of the programme no statistical difference between any pairing of the four learning patterns was yielded.

These results clearly indicate that participating teachers perceive the 'M-POW'R Programme as respectful of the four learning patterns and acknowledge the diversity of the students in the classroom. These findings reflect literature and research findings discussed in this paper, with regard to the inclusivity of the use of the four learning patterns and the effectiveness of the 'M-POW'R programme. Literature review does not yield any comparable research to this study, so direct comparisons cannot be made.

Implications for Practice and Research

Several implications for research and practice can be yielded from this study. In the local context, this 'M-POW'R programme has now been adopted by around four schools and most local teachers and children have been exposed to, and trained in, the Let me Learn Process. A research with all stakeholders involved would, therefore, be useful. Furthermore, the Let me Learn Process should be researched with others areas of learning, such as Mathematics, Science and the Humanities. With regards to practice, the dissemination of this study, as well as qualitative evidence, would help increase awareness of the effectiveness of inclusive techniques, where diversity and individual needs are given their due importance (Turnbull et al., 2010).

Conclusions

Our small study clearly indicates that, when learning strategies are inherently inclusive in nature, the chances are that they complement each other and are beneficial to all children. The findings clearly indicate that professionals using the Muscat 'M-POW'R Programme perceived the use of the four learning Patterns in the programme and, therefore, found the programme inclusive and embracing the whole classroom. This is an exciting finding, particularly since the programme focuses on the skills needed to learn how to read and to eventually glean meaning from print effortlessly. Adams (1990) notes that "Deep and thorough knowledge of letters, spelling patterns and words and of phonological translations of all three are of inescapable importance to both skilful reading and its acquisition" (p. 416). The participants in the study perceived this objective fulfilled and found this programme inclusive of the four learning patterns, as well as enjoyable for their pupils. This is a very important finding and proposes a pedagogy theory as a result: programmes embracing Inclusive aims and strategies complement each other, even though developed separately.

Acknowledgement

We would like to thank Ms Carmen Muscat for helping us out in this research and for giving us permission to research her literacy programme. We would also like to thank Dr. Liberato Camilleri for his statistical support. We dedicate this paper to all those children struggling to learn how to read.

References

Adams M.J. (1990). Beginning *to Read: Thinking and Learning about Print* Cambridge MA: MIT Press.

Adams, M.J., and Bruck, M. (1995). Resolving the "great debate" *American Educator*,19, 7-19 Anders, P. L., Hoffman, J. V., & Duffy, G. G. (2000). Teaching teachers to teach reading: Paradigm shifts, persistent problems and challenges. In M.L. Kamil, P.B. Mosenthal, P. D. Pearson, & R.Barr (Eds.), *Handbook of reading research* (Vol.III, pp.719-742). Mahwah, NJ: Lawrence Erlbaum Associates.

Augur, J. (1982). *Structured language and a multisensory approach: dyslexia resource file UK*: service league.

Barnes C. & Mercer G. (Editors) (1997). *Doing disability research* UK: The Disability Press.

Barr, R. (1984). 'Beginning reading instruction: from debate to reformation'. In David Pearson (ed.) *Handbook of Reading Research*. New York: Longman.

Barton L. & Oliver M. (Editors) (1997). *Disability studies: past, present and future* UK; The Disability press.

Bender , W.N. (2001). *Learning disabilities: characteristics, identification and teaching strategies.* (4th Ed.) USA: Allyn and Bacon.

Berninger V.W., Abbott R.D., Zook D., Ogier S., Lemos-Britton Z. & Brooksher R. (1999) Early intervention for reading disabilities: teaching the alphabet principles in a connectionist framework in *Journal of Learning Disabilities* Volume 32, Number 6 , pp. 491-503.

Bond, G. & Dykstra, R. (1967). 'The co-operative research program in first-grade reading instruction'. *Reading Research Quarterly*, 2(4), pp. 1-142.

Brady S.A., & Moats, L. (1997). *Informed instruction of reading success* USA: Foundation for Teacher Preparation – A position paper of the International dyslexia Association.

Chall, J. (1967). *Learning to Read: the Great Debate*. London: McGraw-Hill.

Combley M. (2000). *The Hickey multisensory language course 3rd edition* USA: Wiley.

Elbro C., Bornstrom I. & Peterson D.K. (1998). Predicting dyslexia from kindergarten. the importance of distinctness of phonological representations *Reading and Writing* 8, pp. 453-485.

Elkonin, D. B. (1973). U.S.S.R. In J. Downing (Ed.) *Comparative reading* USA: New York: Macmillan.

Falzon R. (2010) Teaching Strategies for Children with Dyslexia in the Classroom. In Azzopardi A. (Ed.) *Making Sense of Inclusive Education: Where Everyone Belongs*. Germany: VDM Verlag Dr. Muller Aktiengesellschaft & Co. KG.

Falzon R. & Muscat C. (2001). *Moving the mountain* Antalya 2001.

Fisher, C.J., Fox, D.L. & Paille, E. (1996). Teacher education research in the English language arts and reading. In: J. Sikula, T.J. Buttery & E. Guyton (Eds) *Handbook of Research on Teacher Education* (New York, Simon & Schuster Macmillan).

Goodman, K. & Goodman, Y. (1979). Learning to read is natural. In Resnik, L. B. & Weaver, P. A. (eds.) *Theory and Practice of Early Reading*. Hillsdale, NJ: Erlbaum.

Goodman V. (1999) *Reading is more than phonics* London: Reading Wings.

Graham, S. & Harris, K.R. (1994) 'The effects of whole language on children's writing: a review of the literature'. *Educational Psychologist*, 29, pp. 187-192.

Hall S. L. & Moats L. C. (1999). *Straight talk about reading* USA: Contemporary Books.

Hegarty S. (1993). *Meeting special needs in ordinary schools* UK: Cassell.

Hornsby B. & Frula S. (1980). *Alpha to Omega* 3rd Edition London: Heinemann Education.

International Reading Association. (2001). *National Commission on Excellence in Elementary Teacher Preparation for Reading Instruction*. Paper presented at the annual convention of the International Reading Association. New Orleans, LA. Available online: http://www.reading.org/advocacy/commission.html

Johnson D. (1967). Educational principles for children with learning disabilities *Rehabilitation Literature*, 2, pp. 354-360.

Johnston, C.A. (1994). *Unlocking the will to learn.* Paper presented at the Twentieth Annual Meeting of the British Educational Research Association, Queen's Anne's College, Oxford, UK.

Johnston, C.A. (2002). *Implementing the Let Me Learn process in K-12.* Turnerville, NJ: Learning Connections Resources.

Johnston, C.A. (2006). *Promoting mindful learning in the mindless school.* Keynote presentation at the Let Me Learn International Conference, Sunshine Coast University, Queensland.

Johnston, C.A. (2010). *Finding Your Way: Navigating Life by Understanding Your Learning Self.* Let Me Learn Inc. publication. New Jersey, USA.

Johnston, C.A. (2009). *A comprehensive description of the Let Me Learn Process and advanced learning system including bibliography and lexicon of terms*. (USA , New Jersey ; LML).

Johnston, C.A. & Dainton, G.R. (1996). *Learning connections inventory.* (USA: New Jersey: LML).

Joshi, R.M., Dahlgren, M., & Boulware-Gooden, R. (2002). Teaching reading in an inner city school through a multisensory teaching approach. *Annals of Dyslexia*, 52, pp. 229-242.

Kenig, P. & Wenar, C. (2000) *Removing dyslexia as a barrier to achievement: the dyslexia friendly toolkit* UK:SEN Marketing.

Liberman, I.Y., & Liberman, A.M. (1990). Whole language vs. code emphasis: Underlying assumptions and their implications for reading instruction. *Annals of Dyslexia*, 40, pp. 51 – 76.

Liberman, I.Y., & Schankweiler, D. Speech, the alphabet and teaching to read. In Resnick L.B & Weaver P.A. (Ed.) (1979) *Theory and practice of early reading* (Vol.2) USA: Lawrence Erlbaum Associates, Publishers.

Linnea, E.C. (2003). *Phonics instruction: findings of the National Reading PaneI*, Graduate Center of the City University of New York. Paper presented at the DfES Seminar on Phonics on 17 March 2004.

Lunberg, L., Olofsson, A. & Walls, S. (1980). Reading and spelling skills in the first school year predicted from *phonemic awareness skills in* Scandinavian *kindergarten* Journal of Psychology, 21, pp. 159-173.

Martin, P. Y. & Turner, B. A. (1986). Grounded Theory and Organizational Research. *The Journal of Applied Behavioral Science*, 22(2), 141. Retrieved June 21, 2010, from ABI/INFORM Global database. (Document ID: 1155984).

Mather, N. (1992) Whole language reading instruction for students with learning abilities; caught in the crossfire. *Learning Disabilities Research and Practice*, 7, pp. 87-95.

Mauer D.M. & Kamhi A.G. (1996). Factors that influence phonemic-grapheme correspondence learning in *Journal of Learning Disabilities* Volume 29 Number 3, pp. 259-270.

Mengon, D., & Hart, S., (1991). *Special needs in ordinary schools: improving classroom behaviour: new directions for teachers and pupils.* UK: Cassell.

Miles T.R. and Miles E. (1983). *Help for dyslexic children* UK: Routledge.

Moats, L. (1999). *Teaching Reading IS Rocket Science, What Expert Teachers Should Know and Be Able to do.* USA: American Federation of Teachers.

Moats, L. (2000). *Whole language lives on: The illusion of 'balanced' reading instruction.* USA: Thomas B. Fordham Foundation.

Muscat C. (2007). *Multisensory programme of writing and reading 'M-POW'R* (Unpublished).

National Institute of Child Health and Human Development (NICHD). (2000). Report of the National Reading Panel. *Teaching children to read: an evidence-based assessment of the scientific research literature on reading and its implications for reading instruction: Reports of the subgroups* (NIH Publications No. 00-4754). Washington, DC: U.S. Government Printing Office. Also available online: http://www.nichd.nih.gov/publications/nrp/report.htm

Oakland T., Black J., Stanfor G., Nussbaum N. L. & Balise R.R. (1998). An evaluation of the dyslexia trained programme: a multisensory method for promoting reading in students with reading disabilities in *Journal of LD* Volume 31, Number 2, pp. 140-147

O'Connor R.E., Fulmer, D., Harty K.R. & Bell K.M. (2005) Layers of reading intervention in Kindergarten through third grade: changes in teaching and student outcomes *Journal of Learning Disabilities* Volume 38, Number 5, September/October USA: Pro: Ed.

Oliver, M. (1992). Changing the social relations of research production? *Disability handicap and society*, 7 (2), pp. 101-114

Oliver M. (1996). *Understanding disability - from theory to practice* UK: Macmillan Press Ltd.

Ormrod, J. (2007). *Human learning* (5th Ed.) USA: Pearson Publishers.

Orton, J.L., (1976). *A guide to teaching phonics* USA: Educational Publishing Services.

Orton, J.L., (1966). *The Orton Gillingham approach* USA: Orton Dyslexia Society.

Orton, S.T. (1937). *Reading, writing and speech problems in children*. USA, New York: Norton.

Pressley, M. & Rankin, J. (1994). More about whole language methods of reading instruction for students at risk for early reading failure. *Learning Disabilities Research and Practice*, 9, pp. 156-167.

Pugach, M.C., (1995). On the failure of imagination in inclusive schools. *Journal of Special Education* 29 pp. 219-229.

Reason Rea & Boote Rene (2000). *Helping children with reading and spelling.* London and New York: Routeldge.

Resnick L.B. & Weaver P.A. (Ed.) (1979). *Theory and practice of early reading* (Vol.2) USA: Lawrence Erlbaum Associates, Publishers.

Rose, J. (2006) *Independent review of the teaching of early reading*. UK: Department for Education and Skills.

Rose, D.H., & Meyer, A., (2002). *Teaching every student in the digital age: universal design for learning*. ASCD.

Schneider W. & Naslund J.C. (1993). The impact of early meta-linguistic competencies and memory capacity on reading and spelling in elementary schools: results of the Munich longitudinal study on the genesis or individual competencies (logic) *European Journal of Psychology of Education* Vol. 8, pp. 273-287.

Schwebel, M. & Raph, J. (1973). *Piaget in the classroom*. USA: Basic Books Inc.

Smith, F. & Goodman K.S. On the psycholinguistic method of teaching reading. *Elementary School Journal*, 1971, 71, pp. 177-18.

Snowling, M., (2000) *Dyslexia* UK: Blackwell Publishers.

Spear-Swerling, L., & Brucker, P.O., Preparing novice teachers to develop basic reading and spelling skills in children USA: *Annals of Dyslexia* Dec. 2004.

Squire, L.R. & Zola, S.M. *(1996).* Structure and function of declarative and non- declarative memory systems. *The proceedings of the national academy of sciences,* Vol. 93, November. pp. 13515-13522, USA: Colloqium Papers.

Steffe, L.P. & & Gale, J. (1995). *Constructivism in Education.* UK: Lawrence Erlbaum Association.

Stone, C., Franks, E. & Nicholson, C. (2008). *Beat dyslexia*. UK: LDA.

Thomson M. (Ed.) (2003). *Dyslexia included: a whole school approach* London: David Fulton Publishers.

Tod Janet (1999). *IEPS dyslexia* London: David Fulton Publishers.

Traub & Bloom (2000). *Recipe for reading 6th edition* Cambridge: Education Publishing Service Inc.

Turnbull, R., Turnbull, A. & Wehmeyer, M.L.(2010). *Exceptional lives* (6th Ed). Pearson Education Inc.

Vail, P. (1991). *Common Ground* UK: Modern Learning Press.

Wilson, B. (1996). *The Wilson reading system* 3rd Edition USA: Milbury Massachusetts.

• CHAPTER 20 •

Challenging the Assumptions: The Motivation and Learning of Children who have Developmental Coordination Disorder

Lois Addy

Learning is the process by which we begin to understand the environment in which we live. Children develop their knowledge about their world by exploring their surroundings, investigating relationships between objects and people, and developing an understanding as to how these relate to the overall scheme of events. The school years are fundamental to increasing the child's understanding about his/her world and his/her role within it. They learn how to problem solve, make decisions, form opinions and discover their own values. They evaluate their own competence while at the same time assessing those skills which they cannot do well; thus they learn to succeed, expand, manipulate, avoid, and struggle with concepts which are essential to their future role and position.

This small scale study seeks to look at the impetus to learn, not from the adult perspective - but from that of the child. It particularly focuses on those children who have difficulties in their motor co-ordination, formerly known as developmental dyspraxia (Ayres, 1972. Denckla, 1984) and now termed as Developmental Co-ordination Disorder (American Psychiatric Association, (A.P.A) 1987). It questions whether children with motor co-ordination disorder adopt different learning patterns to those of their peers because of their awareness of their abilities and weaknesses.

It questions assumptions made by remedial therapists, the child's parents and his/her teachers regarding the learning pattern preference the child will adopt

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This Chapter was first presented as a paper at American Educational Research Association Annual Meeting in New York, 8-12 April, 1996.

and whether these influences are indeed correct or whether the understanding of the clinical condition affecting these children actually hinders our appreciation of individual uniqueness.

The Learning Skills of Children with Developmental Motor Co-ordination Disorder

There is a significant number of children within the mainstream school setting who appear to have notable motor co-ordination difficulties with associated deficits in visual perception skills. There is a variety of hypotheses as to the reasons for this, including the increase in premature births with a lack of maturation of the brain's motor integration system. Trauma around the time of birth may result in minimal brain injury which seriously affects the child's motor planning: dysfunction in the integration of the vestibular, tactile, and proprioceptive systems, with its subsequent effect upon visual and hearing perception, within the subcortical / brainstem. Even familial tendencies have been recorded by Hadders-Algra et al, (1986). This results in the child being unduly clumsy, having difficulty dressing, performing physical skills such as hopping, jumping, balance, while at the same time struggling with many aspects of their academic performance.

Children with Developmental Co-ordination Disorder usually have average or above average intelligence but do not achieve their potential (Maeland, 1993). They struggle with many elements in the curriculum and are classically classified by their clumsiness in class which is often a source of irritation to both their peers and teacher, and a source of frustration for the child. Their handwriting tends to be poor with erratic sizing of letters on the page due to poor size discrimination, as adequate visual tracking and form perception are vital to controlled movements (Hulme, et al. 1982). Their drawings are usually very basic which reflect their poor self image and distorted body schema. Their understanding of 3 dimension is also affected by poor depth perception and figure-ground perception, elements which are particularly important for movement and motor performance (Hulme, 1984). This consequently affects their ability to undertake practical experiments or craft activities. Poor figure-ground discrimination skills also affects the child's ability to focus on specified tasks which in turn results in the child becoming easily distracted and often leads to either disruptive behaviour or to day dreaming. The additional effect of auditory figure-ground discrimination exacerbates this dimension, especially in an active classroom of 25 plus children. Poor motor organisation also leads to difficulties in using scissors, rulers, compasses, and subsequent success in undertaking creative activities. Physical education, due to the child's poor motor planning is seriously affected; often they are given the position of substitute in team games so that the game will not be disrupted by their clumsiness, or as a second goal keeper. Their peers either avoid or "mother" the child, often they are ridiculed for their untidy appearance or poor efforts in drawing and writing. Reading is usually very good so more time is given to this than other activities. Overall the child's school days can prove rather motiveless.

The result of this dysfunction is a child who is very frustrated, with a low self esteem and a lack of self-confidence. The children's needs are not usually identified until the child is 6 or more years old, as prior to this it is almost acceptable to be somewhat lacking in co-ordination and the fine refined motor skills, essential in many tasks particularly handwriting, are not in such great demand. It is sufficient time, however, for a child to learn what they can and cannot do and how they feel regarding this. It is long enough for the child to work out how to avoid tasks which they know they will be unsuccessful in. It allows time for teachers and other adults involved in educating the child to label the child as difficult, low achieving, irritating, and disruptive. These labels are difficult to displace.

Purpose

This study seeks to explore a variety of dimensions regarding those factors which influence the motivation to learn of children with developmental co-ordination disorder. It seeks to answer the following questions:

1. What are the motivational factors which influence children with motor learning problems to learn?
2. Do their learning patterns vary significantly to that of their peers?
3. Are there assumptions made by their carers, teachers or remedial therapist which influence their ability to learn?

Method

Twenty-five children aged between 8-12 years with recognised developmental co-ordination disorder took part in this study. The children were all diagnosed following a referral to their Child Development Centre. All attended mainstream primary schools in the local area; they did not belong to the same school. The group consisted of 5 girls and 20 boys.

The children all had marked motor co-ordination weaknesses, the majority being highlighted using the Movement ABC battery (formerly the T.O.M.I.). They also presented with uneven visual perception profiles depicted using a variety of assessments Gardner TVMP, Frostig test of visual perception, Beery, and Goodenough Harris Draw a man test.

These children were asked to complete the Learning connections inventory (Johnston1994). This consists of a series of 28 statements regarding how a child may learn.

To complete the questionnaire the class was introduced to the theme of "How would you like to be taught?" and "How would you teach if you were the teacher?" The children completed the inventory following this and the teacher and myself moved around the room clarifying any concerns or misunderstandings the children may have had.

The results were later analysed according to the scoring sheet attached to the inventory; this resulted in a summary of each child's unique learning combination. This emphasised the factors which influenced the child's motivation to learn. The schemas accentuated through this analysis were classified as Sequential processor, Precise Processor, Technical Processor, and Confluent Processor.

The four learning schemas describe the combination of learning strategies which children may adopt, with perhaps only a marginal bias to one over another. Different strategies are adopted for different occasions. Johnston (1995) in her development of these patterns sees a child appropriating a combination of learning patterns, having a preference towards one or another and reluctantly using others as necessary.

The information gathered from those children with Developmental Co-ordination Disorder was collated and a summary drafted which included information regarding each child's learning combination. This included those learning patterns which the child avoided and those which they preferred to use. These were supported by the qualitative statements made by the child regarding the open-ended questions.

The information regarding the 25 children with recognised Developmental Co-ordination Disorder was then sent to their occupational therapists to establish their views regarding the child's pattern. The questions asked can be seen in Appendix I.

The results of individual's learning patterns were also discussed with many, although not all, teachers concerned. This inability to gain feedback from many of the teachers involved in the evaluation was due to the time scale. The data was collected during the Summer Term (April-July); following this term many of the children were transferred on to Secondary schools or to a new class where their teacher had not had the opportunity to develop an understanding of each child's skills, talents, interests nor their attitude to learning, therefore, the information from the collated results would not be an informed contribution. The analysis of these will be, on the whole, qualitative although a small quantitative analysis will be included.

Results

The Learning Patterns adopted by children with developmental co-ordination disorder

The children's responses to the 28 statements led to the collation of a scale of learning combinations used by each individual child. These correlated with the statements the children made in answering the three open ended questions and validated, to some extent, the learning combination of each child. For example, James' learning combination directed him to using predominantly technical processor schema along with elements of using confluent learning patterns, and an avoidance of the precise processor schema. This was supported through his responses to the three open-ended questions regarding his views on what motivates him to learn. He stated:

> *I hate doing any type of sums, especially those on worksheets or in workbooks; it would be better if the sums were a bit more practical and even relevant to me. I prefer to learn by watching demonstrations, then having a go myself. I also like to make things, collect things, and invent new things. I could then show the teacher these things and she would realise what I know. She could also ask me lots of questions; I wouldn't mind that so much.*

There were several common themes highlighted by the children with developmental co-ordination disorder which are significant in understanding the motivation of children with specific learning difficulties. Their responses to "what makes school work hard for you?" were particularly poignant.

Twenty-three out of the twenty five children in the study expressed their dislike of **mathematics** and their feeling of failure in this subject. This corresponds to Kosc (1970) and Sears (1986) findings relating to that which they term **dyscalculia**. Sears in particular accentuates a correlation between poor Visio-motor co-ordination and aspects of visual perception, such as spatial organisation and position in space, and arithmetic. Wood (1991) suggests that this is partly due to the child's inability to set out the sums correctly which in turn impedes the learning process. Keyboards have been introduced but this involves the composite use of cursor control keys and still layout proves to be complicated. There are several solutions to this quandary: to return to a more practical approach to mathematics, or to assess some of the computer programmes available which specifically simplify the layout and presentation of the numbers required. An example of such a programme is "The Simple Sums" programme designed by Dundee University.

Handwriting also proved to be a feature with which the children expressed their concern and feelings of inadequacy. Twenty-two out of the twenty five children with developmental co-ordination disorder expressed their dislike of activities involving handwriting. They stated that their writing was too slow, untidy and, according to their teacher, often illegible. Considering a fundamental part of the child's school day is devoted to written work, with one third of the school day focusing on handwriting relating to language tasks, one quarter of the day being devoted to writing tasks related to general studies including topic work, and a further proportion relating to writing related to mathematics (Graves, 1978), this has a crucial bearing on the child's will to learn. It leads us to consider whether there is any alternative to the extent of writing so much within the school day.

This questions whether more use could be made of alternate means of recording a child's knowledge, such as the use of recorders or Dictaphones, verbal exercises, drama, role play activities, and demonstrations. It also challenges the reluctance to use taped information to enhance the child's learning and to maximise their use of their auditory memory skills. Such an approach was used for a child who, due to extreme visual figure-ground discriminatory difficulties, could not learn well by reading, as he frequently lost his place when visually scanning the page. It was noted by his mother that he could remember lines from a song played on the radio after hearing it only once. This child had learned to use his auditory skills to compensate for his weak co-ordination and visual perception skills. This approach to learning was subsequently encouraged and the information he required for his graduation examinations was provided on cassette. This child succeeded using these. He was allowed the opportunity to learn in the way that suited him and to be given the opportunity to express his knowledge without the frustration of needing to read and write.

Many of the children in the evaluation appreciated that hand-written information was a necessary aspect of school learning. Many suggested that this could take the form of worksheets containing limited information on them, to prevent it from appearing too cluttered, a dilemma for those with visual figure-ground discrimination. They also suggested that an occasional picture may increase the interest in the subject.

Almost all of the children in the Developmental Co-ordination Disorder group expressed their preference for **learning by listening** as the teacher explained subjects or events; however, this was relating to didactic discourse rather than small group teaching which was felt to be a source of distraction. Demonstrations relevant to the given subject, again involving the whole class or small group outside the bustle of the classroom, was a preferred means of learning. This discrepancy between the child's learning through front of class teaching as opposed to self directed learning reiterates the teachers comments when the child is first referred for help. The child is often described as having a good grasp of general knowledge and can contribute to class discussions well; however, they cannot seem to concentrate in everyday class activities nor record the information they have previously discussed. The frequent assumption is that either they are "dyslexic" or have some form of behavioural problem which prevents them from working alone. The actual difficulty is that of **attention**.

Seven out of the twenty-five children expressed their frustration in being unable to concentrate and attend well, being easily distracted in class by others' conversation. This reflects an area, being increasingly researched, that of auditory figure-ground discrimination. In a similar way to that of visual figure-ground discrimination, the child with **auditory figure-ground discriminatory** problems finds it difficult to focus his/her attention to one field, he/she is unable to "switch off" from other auditory information within the room, hence becoming easily distracted and frustrated by his/her inability to absorb the information required by the teacher. Their comments reflect this:

> *The teacher makes classroom learning hard for me by telling different groups of children to do different things. It becomes confusing. I really don't like distractions when I'm trying to work.*
>
> *I need the teacher to tell me the instructions as to what she wants me to do on my own, as when she tells the whole class and then we go back to our seats; I get distracted and forget what she said; if she told me again slowly and then checked that I've got the gist of it when I've sat down, I'd be OK.*
>
> *I need to have someone who understands me, to sit next to me and explain again exactly what I'm meant to do after the teacher has told the whole class.*
>
> *I get into trouble at school quite a bit; it's quite frustrating really as I sit next to someone who chatters a lot and then I don't get my work done as I'm distracted by them. It's unfair.*

One of the most significant considerations which emerged from this study was the effect of the success at school on the child's **self-esteem, self-confidence and relationship with others**. Seventeen of the children involved in the study spontaneously expressed their incompetence in "keeping up" with their peers, being as proficient as their peers, and being accepted by their peers. This reinforces Maslow's theories of a person's need to be accepted as an important aspect in the process of self actualisation. He believed there were dangers in basing self-esteem on the opinions of others such as teachers and peers and felt that healthy self-esteem is based upon personal achievement, and deserved respect (Adair, 1990). The difficulty with this is the child's clear cognisance of their own inadequacies. This emphasises the responsibility that those involved in the teaching process have in enabling the child determine their talents, strengths and to augment these.

These comments were made regarding their work and how it was often deemed unacceptable by their teacher or peers:

> *I don't like sums or writing, I'm not very good at either.*
>
> *I'm rubbish at drawing and painting; everyone laughs at my efforts.*
>
> *I hate handwriting; it takes up so much effort and it never looks as good as everyone else's.*
>
> *I really find friendships so difficult at school because so many subjects are hard for me; I seem to get teased all the time.*

This reflects the experiences of children with Developmental Co-ordination Disorder in that they appear to "fail" in the classroom despite their intellect and understanding. It also emphasises their awareness of how this failure affects their self-esteem and confidence in relation to establishing relationships with their peers and the frustrations this imparts.

This lack of self-esteem appears also to be compounded by certain tactics adopted by the child's teacher which has been misconstrued as punishment. The suggestion of writing work out again more neatly or to practice certain aspects of handwriting over and above that of the rest of the class is not viewed as helpful, but as a reminder that the child's work is not as acceptable as that of his/her peers and, therefore, not as good. The compositional aspects of the piece of work are shielded by its illegibility or poor presentation. The view that practice makes perfect often has the adverse effect on these children who are in danger of suffering what Cratty (1985) termed as ***"motivational burnout"*** caused by the intensity of repeated practice. Cratty coined this term in relation to physical training but this can also be seen in situations where children have to, for example, repeatedly practise letter formation. This burnout takes the form of anxiety, tension, and a reluctance to enjoy writing tasks. Motivation has ceased. This is where it is important to apply alternatives to subjects which the child finds arduous.

The other consideration of repeated practice is that of "**skill generalisation**". There is no guarantee that skills practised repeatedly in one situation will be generalised to another. Denkla (1984) found that "persons given the advantage of training or over practice on essential motor skills (be they fine or gross motor) may enter adult life without obvious difficulty, unless challenged by new skills to learn". It is then that generalisation needs to take place and previous motor plans retrieved to co-ordinate the new activity. Denkla found that, by focusing too narrowly, skills were compartmentalised and new skills proved difficult.

Several of the children in the group explained that they would like to **show** their teacher or therapist how much they know by bringing their stories, poems, letters and drawings which they have produced at home, and to share these with their teacher and the rest of the class. This suggests that the child feels more able to express themselves and explore their own creativity outside the classroom setting. It suggests the need to create an environment which allows freedom to experiment and explore aspects of creativity and composition, an environment which is free from distractions, time limitations, competition and pressure to succeed. This view was reiterated by the children's parents.

Apart from the themes, which were accentuated by this study, in which aversions to written work, mathematics and nonverbal activities were prevalent, the individual nature of each child was highlighted. Each child used learning schemas which reflected their individual personality, each demonstrating a unique combination of learning strategies used according to their varying learning environments. It was interesting that, despite the concerns expressed by the children regarding their struggles with classroom learning, they did not necessarily rely on using one schema over another. Their preferred approach to learning did not altogether reflect their difficulties; rather it reflected their uniqueness and individuality. For example, one child, who had not only motor co-ordination difficulties but also dyslexia, used her sequential and precise processor schema to learn. Despite her poor visual sequential memory for spelling and reading and poor co-ordination for writing, she still preferred to learn by absorbing detailed facts, visual information in a way she could construct. She did not adopt a schema which was more creative or relied on a more overt demonstration of her knowledge, such as that of the confluent processor. It was this uniqueness which has challenged the opinions of professional and provided a creative dilemma for those adapting the curriculum to meet the disposition of each child.

A Challenge to Assumptions!

Occupational Therapists, like teachers and other remedial therapists involved in education, aim to enable children to obtain their potential in terms of independence, self worth, and functional abilities. As Developmental Co-ordination Disorder has a profound effect upon a child's ability to record information and perceive his/her environment in the same way as his/her peers, a responsibility for enhancing the child's potential rests with those involved in this process. Although there are contradictory views as to whether Developmental Co-ordination Disorder is fundamentally a neurological condition or that of a maturational lag, we still have a service to play in encouraging each individual child to achieve their potential.

There are a variety of approaches used to enhance a child's co-ordination and perceptual skills. Examples are: task orientated approaches based upon cognitive-motor training as advocated by Stott, Moyes and Henderson (1972) and Kirshaw (1973); process dysfunction approaches, for example Sensory Integrative therapy (Ayres, 1983) (Chu, 1993); process oriented approaches based on perceptual-motor training, (Bairstow & Laszlo, 1985; Frostig,1973), along with the more specialised approaches such as psychomotor approach of Dalcroze Eurythmie, (Dalcroze, 1967). Whichever method is adopted, it is in essence a taught approach, just as that of a teacher in education.

So tha the most appropriate choice of therapeutic intervention can be offered, a detailed assessment regarding the child's motor skills, visual perception, and personal concerns is required and decisions are made regarding the most suitable approach to adopt and in which location. Simultaneously, teachers formulate similar strategies to enable the child to learn. These two approaches are frequently brought together to provide a consistent, comprehensive modus operandi to enable the child to learn. The following aspect of the study sought to assess whether the procedures implemented were compatible with that of the child's own learning schema and whether, by looking at individual learning patterns, the distinctive nature of the child can be incorporated into the teaching process.

The Occupational Therapists involved were given a summary of the learning schemas adopted by each of the children with whom they were involved. This included a description of the learning schema the child used most frequently alongside that which he/she avoided. It also summarised the information provided by the children regarding their views on how they would like to learn. They were then asked their opinions regarding the results and how these might affect their future approach.

Twenty-three out of the twenty five respondents felt that the description given of the child and the way they tackled subjects were indeed an accurate reflection of the child's personality. One of the therapists felt that two of the children, whose results led to them being described as creative, did not reflect the nature of the children concerned. In one of these cases the term "creative" was applied to the use of the technical processor schema rather than the confluent processor. The creativity expressed by the child was that of enjoying practical demonstrations rather than creativity in the sense of drama, role-play, story writing. The other child who the therapist did not feel was particularly creative was a child who used a variety of schema as appropriate, not having a definite preference for one over another. It may be that we can assume that this child has not had the opportunity to explore this aspect of their learning within the therapeutic setting.

An element of surprise was expressed by the results of a child who has Developmental Co-ordination Disorder and dyslexia. Children with this dual dilemma often relate to more creative learning approaches, avoiding the processing of complex instructions and details. This child showed a strong preference to using the precise processor and sequential processor schema. This was supported by her views regarding how she would like to learn and highlighted the fact that trivia and the gathering of detailed information regarding relevant subjects does not need to incorporate volumes of written material nor need to involve profuse writing skills. The information provided by this child and the detail regarding how she would like to learn will be used by her support teacher to encourage her learning. This will involve more use of video information, educational cassettes and computer-aided learning. The impression that this child would be motivated to learn through more creative, craft and art type activities was incorrect.

Several children within the Developmental Co-ordination Disorder group responses stressed their use of a more creative, practical approach to learning, enjoying taking things apart to see how they work, constructing models, and undertaking experiments. This surprised many of the therapists who felt that naturally this schema would not be adopted due to the child's **poor manual skills a**nd the potential feeling of failure. One therapist wrote

> *I'm not sure about her preference for enjoying practical activities. They are so difficult for her. I thought these would be avoided!*

This was not the case as the majority of the Developmental Co-ordination Disorder group preferred a more practical outlet to education. Perhaps this is due to the sensory benefits of practical work. The child being able to explore the properties of the subject through the exploration of texture, weight, temperature, and other properties which reinforce the integration of a child's tactile, vestibular and proprioception, thus helping them in their struggle for sensory integration, or could it be a subject which avoids the necessity for profuse handwriting!

At times the learning pattern adopted by the child was seen as preventing them from achieving their potential. One child whose learning schema used was that of the confluent processor was felt to use his own ideas too much without the flexibility of compromise and appreciation of others views. This child was described as "almost obsessional" in that whatever he did he became almost too involved. He spent a considerable amount of time relating to details of films and the dynamics of the relationships within these. He constantly questioned "What has this to do with me?" "How do I fit into this?" The therapist concerned felt that a balance of learning schema was required in this case. There was a danger of perpetuating what appeared to be negative thinking patterns. In this situation, the child also related to a difficulty making and retaining friends; so the suggestion by his therapist to broaden his appreciation of other patterns seemed appropriate.

One child who expressed his preference for using his precise and technical learning schema was supported by his therapist. She commented that he was a practical little boy, somewhat solitary and not always confident in his schoolwork. She felt that any small criticisms set his progress back. This reinforced the child's request for detailed instructions to be given before attempting any new task and a preference for using demonstrations rather than written work. His therapist has agreed to share these findings with his teacher so that applicable learning strategies can be adopted.

The results of the children's impressions caused some speculation as to whether it would be beneficial to attempt to address the child's avoidance of one schema over another, or indeed whether strong preferences for one approach over another was indeed appropriate or reflected an imbalance in learning. Certain therapists confessed to inadvertently encouraging the child to use the precise processor schema which they felt would be more appropriate at school. This approach was used to encourage children who usually adopted technical processor schema, who hated recording facts and details, preferring hands-on, practical work to conform with the requirements of the school curriculum. They felt that the children had to learn how to record details and to be able to scribe well to consume the necessary facts given by the teacher which would, long term, be a requirement of Secondary Education.

On the other hand, some therapists sought to use the schema adopted by the child to encourage their learning and enable them to enjoy their learning more. They also felt that by sharing this information with the child's teacher, they might be able to make the school a happier place for these children.

Some of the responses led to increasing the therapist's awareness of the child's tactics used at school to assimilate and understand information. Regarding one child whose schema pointed towards a preference for sequential processing.

> *She always seems to cause a delay before beginning any work, i.e. by talking, blowing her nose, sorting out her pencil case etc. I always assumed that this was her way of avoiding work, but perhaps it is fair to think that her delaying tactics are related to her learning pattern!*

Others commented:

> *Our therapy sessions tend to be "child led" which allow for his creative expression so it's good to know that therapy is suiting him in that sense. However, I will endeavour to elicit more of his practical creativity in future as highlighted by his responses to the questionnaire.*
>
> *I would not regard him as that creative; he used to go off at a tangent away from the intended task. I used to think that he didn't want to deal with the subject but perhaps the truth is that he wanted to do it his own way and I was being too restrictive." (said of a child who preferred the confluent processor schema)*
>
> *I'm not sure that I agree about the description of this child. He would rather listen and tell than write down facts and figures because of his handwriting difficulties. He is a timid boy though he has a dramatic side to his nature." (child who uses the precise processor schema)*

There is an assumption here that, in order to absorb facts, the information must be written down. In this case the child expressed his preference to listening to the teacher than writing things from books.

The opinions sought from the therapists provided a valuable focus in which to debate the motivational influences of each child to learn both at home and at school. The results challenged therapists about their way of working, their orientation towards a child centred approach to therapy and the possibility of looking at new ways to enable the child to learn without the pressures of academic conformity. It challenges the view that a child will be motivated by that which he/she is successful at and will avoid those things he/she will fail. The parents' views reinforced the need to understand each child's individuality and to enable them to explore in a secure, safe environment those aspects of the curriculum which is usually difficult. It also provided insight into the child's concerns regarding his/her education and a challenge as to how therapy and education can come together to encourage the child's integration and subsequent independence.

Summary

The use of the Learning connections inventory has been an interesting tool in provoking debate and discussion amongst educationalists and health care professionals working with primary aged children. It has accentuated those dilemmas faced by children with Developmental Co-ordination Disorder compared with those of their peers and has raised questions about how these dilemmas can be addressed.

A dual challenge has been set. How do we encourage a child who is fully aware that their performance is different to that of their peers, and not in keeping with the expectations of their teachers or parents? This is demoralising leading to feelings of hopelessness and low self-esteem, alongside the challenge of enabling their educators to find ways of nurturing, strengthening and facilitating the child's intrinsic motivation to learn, while simultaneously encouraging an increase in the child's global self esteem which includes competence, power, moral worth and acceptance (Harter,1989).

Follow-On

This study has provoked much discussion and debate amongst teachers, pupil support services, parents and remedial therapists alike. As a result of this, there have been certain implementations which aim to benefit not only the child with Developmental Co-ordination Disorder but other children too. These include:

1. Several study days have been developed to assist teachers, pupil support workers, non-teaching assistants and remedial therapists in their understanding of how DCD affects the child's academic attainment and his/her motivation to learn. Issues highlighted through this study have been incorporated in these days.
2. Three of the children in the DCD group, whose effort in handwriting was severely affected by their motor control, have been assessed for the provision of a voice-activated computer. Their motor co-ordination made typing also a laborious exercise.
3. Approximately ten children are now using electronic typewriters or laptop computers to augment their written presentation.
4. Several therapists involved in the study have expressed their desire to use the Learning connections inventory as part of their initial assessment in order to increase their understanding of what motivates the child, prior to developing a therapeutic programme.
5. The results of the majority of the children's learning patterns have been discussed with the professionals involved in order to review ways in which the child's comments could be used to enhance their learning.

Appendix I

Questions asked of parents following a brief description of their child's learning schema following the analysis of their responses to the Learning connections inventory:

1. Do you think that these results reflect your child's personality?
2. In your opinion do you think these results are correct?
3. Do these results surprise you?
4. Do these results reflect that of yourself or your partner?
5. Will these results influence in any way the activities you might undertake with your child in the future?

Questions asked of Occupational therapists involved with individual children following a paragraph describing the child's responses to the Learning connections inventory:

1. Do you think that these results reflect the child's personality?
2. Were these results correct in your opinion?
3. Were these results surprising to you?
4. Would these results alter in any way the activities you choose to use with the child?

References

Adair, J. (1990). *Understanding Motivation*. Talbot Adair Press, Surrey. UK

American Psychiatric Association (1987). *Diagnostic and Statistical Manual of Mental Disorders*. Washington DC, USA

Ayres, J. (1972). *Sensory Integration and Learning Disorders.* Los Angeles: Western Psychological Services.

Ayres, J. (1983). *Sensory Interaction and the Child Western Psychological Services*. L.A., USA.

Berkowitz, L (1964). *The Development of Motives and Values in the Child.* Basic Books Inc. New York, London.

Brenner, M.W., Gillman, S., Zangwill, O.L. & Farrell, M. (1967). "Visuo-motor Disability in School Children". *British Medical Journal.* 4. Pp. 259-262.

Bruner, J. (1966). *Towards a theory of Instruction*. Cambridge (Mass) Harvard University Press.

Brynner, J. Whitehead, I. (1972). *Personality Dimensions and Motivation*. The O.U Press.

Carter, C.F. (1973). *Motivation. Non-cognitive Aspects of Student Performance.* SRHE Publication. London, UK.

Chu, S (1993). "The Application of SI Procedures in Clinical Practice: Key Concepts and Treatment Principles". *Handbook for the Advanced Workshop in the Treatment of SI Dysfuction*. BISI.

Cratty, B.J. (1986). *Perceptual and Motor Development in Infants and Children*. Englewood Cliffs, New Jersey. Prentice-Hall.

Dalcroze, J.E (1967). *Rhythm. Music and Education*. Pyrford. Woking. The Dalcroze Society.

David, R. et al (1981). *Proposed Nosology of Disorders of Higher Cerebral Function in Children*. Child Neurology Society. Unpublished manuscript.

Day, H.I, Berlyn, D.E. & Hunt, D.E, (1971) *Intrinsic Motivation - a New Dimension in Motivation*. Holt, Rinehart, Winston Ltd. Toronto, Canada.

Denckla, M.B. (1984) Developmental Dyspraxia. The Clumsy Child in Levine, M.D Satz, P. *Middle Childhood: Development and Dysfunction*. Boston: University Park Press.

Dunn-Rankin, P., Shimizu, M., & King, F. (1969) "Reward, Preference Patterns in Elementary School Children". *International Journal of Ed. Science* Vol.3 pp. 53-62.

Entwistle, N.J (1968) "Academic Motivation and School Attainment". *British Journal of Psychology* 38. Pp. 181-199

Frostig, M. (1973) *Frostig Program for the Development of Visual Perception*. Chicago. Follett Pub. Co.

Graves, D. (1978), *Balance the Basics: Let Them Write*. New York: Ford Foundations.

Gubbay, S.(1975) *The Clumsy Child. A Study of Developmental Apraxic and Agnostic Ataxia*. WB Saunders Co Ltd. London, UK.

Hall, D.M.B (1988). "Clumsy Children". *British Medical Journal*. 296, pp. 375-376.

Hartley, J., Holt, J. & Hogarth, F. (1971). "Academic Motivation and Programme Learning". *British Journal of Educational Psychology*. Vol.41. pp. 171-183.

Henerson, S.E. & Hall, D.(1982). "Concomitants of Clumsy Children' in Young Schoolchildren". *Developmental Medicine and Child Neurology* No 24. Pp. 448-460.

Howe, M. (1972). *Understanding School Learning: A New Look at Educational* Psychology Harper and Row Publications. New York, London.

Hulme, C. & Lord, R (1986). Clumsy Children - A Review of Recent Research. *Child Care. Health and Development*. 12, 4, pp. 257- 269.

Hulme, C., Biggerstaff, A., Moran, G., & McKinlay, I. (1982). Visual, Kinaesthetic and Cross Modal Judgements of Length by Normal and Clumsy Children. *Developmental Medicine and Child Neurology*. 24. pp. 461-471.

Hunt, J. (1960). Experience and the Development of Motivation: Some Reinterpretations. *Child Development* 31. Pp. 489-50.

Johnston, C. (1994). *Unlocking the Will to Learn: Identifying a Student's Unique Learning Combination*. Paper presented at the British Educational Research Association Conference. Oxford Sept. 8th.

Kirshner A. J. (1973). *Training that Makes Sense*. Academic Therapy publications.

Kosc, L. (1974). Developmental Dyscalculia. *Journal of Learning Disabilities*. 7. 33. pp. 46- 59.

Laszlo, J. & Bairstow, P. (1985). *Perceptual Motor Behavior. Developmental Assessment and Therapy*. London: Holt Ltd.

Losse, A., Henderson S.E., Elliman, D., Hall, D., Knight, E. & Jongmans, M. (1991). Clumsiness in Children - Do They Grow Out of It? A 10 Year Follow Up Study. Developmental Medicine and Child Neurology 33, pp. 55-68.

Maeland, A. (1992). Identification of Children with Motor Co-ordination Problems. *Adapted Physical Activity*. quarterly, 9, 4.

Maeland & A. Sovik, N. (1993). Children with Motor Co-ordination Problems and Learning Disabilities in Reading, Spelling, Writing, and Arithmetic. *European Journal of Special Needs Education.* Vol.8., No. 2, pp. 81-98.

Missiuna, C. & Polatajko, H. (1994). Developmental Dyspraxia by Any Other Name: Are They All Just Clumsy Children, *The American Journal of Occupational Therapy* Vol.49, No. 7, pp. 619-627.

Sears, C.J (1986). Mathematics for the Learning Disabled Child in the Regular Classroom. *Arithmetic Teacher*. 1, pp. 3-11.

Smith, F. (1988). Writing, Collaboration or Competition In *Writing and the Writer*. Heinemann books.

Sovik, N. & Maeland, A. (1986). Children with Motor Problems (clumsy children), *Scandinavian Journal of Educational Research,* No. 30, pp. 39-53.

Stott, D.H., Moyes, F.A. & Henderson, S.E. (1984). *Test of Motor Impairment*. Guelph, Ontario: Brook educational.

Willoughby, C. & Polatajko, H. (1993). Motor Problems in Children with Developmental Co-ordination: Review of the Literature. *American Journal of Occupational Therapy* Vol. 49, No.8, pp. 787-793.

Willoughby, C., Polatajko, H. & Wilson, B. (1995). The Self-esteem and Motor Performance of Young Learning Disabled Children. *Physical and Occupational Therapy* Vol.14 (3/4), pp. 1-30.

Wood, B (1991). Suffering with Sums. *Special Children*. Sept. 1991, pp. 24-25.

• CHAPTER 21 •

Reconceptualising Students at Risk: Teacher Assumptions about "the Problematic Student"

Robert B. Kottkamp and Ruth P. Silverberg

Introduction

In this paper, we make a claim about the status of "at risk" which is somewhat different and probably broader than that of other contributors. At risk status is typically defined through some attribute or group of attributes attached to the child or student, such as ethnic origin, gender, sub-culture, class, first language, immigrant or socioeconomic status, or special education classification. We argue simply that any child or student considered by a teacher to be "a problem" or "problematic" is put at considerable academic and social risk within the school environment.

When a teacher conceptualises privately or articulates publicly that a child is problematic, s/he is likely to be engaging in what Argyris and Schon (Argyris, 1993; Agryris & Schon, 1974) call a "self-sealing process." That is, the teacher's own thinking (assumptions or mental models) and empirical data that might challenge the teacher's thinking about the child, become undiscussable. (Self-sealing undiscussability, Argyris and Schon find, is almost universal) and, as our data indicate, what is in the thinking or assumptions of the teacher is always a part, if not the major part, of the "child's problem." Hence, when a child is described as problematic by a teacher, this child indeed has a problem, but one which to a significant degree is imposed upon him/her.

This chapter was first published in Borg & Calleja (2006). Understanding Children and Youth at Risk: Narratives of Hope. Agenda Publications.

Reflective practice is a professional development process we use to break the cycle of self-sealing undiscussability. It enables the teacher to confront his/her own thinking and to understand how it results in the perceived problematic behaviour of the child. It is a process which not only enables the teacher to investigate his/her thinking but typically provides considerable intrinsic motivation for personal change. Reflective practice can work as a process which both liberates the teacher to think and act differently and liberates the child from being in an unintended but real risk situation.

We have three purposes in this paper: (1) to describe a process and a replicable project that invites teachers to engage in a particular form of reflective practice, one aimed at uncovering assumptions or mental models in themselves that inhibit their students' and their own learning; (2) to describe some patterns of negative assumptions we discovered, assumptions that block students from learning; our third purpose is to make a direct connection between the process of reflective practice and the findings of this study and the work of Christine Johnston (1996, 1998). We find an exciting link between our work and hers. Teachers learn to use Johnston's Let Me Learn process through a form of reflective practice, and her process provides direct confrontation and "answers" to many of the negative assumptions we uncovered. We end our paper by making this bridge to her work and point to her own paper, which explains the Let Me Learn process in greater detail.

A Brief Conceptual Framework: Reflective Practice

Teachers in this paper engaged in a project grounded in a model of reflective practice conceptualised by Argyris and Schon (1974), Osterman and Kottkamp (1993), and Senge (1990). Two personal action theories form the core of reflective practice. These theories are simply ideas and assumptions about how things should and do work. *Espoused theories* convey our intentions; they are simply what we say we think and believe. They exist at a conscious level, and they change with relative ease in response to new ideas or information. But while we believe our espoused theories guide our actions, this is not always the case. Often they do not directly affect behaviour. Our actions are often inconsistent with intentions, and new ideas do not always lead to new behaviours.

Theories-in-use or mental models are another matter. Elusive and difficult to identify, they are far more powerful in influencing how we act. In fact, these personal action theories contain the assumptions that actually guide our behaviour. In contrast to espoused theories, which reside at a conscious level and are easily changed, theories-in-use are so deeply ingrained in our consciousness that we cannot easily articulate them, and they are not easily changed. Theories-in-use develop and remain relatively constant over long time spans as a result of acculturation and continuing experience in a relatively stable culture. They become so integrated within our beings that they are hard to isolate. They disappear from our conscious “foreground” and become “background.”

In reflective practice, change is an individually chosen action course arising from a desire to resolve tension resulting from *awareness* of incongruities or discrepancies between elements in the model. Typically, awareness- initiating change comes from recognition of discrepancies between our stated intentions (espousals) and actions (arising from theory-in-use) or between our actions and intended outcomes. When the discrepancy awareness is only between intention (espoused theory) and behaviour, we often initiate single-loop change, or behaviour adjustment without examination of theory-in-use. When the discrepancy awareness includes conscious awareness of theory-in-use, double-loop change is possible. This is a more fundamental change because the assumptions guiding behaviour may be transformed (Argyris & Schon, 1974). Thus, reflective practice is a process for “unsealing” our thinking and making the relationship between our thoughts and actions both visible and discussable.

Reflective practice always entails a relationship between thought and action, theory and practice. This thought-action interplay may be conceptualized as an experiential learning cycle consisting of four stages: concrete experience, observation and analysis, abstract reconceptualization, and active experimentation (Dewey, 1938; Kolb, 1984).

Dewey (1938) described experiential learning as beginning with a problematic or indeterminate situation, a troublesome, unsettling, or tension-inducing experience. For a problem to arise and come to awareness, there must be *concrete experience.* It is the concrete experience upon which we later reflect. The experience may be physical/ social or mental. The problematic sense often comes to awareness as a discrepancy, dilemma, or surprise; it stimulates inquiry and motivates reflection or - the second stage - *observation and analysis.*

Motivated by a vague or clear sense of the problem, in the *observation and analysis* stage, the practitioner assumes the role of researcher and begins to gather information. The metaphor of being the critic in the audience, watching yourself act on stage, applies here. We stand back from the experience itself, assume a more detached stance, and step outside the action to observe it critically and to describe it fully. A full description typically includes emotional as well as cognitive experience. With information in hand, we analyse and reflect on the experience. Depending on the level of analysis, we engage in either single-loop or double-loop learning.

If we engage in double-loop learning, we move on to *abstract reconceptualisation* or consideration of alternative ways of thinking and acting. We engage in an active search for new ideas and strategies, motivated to consider new theories, techniques, and processes-even things we rejected before. We see relevance in ideas we thought irrelevant before, connections between theory and practice. We create new action theories, frame them as hypotheses and then move on to *active experimentation.* This stage completes the cycle as, through taking action based on our reconceptualizations, we create new *concrete experience.*

Design and Process of the "Problematic Student Project" for Discovering Mental Models

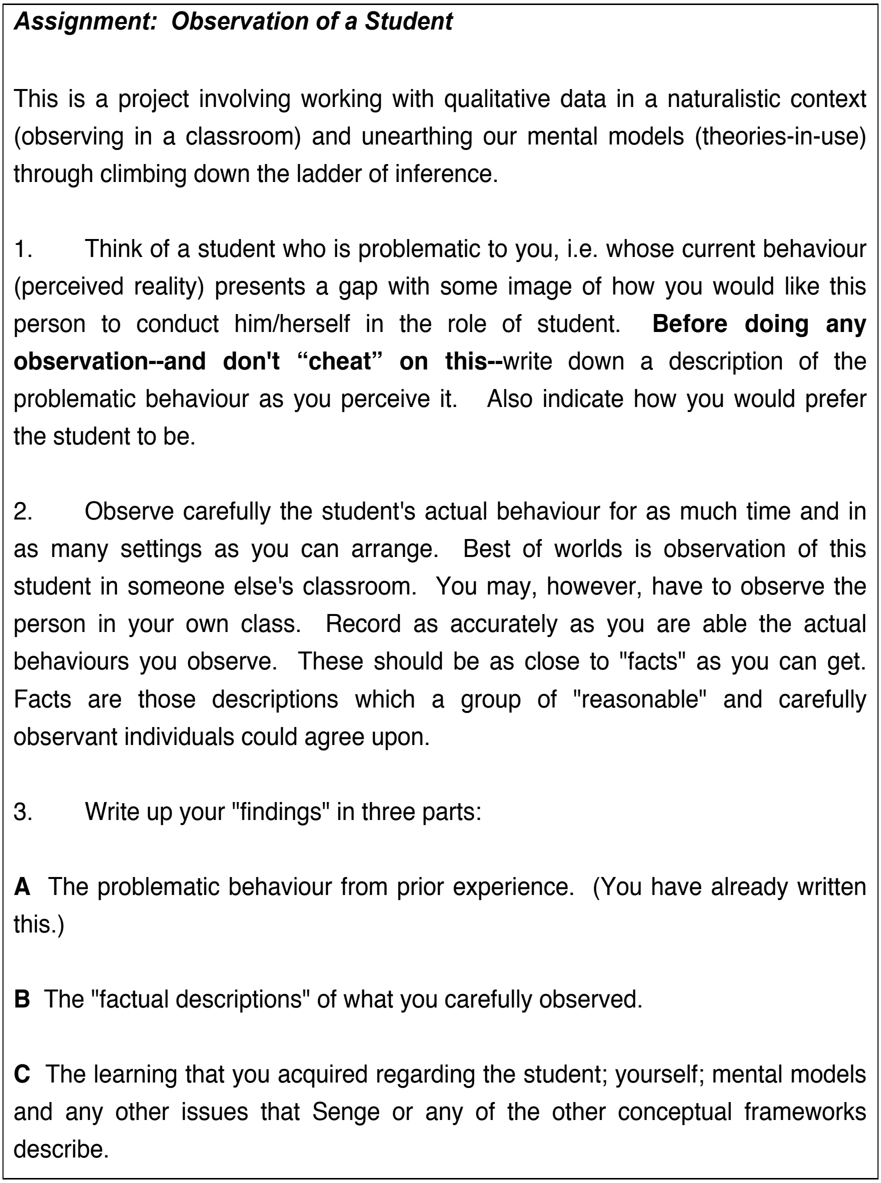
The project yielding data for this paper was designed to "unseal" or move teachers into direct examination of assumptions lying in their theories-in-use or mental models—the actual sources of their actions. This is not easily done, and the project has worked well over time to provoke this process which results in personal statement and examination of assumptions/mental models/theories-in-use. The actual projects assignment is found in Figure 21.1.

The project is carried out in three steps. Step one asks the teacher to choose a student whom s/he finds problematic. "Problematic" is purposefully left vague to allow the teacher to describe specific behaviours along with the implicit assumptions that go along with them. The perceived behaviours are then written up, along with a statement of how the teacher would like the student to behave, which may or may not be consistent with the individual's platform or espoused theory.

The emphasis will be on the final part, the analysing and synthesising piece. The teacher is required to look for any discrepancy between what s/he "knew" about the student and what s/he "saw," which results in a new knowing. Wrestle with what this tells the teacher about him/herself, especially their mental models. (Teachers will be invited to go back to their platform statement and take a look at what they intend to do - or even revise it - but not downward as vision erosion!) Teachers are to indicate any other learning which occurred with regard to the process of moving toward enhanced personal leadership and ability to model new ways of thinking and doing that lead toward improving education for kids.

Step two (undertaken after the description of the student is written) requires the teacher to observe the problematic student very carefully. Observation sites include other teachers' classrooms, recess, lunch, hallways, extracurricular activities, etc. The teacher writes up the observation using **only** descriptive language. No prescription, that is—judgement, assumption, or evaluation—is allowed.

Figure 21.1 Assignment: Observation of a Student



Assignment: Observation of a Student

This is a project involving working with qualitative data in a naturalistic context (observing in a classroom) and unearthing our mental models (theories-in-use) through climbing down the ladder of inference.

1. Think of a student who is problematic to you, i.e. whose current behaviour (perceived reality) presents a gap with some image of how you would like this person to conduct him/herself in the role of student. **Before doing any observation--and don't "cheat" on this--**write down a description of the problematic behaviour as you perceive it. Also indicate how you would prefer the student to be.

2. Observe carefully the student's actual behaviour for as much time and in as many settings as you can arrange. Best of worlds is observation of this student in someone else's classroom. You may, however, have to observe the person in your own class. Record as accurately as you are able the actual behaviours you observe. These should be as close to "facts" as you can get. Facts are those descriptions which a group of "reasonable" and carefully observant individuals could agree upon.

3. Write up your "findings" in three parts:

A The problematic behaviour from prior experience. (You have already written this.)

B The "factual descriptions" of what you carefully observed.

C The learning that you acquired regarding the student; yourself; mental models and any other issues that Senge or any of the other conceptual frameworks describe.

Step three is the "unsealing" process; it asks the teacher to compare step one "observations about the student" saturated with inferences from his/her assumptions/ mental models/theories-in-use, with the careful observational description of step two. It is typically the discrepancy between the two descriptions of the student that initiates the tension of awareness. To heighten the tension based on the two descriptions and push it toward the abstract reconceptualisation stage of the experiential learning cycle, teachers are given Argyris' "Climbing the Ladder of Inference" model. It demonstrates how observations of behaviour (data) quickly become overlaid with our inferences (assumptions) until they become self-fulfilling prophesies to the point that we actually "see" what we assume (our mental models) rather than what is going on. The teacher is asked: "What did you learn" when you compared the initial description of the student with the behavioural data stripped of inference, judgment, or assumption and tried to climb down the ladder of inference to the descriptive data? The problematic student is actually a "foil" or "mirror" for the teacher to give a criticial view of her/his own assumptions/mental models/theories-in-use.

Sample/Data Source

The sample for examination of assumptions consists of 38 case write-ups of the problematic student project. It was derived from four different learning communities of teachers in Hofstra University's integrated administrative certification programme but is less than the total number of teachers in these learning communities. The number was reduced by those who did not submit project copies for their portfolios and by those who did not choose a student. Cases about autistic students were eliminated because they were such situational outliers.

Demographically, the model teacher was a white elementary female. Specifically, the sample was: 95% white, 2% African descent, 2% other; 84% female, 16% male; 55% elementary, 32% secondary, 8% post-secondary, 16% special education or ESL. Their practice settings are in primarily suburban Long Island and represent a variety of student demographics. None of these teachers were novices; most had upward of 7 to 10 years of experience. As a group they could be characterised as "solid" or "good" practitioners.

Method

The methods used to extrapolate assumptions included developing categories, content analysis, and eventually naming assumptions, a form of grounded theory. Each case was a teacher produced project written up to complete a course assignment. Depth and complexity varied considerably. Length ranged from three to 16 pages; some projects contained addenda or responses to "challenges" issued by the instructor upon reading the first version. The individual case was the unit of analysis.

The first stage of analysis was to derive categories of student descriptors from both the "problematic" and the "way I would like the student to be" descriptions in step one of the project write-up. This process consisted of listing individual words and phrases used to describe students and then clustering them into categories. In making this pass through the data, we also made ourselves aware of indicators of other recurrent patterns the project had not specifically stipulated. Examples included isolating of students, attending to student reputations passed on by other adults, indications of actions taken or intentions to take actions resulting from the comparison of the two descriptions, and the stages of the experiential leaning cycle the writer indicated passing through.

On the basis of the category construction we developed a coding sheet. Using this sheet, we took a second pass through the data using a binary code (yes/no) for each of the categories describing student behaviours or attributes and took short descriptive notes in the other categories (e.g, isolation, experiential learning cycle). We then constructed summaries of thought processes aspirants passed through in the project; some of these are provided later as "Illustrative Cases."

Through these various processes we moved back and forth into the more interpretive phase of extrapolating underlying assumptions teachers made in defining and describing "problematic" students. The individual reflective conclusions and the write-ups of the "Ladder of Inference" analyses teachers had done themselves were particularly helpful in the interpretive process. Our identification of assumptions was thus grounded in various descriptive elements and teacher self-analyses.

Descriptors of Students

We computed percentages of several descriptors for the problematic students. They were predominantly male, 81%. The model problematic student was a male in the 3rd to 5th grade. The grade levels of the students, of course, were related to the teaching assignments of the participants. In addition, the problematic students were 21% minority and 29% in some form of special education or ESL.

We then computed percentages of descriptors of the behaviours that teachers used to characterise the problematic students. The categories and proportions of cases identified with each category are shown in Tables 21.1 and 21.2. Table 21.1 contains categories specifically related to student disengagement from learning, while Table 21.2 contains categories of behaviours assumed to be threats to pre-conditions for engagement in learning.

Table 21.1 Problematic Behaviours: Disengagement from Learning

Categories	% of Total	Sample Descriptors
Disengaged, time off-task	47%	Disengaged in learning Uninvolved in discussion Not staying on task Unfocused Daydreaming Looking out of the window
Unprepared for learning	32%	Unprepared Homework or assignments incomplete Does not bring materials needed
Irresponsible about learning	24%	Does not care about learning Irresponsible about learning Underachievement

Table 2 Problematic Behaviours: Threats to Pre-Conditions for Learning

Categories	% of Total	Sample Descriptors
Teacher attributed/imputed negative student intention	60%	Manipulating; devious; unmotivated; Misrepresents truth; anti-social; lazy; makes excuses
Verbally obtrusive	63%	Talking; calling out; laughing; interrupts; Makes noises; class clown; makes wise guy comments
Disruptive	34%	Disruptive; distracting; interfering; impeding others
Physically Invasive	32%	Not keeping hands to self Touching, fighting, shoving, pushing, hitting, kicking, throwing Getting in personal space
Physically Obtrusive	29%	Out of seat Walking/wandering around Doesn't sit still
Non-compliant	29%	Doesn't follow/defies rules Does not follow directions Tests authority
Verbally Abusive	18%	Screams, yells; bullies; intimidates
Behaviours indicating negative attitude	18%	Whines; pouts; nags; argumentative; belligerent; apathetic
Annoying attributes	18%	Annoying; impulsive; immature
Taking excessive amount of teacher time	16%	Demands constant/instant attention/assistance
Avoids learning setting	15%	Comes late; leaves early; uses bathroom frequently

Several patterns emerging from the percentage data are described below:

- Males are chosen much more frequently as problematic than females.

This pattern leaps out of the data. It is consistent with prevailing research.

- Behaviours and attitudes perceived to threaten the pre-conditions for learning, teacher control (or inner states), or safety are invariably problematic.
- Disengagement from learning itself is frequently, but not invariably, perceived as problematic.

We derived these two patterns by looking both within each of the two large categories of problematic behaviours and also between them. Taking together the three indicators of Disengagement from Learning, we coded 61% of cases as containing one or more of these. By contrast, all cases contained one or more often many more indicators of Threatening Pre-Conditions for Learning, Control or Safety. This finding suggests that disengagement from learning itself is not the central issue in defining a student as problematic.

Many teachers attributed or imputed to problematic students negative intentions or motivations for their behaviours or attitudes.

We coded this attributional indicator under the category Threats to Pre-Conditions to Learning, Control or Safety, for 63% of the teachers (tied with Verbally Obtrusive for first place). It is an indicator unique from the others except for Irresponsible about Learning.

Only in these two indicators did the teachers make direct attributions to student intentions or motivations, and, in both cases, teachers assigned internal negative states to students on the basis of observations of behaviours or external indicators. The negative attributions ranged from mild to strong. Examples include: “manipulative,” “devious,” “calculating,” “malevolent,” “misrepresenting truth,” “anti-social,” “lazy,” “sneaky,” and “deliberately disrupting instruction.” A seven-year-old was a “con artist.” One’s motivations were attributed to “needing a lot of attention and trying to get as much as he can” and “always looking for opportunities to prove his manhood.” Another “exists to make teachers’ and student’s lives miserable.” A child attending kindergarten was “manipulative” and often suspected of “utilizing a system of selective hearing.”

We also coded the behaviours teachers said they desired from problematic students. These data are found in Tables 21.3 and 21.4. Parallel to the prior tables, these are arranged with desires for specific indicators of student engagement in Table 21.3 and with desires to fulfill the pre-conditions assumed to be necessary for engagement in Table 21.4.

Table 21.3 Desired Behaviours: Indicators of Engagement in Learning

Categories	% of Total	Sample Descriptors
Active engagement participation	45%	Active involvement/ engagement/ participation in learning/discussion Complete work
On-task	34%	Focuses; concentrates; works independently
Shows effort/pride	32%	Takes initiative to learn; shows good work ethic; realizes potential
Prepared to work	16%	On time; stays in class; completes homework; brings materials

Table 21.4 Desired Behaviours: Indicators of Support for Pre-Conditions for Learning

Categories	**% of Total**	**Sample Descriptors**
Compliant	29%	Listens to/follows rules/instructions Obedient
Respects others	29%	Respects others/their right to learn Doesn't antagonise others
Physically Unobtrusive	24%	Takes seat; remains seated; doesn't wander; sits still
Verbally Unobtrusive	18%	Doesn't talk; doesn't make noise; doesn't interrupt
Cooperates with others	16%	Works/cooperates with others
Indicates Positive Attitudes	5%	Shows commitment/enjoyment/excitement; makes the most of experience; is positive
No extraordinary demands on teacher	5%	Not demand attention; not always interrupting

- Most teachers desired both direct student engagement in learning and behaviours supportive of pre-conditions of learning and control.
- A moderate proportion of teachers desired only direct student engagement in learning; a few desired only behaviours supportive of pre-conditions of learning and control.

Turning to the data for the Desired Behaviours, when cases were coded as above, that is, comparing across the two large categories on the basis of indicators noted within each, we found: 61% specified behaviours in both Engagement in Learning and Supportive of Pre-Conditions of Learning and Control; 27% responded only within Engagement in Learning; 12% responded only within Supportive of Pre-Conditions of Learning and Control. Thus the large majority stated engagement in learning within its desire for the problematic student, but a small portion (12%) would have their desires met if the student would simply stop threatening the learning of others and teacher control. Thus, there was no invariant pattern as in the problematic behaviours, but the largest group desired behaviours from both categories.

- Isolation is a frequently used means of responding to problematic student behaviours.

This category of response to problematic students emerged from across the various sections of the case write-up. Teachers indicated in 55% of the cases that in one way or another they or some other adult agent imposed isolation on the problematic students. One form of isolation is physical, for example, being seated or having one's desk located away from other students. Students were reported as having been suspended, served detention or stood against a wall during recess or physical education. Another form of isolation is administered through conscious or sometimes less than conscious non-attention or non-assistance to a student. Teachers used words like "dismissed" and "ignored" to indicate how they essentially did not interact with some students. A middle school teacher described how she tends to act toward people like J "who annoy me.... I tend to dismiss them. It's the way I cope with them. Rather than let them bother me, I'll dismiss them as having some personality flaw and try to totally ignore them...try not to get too...worked up and avoid the person as much as possible." A more subtle form of isolation was described in relation to a first grader: "Each day I try to begin a clean slate with D. I try to get close to him.... In a short time though, he does something that makes me angry, and I sort of give up."

A moderate proportion of teachers reported orienting themselves to act toward problematic students on the basis of reputational "tales" reaching them before the students did.

In 29% of cases we found voluntary reports of reputational "tales" from colleagues. The information in the tales preceded the direct assignment of the problematic students to the teachers. Furthermore, in no case of a reputational tale did the teacher question the validity and conclusions conveyed through the tale until after engaging in the reflective portion of the project. A middle school teacher reported a "litany" of reputational tales about his problematic student: The student "has a history of behaviour which preceded him. Each...previous teacher...made a point of coming to speak to me regarding behaviours observed by them...." A primary level teacher reported: "Prior to D entering my class, I was overloaded with negative information about him.... When he...arrived, he had no chance. All of the 'annoying' qualities I observed were actually what I believed I would see."

Illustrative Cases

Thus far we have described patterns elicited from teacher descriptions of problematic students and several concerning teacher-reported behaviours. Our aim is to present assumptions or mental models underlying teacher thinking about and responses to problematic students. The cases we analysed contained many poignant stories of insight and self-disclosure as teachers discovered how they had put students at risk. We selected four of these as examples of the way teachers described their experience when the invitation to reflective practice was accepted by the mind and the soul. The clarification of assumptions through reflection was especially powerful when these teachers pushed reflective processes to the third and fourth stages of the experiential learning cycle, abstract reconceptualisation and behavioural experimentation. Therefore, in this section we analyse shortened cases to derive or clarify meanings for the patterns already identified. The analyses also illustrate the reflective practice potential of this project. Following the cases we move to providing assumptions/ mental models directly.

Amanda

Amanda, a fifth grade teacher, described a boy she defined as problematic in ways familiar to most teachers. "He often seems off task when working independently...he usually is daydreaming. He prefers to socialise with classmates, rather than complete his work." Amanda gave a clear description of her own leaps of abstraction after observing the student and comparing the observed data to her original conception.

> *My ladder of inference began with observing D glancing around the room during the lesson. After the lesson, D would talk with a student rather than complete his class work. I selected data and added meaning: D isn't really focused or engaged, and he really isn't trying. Next, I drew the conclusion that D doesn't care about learning. Finally, I took action based on my belief which was that other students would benefit from my assistance, and that D doesn't need as much of my attention as his classmates.*

This description exemplifies the tendency to put a student at risk by attributing intent to his/her behaviour, and to withdrawing from or isolating the student when it seems he or she "doesn't care" and is therefore unreachable. Fortunately, Amanda decided to change her behaviour toward D.

> *I need to give D more recognition when he participates in class discussions, as well as to provide opportunities for his involvement…I am now aware of the need to provide D with assistance when he has difficulty completing assignments. This new awareness may also require inquiry to determine why D is not completing an assignment or working independently.*

Amanda and her classmates had taken a course together two semesters prior to this course in which they looked at the power of inquiry in a critical incident. Amanda's failure to use this strategy until she became aware of the assumptions guiding her perception of the student is an example of the power of this activity to "clear the lens" and help teachers interact with students in ways that are consistent with their espousals.

Judith

A teacher in an alternative high school, Judith found her assumptions stemming from generalisations about the population with whom she worked had the power to obscure her perception of an individual. She said,

> *"I am aware that whenever I give a group lesson, J would put his head down and not get involved at all…My urgings to involve him are to no avail…I am convinced that he is on drugs or alcohol, not unlike a lot of the students in our programme." Based on this assumption, Judith withdrew from or isolated the student. She said, "…no other student gets me aggravated like he does. My success rate in turning these students around has been quite high. But he really presses my button…I used to call on him a lot to jostle him, but now I do not make any effort to get him involved during group lesson time…after all I am quite relieved not to have his disruptions."*

Judith reported that she usually looked in the folders of "problem students," but in this case had not taken the time to do so. When she looked and discussed her frustration with a colleague, she discovered the real explanation for the student's behaviour.

> *I started having problems with J in early September…After some reflection, I remembered a particular group lesson on ice-breaker games I was running…I had the students group themselves…One of the categories I used was number of siblings…it was during this exercise that J initially became uninvolved…L [the colleague] made me aware that J's brother died from a drug overdose a couple of*

> *weeks prior to J's entering our programme...His being "out-of-it" was an escape from the emotional pain, of which I reminded him...It was written in his folder that he is very shy and doesn't like to be put "on the spot." But my insistence that he take part in the group by calling on him, made him withdraw more. I hope to be more sensitive to his painful situation in the future...As for his shyness, I will let him take the initiative...To get it started, though, I plan to have a private talk with J about what happened in September.*

Again, the initial assumption—that the student didn't care, that there was intention in his behaviour—led to the teacher's withdrawal, thus putting J at risk by guaranteeing that the cycle of disengagement would continue. Confrontation of the assumptions led the teacher to reach out to the student. There is now a possibility that J will have his need for belonging met, at least with one teacher who has learned about herself and is ready to change the way she looks at him.

Sophia

The story of Sophia and M illustrates the way a teacher can personalise a student's behaviour and put him at risk by becoming desperate for separation from the feelings that emerge from interactions with the student.

> *M cannot sit still. He taps his head, he taps his feet, he taps his desk...An hour at a time is about all I can take of him without a break...I don't know if I'm feeling sorry for him, guilty about the rest of my class being disturbed or angry that his mother has chosen this year to take him off his medication....I was warned about him by my colleague... "He <u>will</u> drive you crazy." Is it too much to ask that he show the slightest interest in working with other children in the room, cooperating while in a group, or sharing his ideas? It seems that the only time M attempts to join the others is when they are at the computer, or playing some other sort of game.*

This narrative is full of the intensity and confusion that Sophia felt when this child confirmed her attributional assumptions about students—that they withhold cooperation, and the sharing of their ideas intentionally—. Her query "Is it too much to ask...?" exemplifies her response to a challenge to her feelings of efficacy and control. She wrote as openly about the experience of completing the reflexive loop.

> *It was as if a light bulb went on as I analysed the behaviours I observed and compared them to my mental models of children who have been classified ADHD….I found myself becoming quite fond of M…given the chance, he has an interesting sense of humour which others can appreciate…Initially, I think I allowed myself to see M's disability as my problem because of how it affected my class…In reality, the problem was always M's, not mine, and I realized I was there to help him find a way to deal with the repercussions they had on his life…. We are taking steps one at a time….I have focused my energy and my patience on my vision for M…Last week, the children were choosing small groups among themselves….M sat quietly as this went on anticipating he would be partnered with me as usual….Then, Alex and Greg walked across the room and stopped at M's desk…. "Let's work on this M," Alex said. M glanced at me and flashed a huge smile!"*

This experience allowed Sophia to increase her sense of self-efficacy while developing a relationship from which she can derive a teacher's greatest reward—the knowledge that she has reached one student, a student whose problems might have pushed him out of the school community if not for her willingness to commit fully to the reflective process.

Thea

The final story provides another view of an experienced, dedicated, caring teacher who discovered difficult things about herself. Thea is a third grade teacher. She said,

> *I remember D's kindergarten teacher describing him as the most obnoxious child she had ever met…He always pushed and shoved other kids for no apparent reason; he often disrupted the class by calling out and deliberately falling out of his chair…His first and second grade teachers had the same complaints…Before he became a third grade student of mine, I had several unpleasant encounters with him….I caught him running and screaming in the hallway…I had seen him physically fighting….Each time he would deny any wrong doings… I cringed when I saw his name on my roster…For the past month of school, D has served detention for not completing homework, fighting with other students, constantly calling out in class and acting disruptively…*

Thea chose to engage the child in dialogue after seeing other teachers consistently single him out for reprimand and punishment when she did the observation portion of the project. She said,

> *I learned that he is very sensitive, intelligent, humorous, lonely, and sad...We discovered that we share a common love, all types of music...Watching D with Adam on the basketball court and in the science class made me realize that he is very sensitive and compassionate towards others...I also realized that D has leadership qualities I did not recognize before...I realised that I "jumped" on him every time I thought he was doing something wrong. I guess I was afraid that if I was not very tough on him from the beginning then I would lose control over him. I was also afraid that the other children would follow his lead, and that he would become the authority in the class. This led me to see that I am more insecure than I thought...I realised that I am more of a controller than I previously cared to acknowledge...Since I had made a prejudgment of him, I was afraid of him challenging me and winning..I wanted to hug him and ask him to forgive me...I found myself aching for him...D and I have now established an open line of communication...We have gotten to know each other and built a relationship...We have successfully broken the cycle of the control struggle between us.*

Thea's use of the word "we" in the last comment indicates to her transition from a posture of control to one of partnership with D. She can now enjoy D, and use the information that she gathered about herself in her future interactions with "problem" students. She has significantly reduced the risk she and her colleagues had placed D in. Most importantly, she has experienced truly transformative learning and now knows her own power to reflect on and modify her own perceptions and behaviour.

Assumptions or Mental Models

Here we posit the underlying assumptions or mental models held by the teachers, many of who place the students at significant risk. We extrapolated these from the patterns in descriptions of problematic students along with patterns and insights gleaned from the reflective portion of the cases, as illustrated by the cases just rendered. The following phrase serves as a prefix for all assumptions listed below:

As perceived by teachers...

- Male students are much more problematic than female students. (That is, they are more likely to engage in threats to pre-conditions to learning, control or safety and more likely to be disengaged from learning.)
- Disengagement from learning alone does not make a student problematic, but regularly threatening the pre-conditions for learning, control or safety always does.

We draw data from the cases to illustrate. Amanda's fifth grader was problematic not just because he was off task and failed to complete work, but because he daydreamed and socialised (threatening pre-conditions for self and others) and did not "*care about learning*" (attribution of intent). For Judith, the student was more problematic because he chose to be on drugs or alcohol (incorrect attribution) than because he was uninvolved in group lessons. J was more problematic to Sophia because of his not sitting still and tapping, his disruption of others (pre-conditions) and threat to her *control* than because he was not deeply engaged in learning. For Thea, D was problematic because he called out, disrupted (pre-conditions for learning), and fought (safety) as well as failed to complete homework.

The roots of problematic behaviours lie within students or their families (but never in the teacher or the larger system of education).

Attributions for problematic behaviours were universally made to students themselves and in some cases to their family circumstances. (Prior to the reflective section, only one Kindergarten teacher mentioned a structural element, a one-hour music class, but then did not specifically relate it to problematic behaviours.) However, following the project's reflective phase of comparing two descriptions, the teachers universally took responsibility for some or all of the problems they had initially attributed solely to the students or families. There is a stark and amazing contrast between the pre-and post-reflection sense-making and assumption sets among teachers across four years. The post-reflection contrast helped us discover the original assumption.

Information about problematic students from colleagues is valid and to be attended to (but not questioned).

The assumed validity and attention given to reputational tales from colleagues and the powerful suasion they had upon teachers is well illustrated in the cases of Sophia and Thea. Both of them based actions toward their students on these reputational reports. In all cases where reputational tales were voluntarily mentioned they were taken as valid; no question was ever raised. Only following reflection did teachers question the validity or utility of these reports.

Once I have determined that a student is unreachable, I isolate him so as to prevent him from disrupting other students and causing me excessive psychic pain.

This assumption is grounded in our broad interpretation of whole cases and as such is harder to illustrate specifically. We may, however, find aspects of it in the illustrative cases. Amanda in her reflective deconstruction using the ladder of inference described how her attribution of "he isn't trying" was escalated to the conclusion "D doesn't care about learning." At that point she determined that he was unreachable. Her action was to withdraw from or isolate D: "I took action based on my belief…that other students should benefit from my assistance, and that D doesn't need as much of my attention as his classmates." Through withdrawal she reduced her daily confrontation with the fact that D was not learning. Judith also showed us this assumption in action. She determined her student to be unreachable through her attribution of him being on drugs or alcohol. She stopped even trying to engage him in group lessons. Rather, "now I do not make any effort to get him involved during group lessons…I am quite relieved not to have his disruptions." Her withdrawal isolated the student and as we argued earlier guaranteed that his cycle of disengagement would continue—that is, until she went though the reflective phase later on.

We hypothesise that attributing negative intentions to a student is an integral component of moving beyond simply considering the student to be problematic to the conclusion that s/he is unreachable. Further, special education or minority status may also add assumptions leading to the larger assumption of unreachability and then on to isolation/withdrawal. Students who receive these attributions from teachers are placed at very high risk of failure to learn.

Unilateral action on the basis of the knowledge I possess about a problematic student is a valid approach to the problem.

All of the teachers used what they knew of the student through reports and current and prior observations consciously and unconsciously to frame strategies for teaching the problematic student. In all of the cases above, the teachers observed the student, drew conclusions, and framed their behaviour based on their knowledge. None of the teachers in the study mentioned attempting a dialogue with the student about the problem prior to the exercise.

I must have complete control of the situation before teaching and learning can take place.

Judith did not use the word "control" but clearly she assumed the need for it. In data beyond what is presented in the case above she described how J *always* made wise guy comments and demanded that "*his* needs" be taken care of first. Part of her withdrawal/isolation response was to refrain from waking him from sleep during group meetings. Allowing him to sleep was a form of controlling the situation as a prelude to teaching the remainder of the students. Sophia was angry at J's parents for taking him off medication—a form of controlling him. Clearly she perceived getting J under control by other means as a pre-condition for teaching and learning to occur. She felt "*guilty* about the rest of the class being disturbed" when he and the situation were not under control. Thea attempted to control D through detention and other means. In the reflective portion she admitted being "afraid" that she "would lose control" and that "other children would follow his lead." For Thea her control of the situation rather than his was a pre-condition for teaching and learning. In a case of an early childhood teacher not illustrated, we find one of the strongest statements of the control assumption, identified through her reflection:

> *All my experiences/mental learning models (elementary school, my student teaching experience, my college roommate, and personal thoughts—which have unfortunately turned into anxiety and panic attacks) are about control. All of these people and ideas have fostered my own personal thought of "being in total control." I think subconsciously these ideas have created mental models of (regardless of the situation), "I must be in control."*

Another teacher at the elementary level in her reflection concluded that she wanted to develop a more trusting relationship with her problematic student but realized that meant not conveying her existing mental model. She reflected:

> *How can the student trust me when I have conveyed directly and indirectly an attitude that relates - I already know what you are about? Teachers do this based on our past experiences with troubled students. We assume all students are the same and we will control the inappropriate behaviours immediately.*

A third grade teacher reflected as follows concerning the issue of control:

> *The problem I face is an issue of control. I sometimes like the feeling that my class is "controlled," when they are all working at the same pace, and everything is going smoothly. As soon as something disrupts that (like J C), I am very quick to label him as a problem student instead of thinking what I could do to make things better....I even blame his parents for not teaching their child control....*

Reflective Practice Outcomes

This project invites teachers to engage in reflective practice; in fact it directs them very straightforwardly toward examining their theories-in-use/mental models if they take the invitation seriously. Most do. By our analysis, 74% of the teachers engaged in a reflective practice cycle. That is, they reached at least the third or fourth stage of the experiential learning model, abstract reconceptualisation or behavioural experiment. Put differently, 42% of them described new behaviours they were testing (Table 21.5) and 68% of them described some kind of intention to change thought or behaviour (Table 21.6).

Table 21.5 Actual Behaviour Changes Following Reflective Practice

Behaviour	% of Total	Sample Descriptors
Gather more information	44%	Talk to child study team Refer to psychologist Meet with parents Refer to social worker Talk with team partner
Talk with or listen to student	44%	Ask him where he would like to work (tech lab) Get to know him Develop a relationship with him Discuss current situation, seek work agreement Help him to understand the “rules of school” Talk with him about his behaviour toward others

Testing New Behaviours

Sixteen or 42% of the teachers reported testing out new behaviours. Two categories encompassed most of these new behaviours: Gathering More Information and Talking With and Listening To Students. Each category contained 7 reports or 44% of those who reported behavioural change.

Gathering more information

These individuals were looking for more information to extend the insights they had already reached from the reflective process of comparing the two descriptions. Several spoke with a psychologist or social worker; several contacted the child study team; several spoke with family members, parents or sibling; one asked for more information from her team partner. Of this group, 5 or 71% had specifically indicated actions, before reflection, to isolate the student. Here they were seeking information and insights to be used to build relationships.

Talking with and listening to students

This group (3 of whom also sought more information) reported direct actions to build relationships so that valid information might flow and be heard in each direction. Thea sat with and engaged D in conversation to gain a better understanding and appreciation of him. She also shared and disclosed things about herself. She affirmed some of the insights she had gleaned in the careful observation, that he was sensitive, intelligent, and lonely. She de-problemitized D in the process and noted that "we" freed ourselves from a struggle for power. Thea was building a relationship in which she could teach and D could learn. In achieving this she rejected the *control first* assumption from which she began, as well as several of the other assumptions extrapolated in this paper. Sophia's change in behaviour entailed working with J, essentially coaching him "to help him understand the 'rules' of the game called school." Another teacher who wrote of a "young" third grader, upon reflection changed her behaviour. "D and I discussed his current situation and agreed to work together to get to the preferred situation." In addition, she invoked the help of the psychologist and his guardian. She noted: "These interventions are only part of the beginning of a long and continuous process for this student to receive an equal opportunity to learn—without being classified as special." She concluded: "As educators we have the ability to enhance or destroy a student." With D she chose enhancement and moved from a position of isolating him to building a working relationship.

Intentions to Change Thoughts and Behaviours

Many of the teachers indicated the intention to change their behaviour toward the problematic student after moving through the reflective practice cycle. Some did not have the opportunity to try the new behaviours because they no longer worked with the student; some did not have the opportunity within the time frame of this course, and others chose onl y to posit possibilities for change. The intended changes fell into three patterns: ways that the teacher would respond differently *toward* the student, ways that s/he would move forward *with* the student, and the intention to change self. The first pattern suggests an intention to continue a power/control relationship with the student, a relationship with some potential but representing a maintenance of the initial "control first" assumption. The second pattern indicates movement from the control assumption to one of partnership in learning. The third group of behaviours indicates awareness of self as the real source of the problem with the student. These three patterns, like the others, contained many overlaps.

Table 21.6 Intended changes following Reflective Practice

Change	% of Total	Sample Descriptors
Change thinking/behaviour toward student	54%	Change my pedagogical behaviour Alter other behaviours toward student Respond more patiently, compassionately Implement behaviour modification Gather more data from others
Engage with student	27%	Help support child in interactions with peers Help build trust and responsibility Help student change his/her mental models Talk with student
Self-referent changes	38%	Monitor my own behaviours using R.P. Focus on Personal Mastery Increase awareness of differences among students Pay more attention to underlying causes of behaviour Take leadership role in changing school approach

Conceptual Elaborations

As we read the cases and extrapolated assumptions, we were struck again and again by the ability of several existing conceptual frameworks to provide additional meaning and explanatory power to what we were finding. The first of these is Dan Lortie's classic sociological interpretation of the ethos of teaching in School teacher (1975). All we read, extrapolated, and interpreted could in one way or another be made more understandable through the concept of psychic rewards and teachers' daily striving to reap them. "Psychic rewards consist entirely of subjective valuations made in the course of work engagement…." (p. 101), and they are the primary rewards teachers seek. Lortie found that, "Knowing that I have 'reached' students and they have learned" (p. 105) summarized psychic rewards for the vast number of teachers, and we confirmed it 20 years later (Cohn & Kottkamp, 1993). Further, Lortie explained that the implicit argument in the second half of the book is that teacher role expectations have their locus in the reward structure—in psychic rewards (personal communication).

Problematic students by definition block teachers from receiving the psychic rewards they seek. Teachers feel they cannot "reach" these students themselves, and worse they threaten the receipt of rewards from the majority of other students by destroying the pre-conditions teachers perceive necessary for teaching and learning to occur—the indicators listed by our teachers in their descriptions of problematic students.

In his prelude to the chapter, "Endemic Uncertainties" Lortie wrote, "It is necessary to keep...uncertainty in mind if we are to understand the psychic world of classroom teachers, for uncertainty is the lot of those who teach." (p. 133) What teachers want is "the good day...marked by getting through to students, finishing one's plans, and effective teaching.... At the end of the day the teacher feels worthy." (p. 172) Worthiness comes with the receipt of psychic rewards. But the "good day" is always uncertain and so the rewards that come with it. Problematic students are a primary agent of uncertainty. They wreck "good days;" they steal psychic rewards.

The assumptions we derived may be understood in light of teachers' ongoing struggle to reap what is never certain. Disengagement of a single student is less problematic than when that student threatens the conditions that make receipt of rewards from the rest of the students possible. Control is exercised immediately as a major strategy to reduce uncertainty and the conditions that threaten learning, thus teacher's rewards. Isolation in its physical manifestation is a strategy to reduce the uncertainties coming with disruption; in its interactive withdrawal form, it deadens the psychic pain of the constant reminder that the teacher is not reaching a particular student. Reputational information from colleagues is the early warning system that allows a teacher to begin to build the defence to stave off yet more uncertainty. These assumptions are understandable in terms of teacher ethos and culture. Further, Lortie explained that acculturation into these assumptions begins in the "apprenticeship of observation" when future teachers are still students.

It is tragic that what our teachers have found to be unintended and self-defeating results are passed along with these assumptions from generation to generation of teachers. We note that the process of reflective practice for many of these teachers had the power to raise to the level of consciousness what was unconscious for them in the inherited culture and to raise the necessary questions about the state of "what is" to enable them to think and therefore act in new ways. The new ways they created increased their sense of self-efficacy and their receipt of psychic rewards as an outcome of greater student engagement and learning.

Osterman and Pace (1999) used the conceptual frameworks of student engagement and teacher responses to disengagement in their study of pre-service teacher beliefs. Their review of the literature in these areas indicated that teachers tend to assign responsibility for disengagement to students themselves and in response to student disengagement isolate or withdraw from them. (Adelman & Taylor, 1990; Kagan, 1990; Osterman, 1998) The pre-conditions for engagement include belonging and autonomy (Connell & Wellborn, 1991; Deci, Vallerand, Pelletier & Ryan, 1991; Ryan, 1995); these are diminished by teacher isolation and withdrawal behaviours.

Osterman and Pace's study asked 80 pre-service teachers to respond to a hypothetical situation of a disengaged second grade boy. The teacher aspirants described what it is like to have this student in class, explained the possible causes of the behaviour, and told what they would do about it. The findings confirmed the literature, with the majority suggesting that the explanation for the student's behaviour was within the student and "there was a sense that many perceive Albert's behaviour as intentional." One third of the participants said that their response would be referral and removal. Of the 62% who assumed responsibility for the student's behaviour, one third said that they would address the problem using a programme of punishments and rewards. Osterman and Pace concluded that "If teachers perceive disengagement as chronic and unalterable and if they perceive that their own efforts are likely to be unsuccessful, this could very easily encourage them to avoid the problem, thereby preserving their own sense of competence and protecting the quality of the classroom for the majority." (p. 10)

There are multiple implications in the striking similarity between this study of pre-service teacher beliefs and projected classroom behaviours and the current study of the mental models of experienced teachers. While responses were not broken down specifically by how many participants would change their behaviour *toward* the student and how many would change by engaging *with* the student, the prevalence of belief that the appropriate response to disengagement is to shift the blame to the student and then remove him or her or "modify" the behaviour is evident in both groups.

The Let Me Learn Process: Confronting and Changing Negative Assumptions

Having argued that the student a teacher describes as problematic is at risk and having extrapolated negative assumptions associated with teachers who define students as problematic, we now explore what might be done to shift teacher assumptions and reduce placing students at risk. We briefly describe the Let Me Learn process (Johnston, 1996, 1998) and indicate how it directly confronts and addresses many of the assumptions we discovered. This is necessarily a brief discussion; the reader is directed to the more complete paper by Johnston herself.

The Let Me Learn process (LML) is grounded in the Interactive Learning Model (ILM) (Johnston, 1996, 1998). ILM is conceptually based in literature on cognitive and brain science, multiple intelligences, and learning styles. The model depicts the simultaneous interactions of cognition, conation, and affectation as they form four synchronous patterns of mental processing: Sequential, Precise, Technical, and Confluent. These patterns found in varying amounts in all learners represent how the learner sees the world, takes in and integrates stimuli, and formulates responses to them.

All learners do learn, but a shared knowledge of one's patterns, the patterns of learner colleagues and of the teacher learner/learning facilitator provides the deep awareness needed to create an environment in which learning is maximized for all. The LML process puts great emphasis on the learner taking control of how to make learning work for him/herself. Children go through the motivating transition from passive object acted upon by outside agents to active learner responsible for and confident in negotiating with the environment (including teacher) to secure the personalised activities that make learning work for the unique learner that each individual is.

Children are empowered to go through this transition because the teacher goes through a transition with them, a double-loop learning transition in which his/her assumptions about teaching, learning, control, shared responsibility and collaborative work are all likely changed. The teacher learns that how s/he learns affects how s/he teaches and that this "natural" approach only works well for some of the students. So the primary focus shifts from teaching to learning, to observing and listening to learners articulate their needs, successes and difficulties. The learners voice become stronger and the teacher listens more deeply. As focus shifts to learning and to student responsibility for it, teacher focus on external control ebbs as active learning itself becomes the internalised control system within the classroom.

Teachers undergo this transition and assumption change by engaging in a development process consisting of repeated experiential learning cycles of reflective practice. In one element of development, teachers choose specific students who fit the descriptors: "the ideal student," "the one I can't reach," "one who drives me nuts," and "the enigma." Teachers then pay very careful attention to these students, their work products, patterns of interaction, etc. As they proceed, teachers learn how the relationship between their own learning patterns and those of these categories of thinking about students are systematically patterned. The "ideal" student is one whose patterns matches the teacher! The "can't reach," "drives me nuts,' and "enigma" students have patterns quite different from the teacher. The teacher learns that the "problems" with these students lie as much within him/her as they do the student. In fact, it is a matter of beginning to listen more carefully to the voice of the learner.

Teachers experience the LML process and come to understand and base their work on the ILM model by going through an experiential and reflective practice development process where they confront the negative assumptions described in this paper and begin to replace them with opposite ones. When the teacher's primary focus shifts to learning, concern for engagement/disengagement replaces concern for behaviours about preconditions for learning as the center of teacher attention. When teachers begin to listen carefully to the voices of learners, they shift away from believing they must take unilateral action; they stop believing that students are unreachable and drastically reduce behaviours that isolate them; teachers stop attributing negative motivations to behaviours which unlike before they now have a means for beginning to understand through dialogue and negotiation with the student (as was the experience for Thea and others in the cases above); they stop attributing all problem behaviours to students and parents and recognise when and where their actions and assumptions contribute to student difficulties. When teachers begin to listen to the voices of students and collect data with them directly, they have less need to give credence to untested reputational tales of colleagues. When teachers begin to act on the belief that students are responsible for their own learning, they put more trust in collaborative learning where students are grouped so that learning patterns differ and strengths are shared, and collaborative learning further reduces isolation. When students are learning, working with each other responsibly and communicating openly with teachers, the need for complete external control evaporates. When double-loop learning occurs among teachers in both assumptions and behaviours in the ways just described, students learn and teacher psychic rewards grow tremendously; conditions that rob teachers of these intrinsic rewards decline, uncertainty decreases, "good days" come more often.

The Let Me Learn model is a powerful tool that can be used to confront and reverse at risk mentality which produces assumptions and behaviours that exist when teachers perceive students as problematic.

References

Adelman, H.S., & Taylor, L. (1990). *Intrinsic motivation and school misbehaviour:* Some intervention implications. *Journal of Learning Disabilities*, 23, 9, 541-550.

Argyris, C. (1993). *Knowledge for action: A guide to overcoming the barriers to organizatinal change*. San Francisco: Jossey-Bass.

Argyris, C., & Schon, D. (1974). *Theory in practice: Increasing professional effectiveness.* San Francisco: Jossey-Bass.

Cohn, M.M., & Kottkamp, R.B. (1993). *Teachers: The missing voice in education.* Albany, NY: State University of New York Press.

Connell, J.P., & Wellborn, J.G. (1991). Competence, autonomy, and relatedness: A motivational analysis of self-esteem processes. In M.R. Gunnar & L.A. Sroufe (eds.), *Self processes and development* (Vol. 23). Hillsdale, N.J.: Lawrence Erlbaum Assoc.

Deci, E.L., Vallerand, R.J., Pelletier, L.G., & Ryan, R.M. (1991) Motivation and education: The self-determination perspective. *Educational Psychologist*, 26, 3 & 4, 325-346.

Dewey, J. (1938). *Logic: The theory of inquiry*. New York: Holt.

Johnston, C. A. (1998). *Let me learn*. Thousand Oaks, CA: Corwin Press.

Johnston, C. A. (1996). *Unlocking the will to learn.* Thousand Oaks, CA: Corwin Press.

Kagan, D.M. (1990*).* How schools alienate students at risk: A model for examining proximal classroom variables. *Educational Psychologist*, 25, 2, 105-125.

Kolb, D.A. (1984). *Experiential Learning: Experience as the Source of Learning and Development.* Englewood Cliffs, NJ: Prentice Hall.

Leithwood, K., Begley, P.T., & Cousins, J.B. (1994). *Developing Expert Leadership for Future Schools.* London: Falmer Press.

Lortie, D.C. (1975). *Schoolteacher: A sociological study.* Chicago: University of Chicago Press.

Osterman, K.F., & Kottkamp, R.B. (1993). *Reflective Practice for Educators: Improving Schooling through Professional Development*. Newbury Park, CA: Corwin Press.

Osterman, K.F. (1998). Student community within the school context: A research synthesis. A paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA.

Osterman, K. & Pace, D. (1999). Pre-service Teacher Beliefs about Student Disengagement. *Teaching Education Journal*, 10,2.

Ryan, R.M. (1995) Psychological needs and the facilitation of integrative processes. *Journal of Personality*, 63(3), 397-427.

Senge. P.M. (1990). *The fifth discipline: The art and practice of the learning organization.* New York: Bantam Doubleday Dell Publishing Group.

• CHAPTER 22 •

Intercultural Communication Training Respectful of Learners' Characteristics: a Pedagogical Model for Social Promotion of Intercultural Communication, Expertise and Skills

Colin Calleja

The escalating immigrant presence in Europe highlights certain issues of diversity in terms of language, para-language, religion, territoriality, class, ethnicity and race. The reality today more than ever is that 'most, if not all, nation States are differentiated polyethnic States...' (Gundara, 2000: 24). While this reality, one can argue, has always been an integral part of most European historical reality, most Europeans, and in particular Mediterranean countries, are experiencing a 'new' immigration phenomenon. The new wave of immigrants from Africa, sometimes referred to as the 'boat people' that cross the sea from the shores of Africa to find a better life in the perceived more affluent countries of Europe, has implanted a new wave of racial awareness which often resulted in racism both at the level of popular talk – man in the street chatter – and of the pseudo-philosophical and I dare say the pseudo-political discourse, which often result in social and economic policies of a neo-liberal orientation (Fridell, M. 2008).This paper will not attempt to engage in a discussion of the political and moral dilemmas that such a complex phenomenon raises. This paper takes an a-priori political stance that multiculturalism has strengthened or is in fact strengthening the cultural life of Europe. The recognition of the enrichment that different cultures bring to a specific society needs to be celebrated and embedded in the life of the people that make up that society.

This paper was first published in the Journal of Linguistic and Intercultural Education (JoLIE) in 2009.

Such recognition of diversity needs to be a complex appreciation of the concept because diversity is not only between the dominant society and the minorities, but also diversity between the different minorities in a specific nation. It is, therefore, believed that this principle needs to be entrenched in the whole of the educational system that values diversity.

This principle was transferred to an agenda of intercultural training, a lifelong learning programme within the Socrates/Grundtvig projects – SPICES (Social Promotion of Intercultural Communication Expertise and Skills). This training programme has built a specific pedagogical model that responds to the diversity of learners' learning profiles and methodology. Such a model would help in a paradigm shift from a negative analysis of the realities, such as xenophobia, to a more positive, solution-oriented discussion of the issue, namely possibilities for enhanced communication, leading to better understanding and appreciation of behaviours and intercultural differences. Such understanding "ultimately promotes clearer communication, breaks down barriers, builds trust, strengthens relationships, opens horizons and yields tangible results..." (Kwintessential, 2009).

This paper presents the work developed within the framework of lifelong learning, Grundtvig 1.1, a project that involved seven partners who came from Bulgaria, Germany, Italy, Slovenia, Spain and Malta. The objective of this project was to illustrate a method in which persons-professionally-in-contact-with-mobility, such as intercultural communication trainers, language educators, communication facilitators, intercultural mediators, may use to create training/learning packs for their trainees to acquire intercultural communication skills and/or a second language as language of the context (Klein et al, 2007:13-14). The second target group are the adults-in-mobility (for work, study, tourism, immigration etc.).

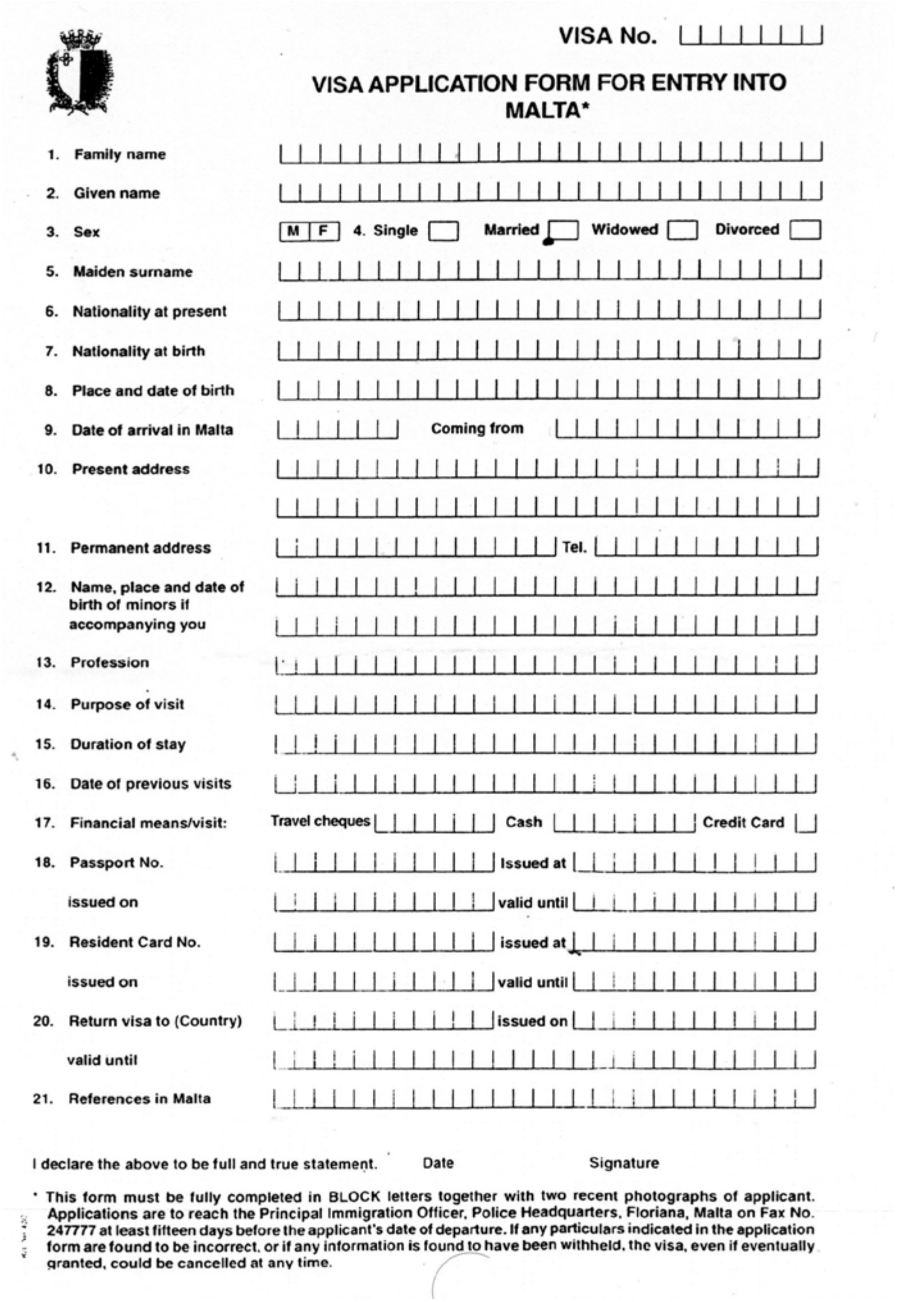
The products of this project are based on two fundamental understandings. The first is the recognition of interculturalism, namely the fact that societies are made of groups that are involved in continuous discussion and willing to be subject to mutual influence. In the words of Balboni (2002), "in the intercultural society the enrichment is philosophical: one discovers other points of view, other ways of conceptualising reality, other styles of life" (p. 210-211). The second is the recognition of diversity of learners and thus the need of a pedagogical model that addresses these differences within a community of learners, thus providing an environment that is conducive to learning and in which participants learn in full respect of each other's learning modalities.

Interculturalism

This project departed from the recognition of interculturalism as a positive reality that is enriching the 21st century societies across Europe and beyond. At the same time, the project partners were aware of the challenges that this reality brings to the communication efforts that citizens of these nations encounter in their attempt to dialogue. These challenges can create 'the other' within a society that in principle is trying to go beyond tolerance and create an interrelationship between different cultures present in any one society. It is, therefore, crucial to create means of intercultural communication that recognises and values as equal different styles of communication, without imposing any one mode of communication on another. Thus, according to the definition developed within this partnership, intercultural communication (ICC) "is a way or a style of communicating between people who refer to different cultural backgrounds" (Klein et al. 2007: 15).

Thus, the project redefines intercultural communication as a process of communication that involves a complex interaction of a range of communication vehicles that involve verbal (language), paraverbal (voice), non-verbal (body) and visual (colours, forms). These gave this partnership the foundations of the methodology that moves away from the traditional, artificially generated, verbal language-based learning scenarios to the creation of materials that are extracted from the context. These materials are not necessarily written texts but also verbal interactions originating from multiple institutional contexts where 'adults in mobility' and 'adults professionally in contact with mobility' interact. These settings present a challenge to communication between the person professionally in contact with mobility and the person who is in mobility seeking to communicate a need (see figure 22.1 and figure 22.2). Written and spoken materials from such contexts constitute prototypical training material through which trainees will be given exposure to, encouraging them to analyse, reflect and react to such materials. Various media are used to help participants to're-live' the situation (video recording, textual analysis, decoding of non-verbal and paraverbal behaviours). These contextual resources are accompanied with a number of tools that can be used by trainers and trainees to help them through the process of selecting and analysing written, spoken and visual texts (see Figure 22.3).

Figure 22.1 Written communication – A resource from the Maltese context



VISA No.

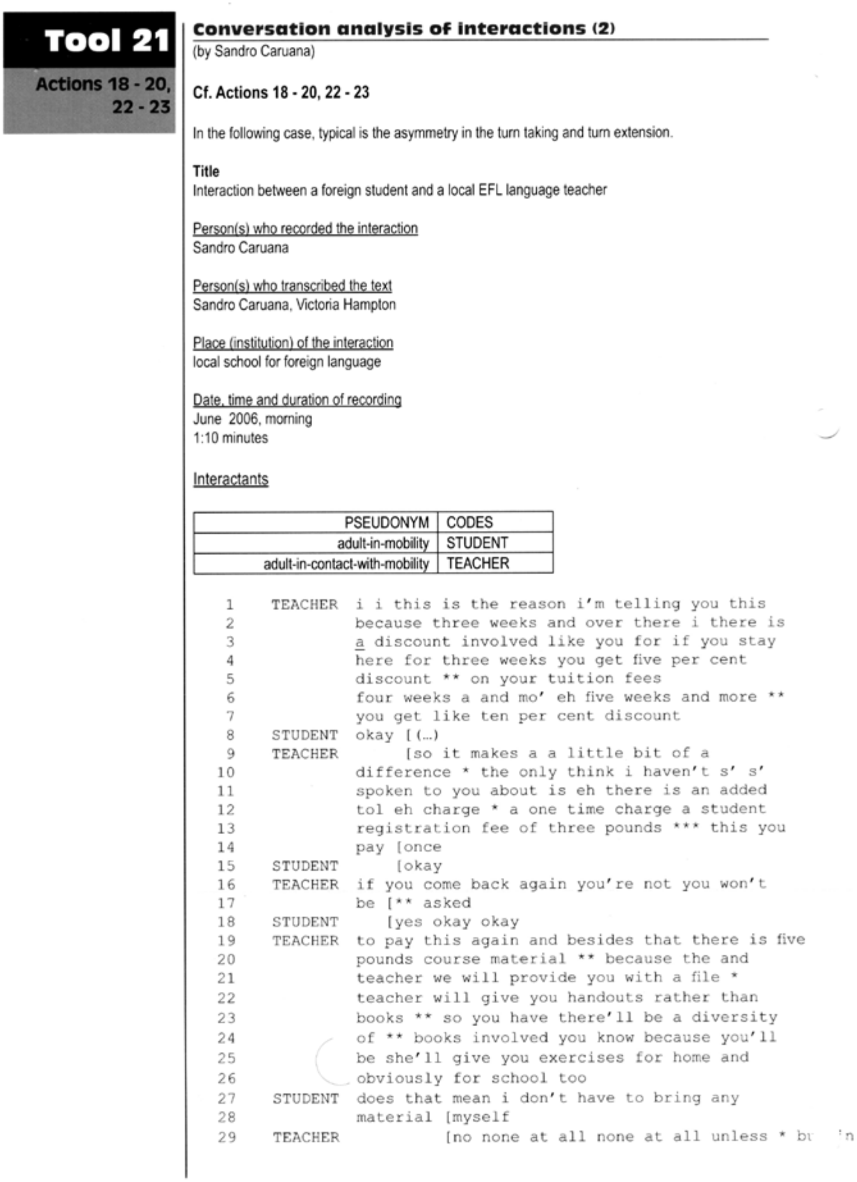
VISA APPLICATION FORM FOR ENTRY INTO MALTA*

1. Family name
2. Given name
3. Sex ☐ M ☐ F 4. Single ☐ Married ☐ Widowed ☐ Divorced ☐
5. Maiden surname
6. Nationality at present
7. Nationality at birth
8. Place and date of birth
9. Date of arrival in Malta Coming from
10. Present address
11. Permanent address Tel.
12. Name, place and date of birth of minors if accompanying you
13. Profession
14. Purpose of visit
15. Duration of stay
16. Date of previous visits
17. Financial means/visit: Travel cheques Cash Credit Card
18. Passport No. Issued at
issued on valid until
19. Resident Card No. issued at
issued on valid until
20. Return visa to (Country) issued on
valid until
21. References in Malta

I declare the above to be full and true statement. Date Signature

* This form must be fully completed in BLOCK letters together with two recent photographs of applicant. Applications are to reach the Principal Immigration Officer, Police Headquarters, Floriana, Malta on Fax No. 247777 at least fifteen days before the applicant's date of departure. If any particulars indicated in the application form are found to be incorrect, or if any information is found to have been withheld, the visa, even if eventually granted, could be cancelled at any time.

Figure 22.2 Conversation analysis of interaction



Tool 21

Actions 18 - 20, 22 - 23

Conversation analysis of interactions (2)

(by Sandro Caruana)

Cf. Actions 18 - 20, 22 - 23

In the following case, typical is the asymmetry in the turn taking and turn extension.

Title

Interaction between a foreign student and a local EFL language teacher

Person(s) who recorded the interaction

Sandro Caruana

Person(s) who transcribed the text

Sandro Caruana, Victoria Hampton

Place (institution) of the interaction

local school for foreign language

Date, time and duration of recording

June 2006, morning

1:10 minutes

Interactants

PSEUDONYM	CODES
adult-in-mobility	STUDENT
adult-in-contact-with-mobility	TEACHER

TEACHER i i this is the reason i'm telling you this because three weeks and over there i there is a discount involved like you for if you stay here for three weeks you get five per cent discount ** on your tuition fees four weeks a and mo' eh five weeks and more ** you get like ten per cent discount

STUDENT okay [(…)

TEACHER [so it makes a a little bit of a difference * the only think i haven't s' s' spoken to you about is eh there is an added tol eh charge * a one time charge a student registration fee of three pounds *** this you pay [once

STUDENT [okay

TEACHER if you come back again you're not you won't be [** asked

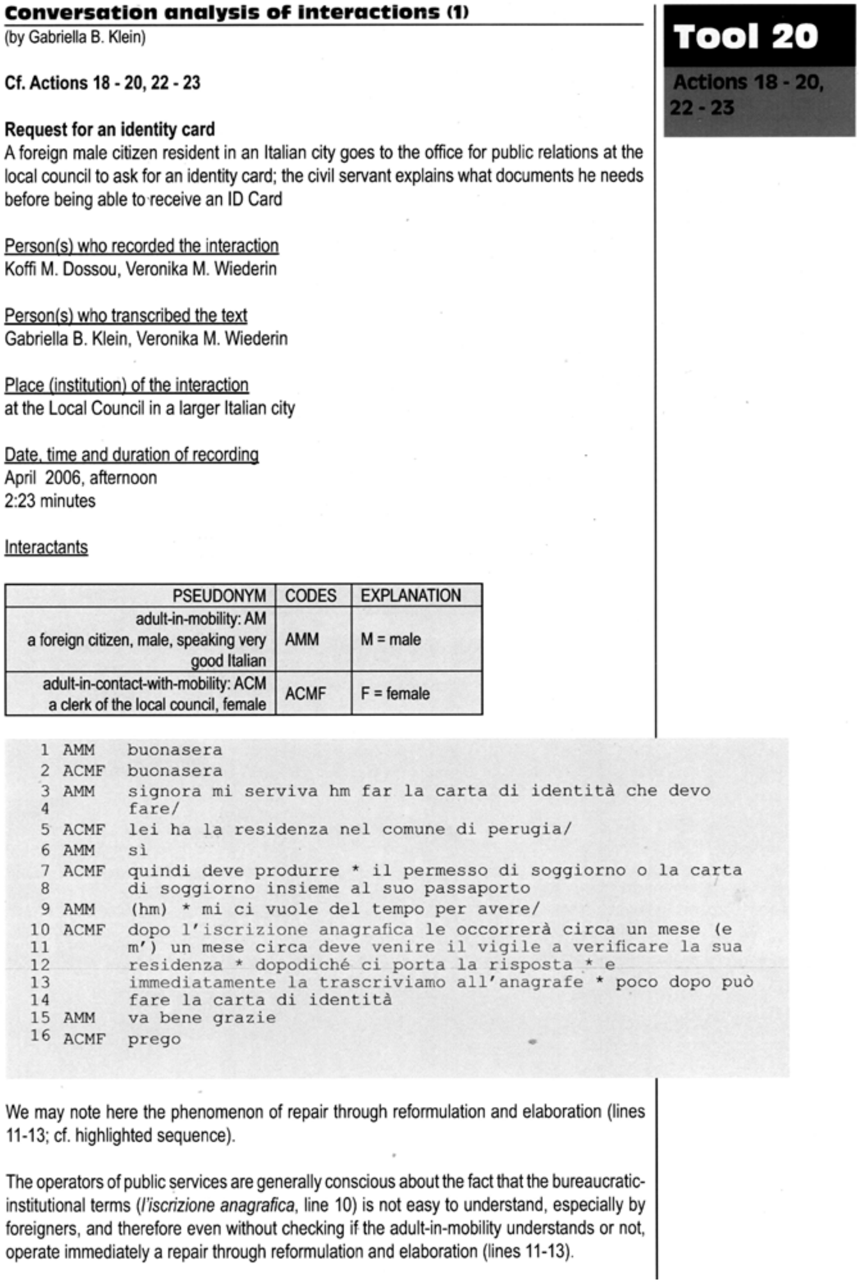
STUDENT [yes okay okay

TEACHER to pay this again and besides that there is five pounds course material ** because the and teacher we will provide you with a file * teacher will give you handouts rather than books ** so you have there'll be a diversity of ** books involved you know because you'll be she'll give you exercises for home and obviously for school too

STUDENT does that mean i don't have to bring any material [myself

TEACHER [no none at all none at all unless * b

Figure 22.3 A snapshot of a tool used in the handbook for Conversation Analysis of Interactions



Conversation analysis of interactions (1)

(by Gabriella B. Klein)

Tool 20

Actions 18 - 20, 22 - 23

Cf. Actions 18 - 20, 22 - 23

Request for an identity card

A foreign male citizen resident in an Italian city goes to the office for public relations at the local council to ask for an identity card; the civil servant explains what documents he needs before being able to receive an ID Card

Person(s) who recorded the interaction
Koffi M. Dossou, Veronika M. Wiederin

Person(s) who transcribed the text
Gabriella B. Klein, Veronika M. Wiederin

Place (institution) of the interaction
at the Local Council in a larger Italian city

Date, time and duration of recording
April 2006, afternoon
2:23 minutes

Interactants

PSEUDONYM	CODES	EXPLANATION
adult-in-mobility: AM a foreign citizen, male, speaking very good Italian	AMM	M = male
adult-in-contact-with-mobility: ACM a clerk of the local council, female	ACMF	F = female

```
 1 AMM   buonasera
 2 ACMF  buonasera
 3 AMM   signora mi serviva hm far la carta di identità che devo
 4       fare/
 5 ACMF  lei ha la residenza nel comune di perugia/
 6 AMM   sì
 7 ACMF  quindi deve produrre * il permesso di soggiorno o la carta
 8       di soggiorno insieme al suo passaporto
 9 AMM   (hm) * mi ci vuole del tempo per avere/
10 ACMF  dopo l'iscrizione anagrafica le occorrerà circa un mese (e
11       m') un mese circa deve venire il vigile a verificare la sua
12       residenza * dopodiché ci porta la risposta * e
13       immediatamente la trascriviamo all'anagrafe * poco dopo può
14       fare la carta di identità
15 AMM   va bene grazie
16 ACMF  prego
```

We may note here the phenomenon of repair through reformulation and elaboration (lines 11-13; cf. highlighted sequence).

The operators of public services are generally conscious about the fact that the bureaucratic-institutional terms (*l'iscrizione anagrafica*, line 10) is not easy to understand, especially by foreigners, and therefore even without checking if the adult-in-mobility understands or not, operate immediately a repair through reformulation and elaboration (lines 11-13).

A Pedagogical Model that respects diversity

The guidelines, therefore, suggest the following underlying principle that sustains the methodology that is suggested here. The principle is that all materials used should respect each learner's context and modality of learning. The three elements that make up this principle are:

- Respect and appreciation of the experience that the trainee brings to the training and in view of the curriculum that is being covered. Thus, acquaintance with the prior knowledge that each trainee comes with is crucial in the designing and planning stages of any training programme. Such experience can be attained through prior assessment of the competences and knowledge of the trainee cohort.
- Connecting with the interests of the learner can be yet another crucial ingredient in accessing the learners' will to learn and thus respecting the context from which the learner hails. These interests could serve as anchoring thought processes on which to build new understanding and new learning (Csikszentmihalyi, 1997).
- Finally, an important element to consider, and which should help us accurately personalise our training is precise knowledge of the processing preferences of each person who is involved in the training being organised (Johnston 1996, 1998; Sternberg, Torff and Grigorenko, 1998). Simply using strategies indiscriminately, without knowledge of the processing characteristics of the learners for which the strategies are intended, would do little good. Each learner, as we will explain further on in this paper, brings to the learning environment a personalised combination of learning patterns that would impinge on the learning and teaching climate and the relationship of the people within it.

These three elements would give the trainer the information required to modify the content and/or the process through which the trainee will be able to access the learning outcomes. This information will also make possible for the trainer to suggest different products or responses that the trainee is expected to yield by the end of the activity. Finally, knowledge of these elements will help the trainer negotiate the learning environment and group the trainees into effective and efficient learning teams.

Through these accommodations and considerations the trainer will be facilitating learning thus creating an environment that is conducive to learning. For this end, the training programme suggests a number of methods that can be used, amongst which one can mention interactive methods (moderation method, brainstorming, life story approach, cooperative and task-based learning, role-playing, problem-solving and self- and other observation of the communicative behaviour) and deductive approaches, which might be more appropriate when the objective is to inform.

The choice of methods can also be affected (in my opinion should be affected) by the profile of the participating cohort. Brain research (Bruer, 1997) has indicated pathways which might differ from one learner to another which "work within each of us to create a system of learning based upon stimulus processing, the use of memory, and the pattern-driven ingenuity of our human capacity to respond" (Grundtvig Let Me Learn Training Module: 2005).

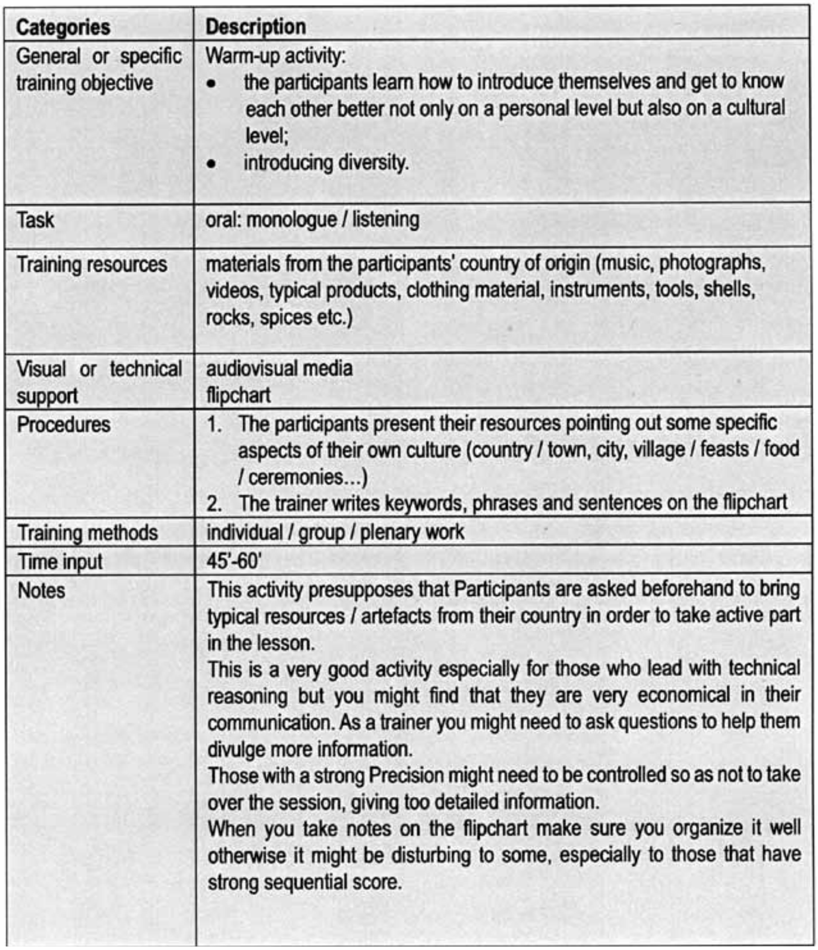
A successful programme is one that is respectful of the different learners' pathways for taking in the world and making sense of it. Learners need to make sense of the world in order to understand and learn. It is common knowledge that all learners have personalised means for doing so. Why? Johnston (1994, 2002, 2006, 2009) explains this phenomenon through a simple representation explaining how four interactive learning patterns of 'sequence', 'precision', 'technical reasoning' and 'confluence' interact to form distinct combinations which govern how each learner takes in and interprets the world. These patterns act as channelling filters of sensory stimuli. According to this representation, the learning journey begins with the senses that serve as the first line receptors that initiate learning. It is they who gather and channel stimulus into the brain that in turn channels it through its complex series of regions and its neuron-circuitry. Within the brain's electro-chemical processing, the stimulus is "handled" by a number of operations, ultimately coming to a point where it meets up with our brain-mind interface where it is filtered by our individual learning processes, i.e., blocked, welcomed, or given limited access to continue on its way to operate within our mind and memory. The stimulus that makes it through the interface is then translated into symbolic representation and passed to our working memory to become a part of our human consciousness (declarative memory) or sub-consciousness (non-declarative memory) (Johnston, 2009; Squire and Zola, 1996).

Here is where one recognises the central role that these patterns play in forming and operating our learning system. A true understanding of the personalised learning connections of each learner will guide learners and trainers how to 'handle' sensory stimuli and make sense of them. Achieving control is the key to learning. Thus, while, as the literature contends, it is important for all senses to be respected in channelling stimulus into the brain, it is equally crucial to have knowledge of each learner's patterned combination to help each learner make sense of the task at hand. This knowledge is also crucial for intentional learners to be able to 'tether' or 'stretch' his/her learning patterns to make optimal use of his/her learning potential because, as Johnston puts it, "(F)inding Your Way is about taking hold of how you learn and making it work for you so that you can navigate your daily life as well as your future" (Johnston, 2007).

This metacognitive enquiry involves trainers in the learning process as learners and collaborators and not merely in the traditional role of trainer that has all the answers. The process will hopefully lead to an awareness of each learner's unique needs, not just on the trainer's delivery of information, or on the assignments themselves, devoid of the learner's stance towards them.

Through the knowledge of the trainees learning processes, trainers can facilitate the task analysis process (see figure 22.4), help in the identification of the patterns required for successful completion of the task and assist the learner to strategise for meeting these demands (see table 22.1 and table 22.2)

Figure 22.4 A prototype activity with notes decoding the activity's use of patterns required.



Categories	Description
General or specific training objective	Warm-up activity: • the participants learn how to introduce themselves and get to know each other better not only on a personal level but also on a cultural level; • introducing diversity.
Task	oral: monologue / listening
Training resources	materials from the participants' country of origin (music, photographs, videos, typical products, clothing material, instruments, tools, shells, rocks, spices etc.)
Visual or technical support	audiovisual media flipchart
Procedures	1. The participants present their resources pointing out some specific aspects of their own culture (country / town, city, village / feasts / food / ceremonies...) 2. The trainer writes keywords, phrases and sentences on the flipchart
Training methods	individual / group / plenary work
Time input	45'-60'
Notes	This activity presupposes that Participants are asked beforehand to bring typical resources / artefacts from their country in order to take active part in the lesson. This is a very good activity especially for those who lead with technical reasoning but you might find that they are very economical in their communication. As a trainer you might need to ask questions to help them divulge more information. Those with a strong Precision might need to be controlled so as not to take over the session, giving too detailed information. When you take notes on the flipchart make sure you organize it well otherwise it might be disturbing to some, especially to those that have strong sequential score.

The operational patterns (of sequence, precision, technical reasoning and confluence) which form the dynamic relationship of the three mental processes of cognition, conation and affectation interact to form personalised combinations which eventually help the learner make sense of the task and learning arrangement and strategise for successful completion. The tool used for capturing one's personalised learning processes is the Learning Connection Inventory (Johnston & Dainton 1997), an inventory that captures the intensity of the combination of the four learning patterns. Once this is captured, a process follows to help the learner use the four patterns with intention and negotiate learning environment effectively.

Figure 22.5 The Learner: An Intentional Performer

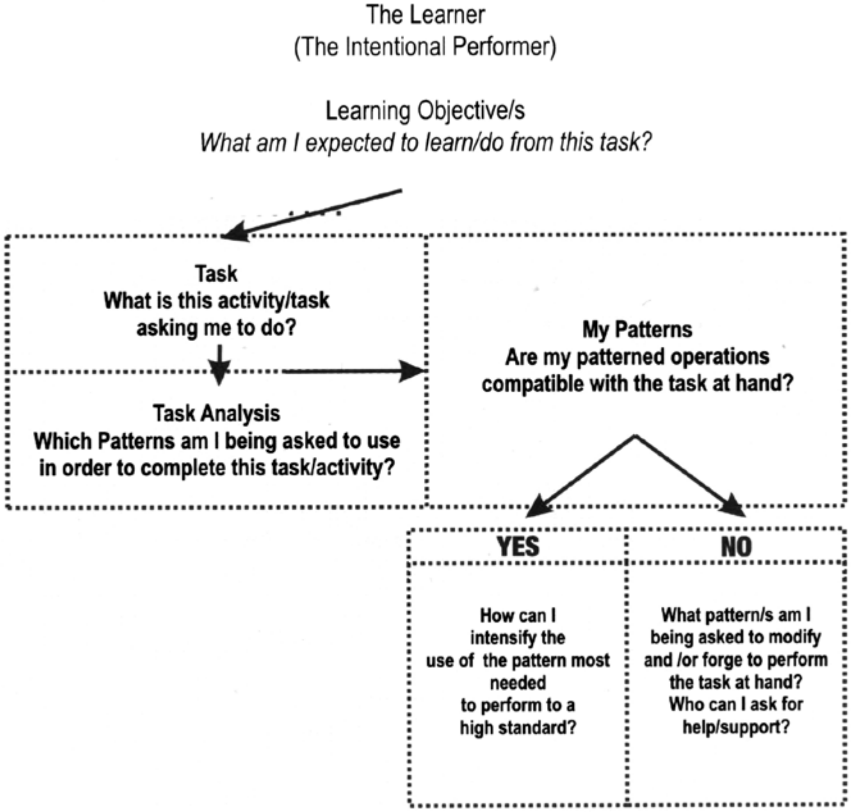
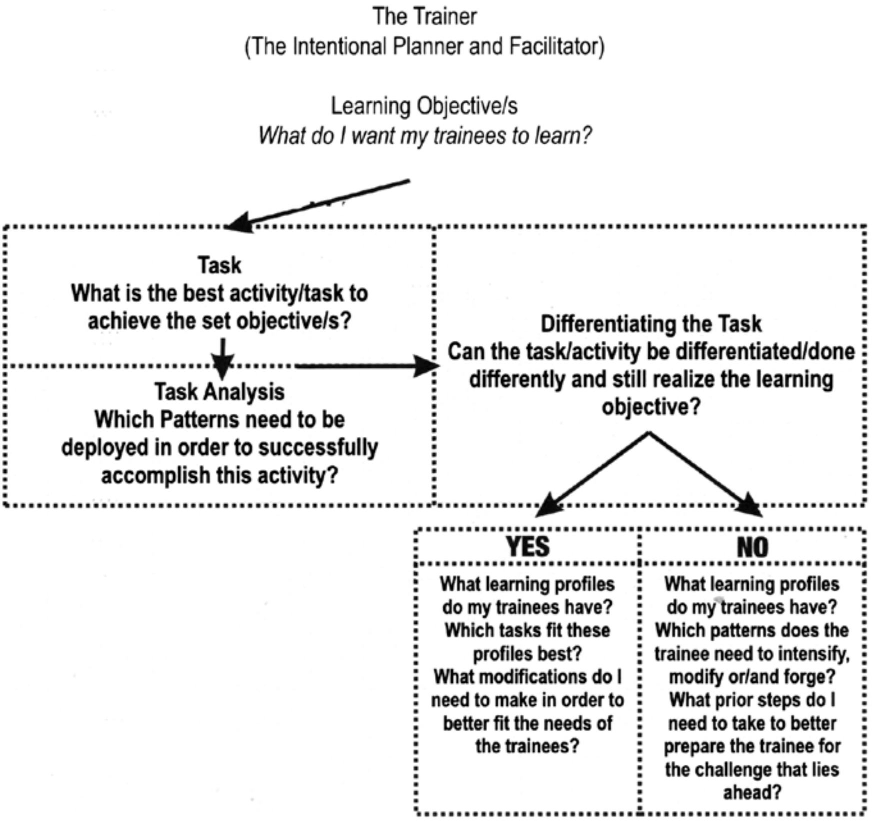
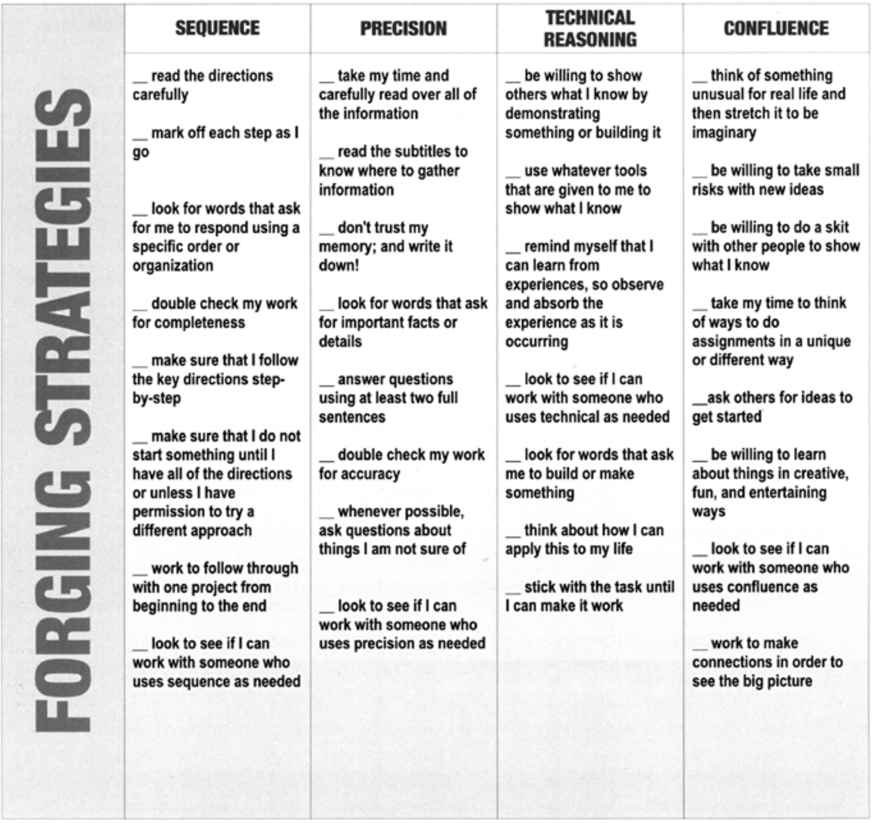

The Learner
(The Intentional Performer)
Learning Objective/s
What am I expected to learn/do from this task?
Task
What is this activity/task asking me to do?
Task Analysis
Which Patterns am I being asked to use in order to complete this task/activity?
My Patterns
Are my patterned operations compatible with the task at hand?
YES
NO
How can I intensify the use of the pattern most needed to perform to a high standard?
What pattern/s am I being asked to modify and /or forge to perform the task at hand? Who can I ask for help/support?

Figure 22.6 The Trainer: An Intentional Planner and Facilitator


The Trainer
(The Intentional Planner and Facilitator)
Learning Objective/s
What do I want my trainees to learn?
Task
What is the best activity/task to achieve the set objective/s?
Task Analysis
Which Patterns need to be deployed in order to successfully accomplish this activity?
Differentiating the Task
Can the task/activity be differentiated/done differently and still realize the learning objective?
YES
NO
What learning profiles do my trainees have? Which tasks fit these profiles best? What modifications do I need to make in order to better fit the needs of the trainees?
What learning profiles do my trainees have? Which patterns does the trainee need to intensify, modify or/and forge? What prior steps do I need to take to better prepare the trainee for the challenge that lies ahead?

Once the individual's unique learning combination has been established, learners and trainers can make use of a series of metacognitive strategies for utilising the best methods for accessing knowledge and/or learning a skill. This metacognitive process transforms the way we understand the learning scenario – from a trainer focus scenario in which the trainee is perceived as a passive recipient of content and passive performer of pre-packaged skills/strategies to an intentional performer, an active learner who is involved in meta-analysis of the compatibility between the task and his/her own (the learner's) approach to learning. Here learning is highlighted and moved to the frontal consciousness level so as to affectively and intentionally perform (see figure 22.5 – The Learner – An Intentional Performer).

Table 22.1 Sample strategies for forging patterns (Let Me Learn Inc 2005)

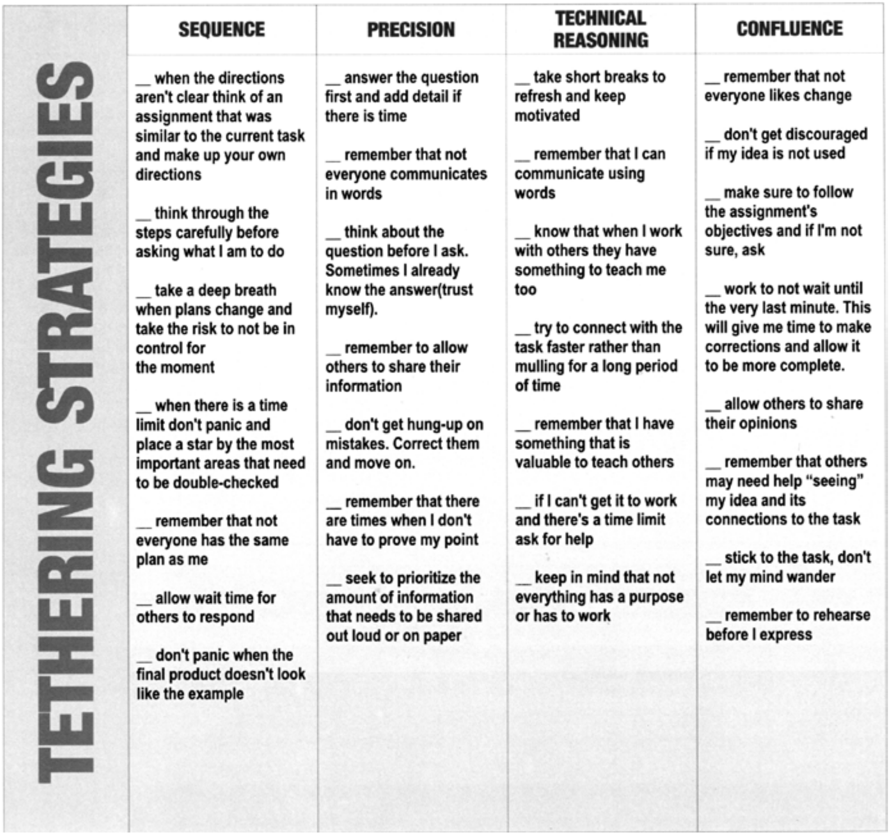


	SEQUENCE	PRECISION	TECHNICAL REASONING	CONFLUENCE
FORGING STRATEGIES	__ read the directions carefully __ mark off each step as I go __ look for words that ask for me to respond using a specific order or organization __ double check my work for completeness __ make sure that I follow the key directions step-by-step __ make sure that I do not start something until I have all of the directions or unless I have permission to try a different approach __ work to follow through with one project from beginning to the end __ look to see if I can work with someone who uses sequence as needed	__ take my time and carefully read over all of the information __ read the subtitles to know where to gather information __ don't trust my memory; and write it down! __ look for words that ask for important facts or details __ answer questions using at least two full sentences __ double check my work for accuracy __ whenever possible, ask questions about things I am not sure of __ look to see if I can work with someone who uses precision as needed	__ be willing to show others what I know by demonstrating something or building it __ use whatever tools that are given to me to show what I know __ remind myself that I can learn from experiences, so observe and absorb the experience as it is occurring __ look to see if I can work with someone who uses technical as needed __ look for words that ask me to build or make something __ think about how I can apply this to my life __ stick with the task until I can make it work	__ think of something unusual for real life and then stretch it to be imaginary __ be willing to take small risks with new ideas __ be willing to do a skit with other people to show what I know __ take my time to think of ways to do assignments in a unique or different way __ask others for ideas to get started __ be willing to learn about things in creative, fun, and entertaining ways __ look to see if I can work with someone who uses confluence as needed __ work to make connections in order to see the big picture

This process also alters the role of the trainer. Figure 22.6 illustrates how the trainer's perceptions and assumptions about learning, and specifically about how a specific learning episode can be taught, are brought to the awareness level and analysed in the light of the learner's profile. The trainer's role will then change for one of a facilitator of the process through supportive interventions and negotiated strategies (see table 22.1: Sample strategies for forging patterns and table 22.2: Sample strategies for tethering patterns).

The above strategies are only some examples of learner-generated responses to a learning situation once s/he is fully aware of his/her learning profile, that is what works in order to effectively integrate in the path to learning. As learners become more efficient in decoding learning activities and interpret them in light of their personalised combination of learning patterns, they start generating their own strategies for forging and tethering learning patterns.

Table 22.2 Sample strategies for tethering patterns (Let Me Learn Inc 2005).



TETHERING STRATEGIES	SEQUENCE	PRECISION	TECHNICAL REASONING	CONFLUENCE
	__ when the directions aren't clear think of an assignment that was similar to the current task and make up your own directions __ think through the steps carefully before asking what I am to do __ take a deep breath when plans change and take the risk to not be in control for the moment __ when there is a time limit don't panic and place a star by the most important areas that need to be double-checked __ remember that not everyone has the same plan as me __ allow wait time for others to respond __ don't panic when the final product doesn't look like the example	__ answer the question first and add detail if there is time __ remember that not everyone communicates in words __ think about the question before I ask. Sometimes I already know the answer(trust myself). __ remember to allow others to share their information __ don't get hung-up on mistakes. Correct them and move on. __ remember that there are times when I don't have to prove my point __ seek to prioritize the amount of information that needs to be shared out loud or on paper	__ take short breaks to refresh and keep motivated __ remember that I can communicate using words __ know that when I work with others they have something to teach me too __ try to connect with the task faster rather than mulling for a long period of time __ remember that I have something that is valuable to teach others __ if I can't get it to work and there's a time limit ask for help __ keep in mind that not everything has a purpose or has to work	__ remember that not everyone likes change __ don't get discouraged if my idea is not used __ make sure to follow the assignment's objectives and if I'm not sure, ask __ work to not wait until the very last minute. This will give me time to make corrections and allow it to be more complete. __ allow others to share their opinions __ remember that others may need help "seeing" my idea and its connections to the task __ stick to the task, don't let my mind wander __ remember to rehearse before I express

Conclusion

Senge (1990, p.160) asserted, "structures of which we are unaware hold us prisoners". This paper argued that structures we create to support learning and training can in fact be hurdles in the way of the learners' learning process. It is only through a conscious decoding of activities in respect of their demands on the processing learning patterns and subsequent negotiated patterns' management strategies, would such activities empower learners to have control of their intended learning. It was also argued that through such an awareness of the learning process, trainers could modify the activities to respond to the learners' particular needs. This paper attempted to explain how intercultural communication training could develop a training environment that is conducive to learning through being respectful of the learners' characteristics. Thus, while promoting respect for intercultural diversity, the process is respectful of the individual's preference of engagement in learning.

References

Balboni, Paolo E. (2002). *Le Sfide di Babele. Insegnare le lingue nella Società Complesse.* Torino: Utet.

Bruer, J. (1997). *Schools for thought: A Science of Learning in the Classroom.* Cambridge: MA. MIT Press.

Calleja, C. and Montebello, M. (2006). Let Me Learn In-Service Training: A Teacher's Experience", *Journal of Maltese Educational Research* (JMER), Vol. 4, No 2: pp. 54-66.

Csikszentmihalyi, M. (1997). *Finding the Flow: the Psychology of Engagement with Everyday Life.* NY Basic Books.

Fridell, M. (2008). Immigration in the neoliberal politics of redistribution reform, on *All Academic* URL: http://www.allacademic.com//meta/p_mla_apa_research_citation/2/4/1/6/3/pages241637/p241637-1.php.

Grundtvig Let Me Learn Training Module (2005).

Gundara, J. (2000). *Interculturalism, Education and Inclusion.* Sage Publication.

Johnston, C. (1996). *Unlocking the Will to Learn*. Thousand Oaks. CA. Corwin.

Johnston, C. (1998). *Let Me Learn*. Thousand Oaks, CA. Corwin.

Johnston, C. & Dainton, G. (1997). *The Learning Connections Inventory*. Pittsgrove. NJ: Let Me Learn.

Klein, G. and Caruana, S. (Eds.) (2008). *Intercultural Communication in Bureaucratic and Institutional Contexts*. Conversarii. Studi Linguistici CLA. Sezione Didattica. Univesita Degli Studi di Perugia. Guerra Edizioni.

Kwintessential (2009). "Cross Cultural Awareness and Training" URL: http://www.kwintessential.co.uk/cross-cultural/cross-cultural-awareness.html

Senge, P. M. 1990. *The fifth discipline*. New York: Doubleday-Currency.

Sternberg, R.J., Torff, G. & Grigorenko, E.L (1998). Teaching Triarchically Improves Student Achievement. *Journal of Educational Psychology*, 90(3): pp. 374-384.

• CHAPTER 23 •

Changing the Pedagogy - What Difference does it Make?

Robert Grandin with Cathy Burke

The complex and dynamic nature of the teaching/learning process has spawned an immense number of theories and packages designed to improve the effectiveness of this process. Almost all of them call for a change in the pedagogy of the classroom, away from the "expert" teacher plus a "chalk and talk" method of instruction of the past. But observers of classroom practice still see many teachers managing a classroom in much the same way as it was done in the 19th Century. One could argue that the conflict between student-centred learning practices and structured assessment demands means a teacher must decide which path to follow. The accountability measures and reporting practices of the assessment outcomes are so threatening that a teacher often decides that it is essential to maintain a focus on the latter issue. The result is a process that attempts to have all students learn the same material, in the same way, at the same speed of progress, essentially in preparation for "the test". The diversity in individual difference means that this is an impossible task. Consequently, we have the spread of achievement outcomes that are the focus of criticism of classroom practice, which leads to an interpretation that talks of the failure of the student to meet standards.

It is the political pressure on accountability measures that creates the major tension, as they are used to debate the success or failure of programs. While these outcomes are linked to age or number of years at school, the goal of providing a map of student progress through schooling becomes lost. Instead of illustrating the successful achievement of criteria and individual strengths, the outcomes are scaled against age appropriate statistics and relative performance is highlighted. Rather than providing information upon which to develop an appropriate learning pathway, the introduction of "good, better, best" introduces challenges of self-worth for the student. While the rhetoric of standards is an improvement in recognising learning needs of the student and in reporting progress, the practice of publishing the outcomes in any form of relative performance list destroys this opportunity for recognising the diversity in student learning. Consequently, excellent progress in the recognition of learning difference between students, in mapping the development of progress through key learning areas, and providing opportunity for a changed pedagogy in the classroom, are lost in the determination to keep a competitive and "I am right" attitude within the education system.

The challenge from many traditionalists is to demonstrate that a changed pedagogy can create improved "marks". Many schools use the maintenance of high marks or ranking on performance lists to illustrate the quality of their teaching/learning approach. Too often this has been achieved by the inclusion of "teaching to the test" regimes, justified by the self-fulfilling prophecy that they achieve higher marks. Unfortunately, the growing criticism from the post-school environment about the lack of student creativity/self-direction/curiosity may be an outcome of limited opportunities to use these attributes at school AND HAVE THEM VALUED. Too often teachers endeavour to provide opportunities for students to have different pathways to gaining knowledge, only to find that a reporting system requires that the outcomes are relatively valued. Given that this is frequently a difficult task, requiring an appreciation of such issues as the value of individual effort, of personal growth, or of information gained but not presented, the teacher often avoids including the marks rather than confront the arguments about relative value. Consequently, what may have been a student's most determined and valued effort goes unnoticed to the external reviewer.

Over the past twenty years, I have been involved in changing the pedagogy of schools. Initially it was in response to the challenge of creating a school environment for unsettled and disadvantage students. A program was developed that allowed more time to be spent in activity based learning than on traditional academic classwork. The focus was on rebuilding self-worth and finding interests that could be pursued to build a future. For a Master's Degree dissertation I used Robert Stake's Responsive Approach in an evaluation of the impact of Government Special Support Programs on the life goals of educationally disadvantaged students (Grandin, 1990). The use of a comparison of the intended and observed aspects of the program allowed an insightful observation of the impact of the process. In brief, many changes were observed in the attitudes of the students, while little major change was observed in academic performance. The changes, however, were sufficient to provide increased opportunity and purpose in the student's future.

In the second school a much more radical process was implemented using a contract-based structure to allow students to produce individual programs as they tackled the curriculum objectives. In what could be loosely described as a "free" school, the students were organised into vertically integrated "home groups" for support purposes, but the day to day activity had little resemblance to the ordered, timetable structured traditional school. Major educational innovations that were blended into the process were negotiated curriculum, constructivist learning approach, integrated study of subjects and cooperative groupings. Assessment was formative and, therefore, an integrated part of the learning process. Recording was done against the National Profiles in the eight key learning areas on computer, and provided individualised and non-comparative outcomes. Comparative testing was eliminated as students were rarely at the same place in the curriculum at the same time. A Phenomenographic study of the children's experience of learning in this school (Grandin, 1998) illustrated that while there were significant achievements by the students in National competitions, success was measured by other factors. The students indicated enjoyment in a move towards self-directed learning, working in groups, and using a deeper approach to learning. Other issues were the active participation in school by many that were excluded elsewhere, by intensive investigation of significant issues in society and a harmonious atmosphere within the school. Academic achievement was in line with student's ability, but most significantly the completion rate at year 12 was almost 100%.

Following this experience, I worked in the USA for several years assisting teachers to refocus their teaching upon the learner in the classroom, as distinct from on the curriculum. This pedagogical change required a self-reflective effort by the teacher on how he or she approached learning and consequently teaching. After the students completed the same reflective activity, it was possible to form learning partnerships in which the student could demonstrate to the teacher what he or she had learned in ways that enhanced their productivity and performance. The increase in classroom activity can be instantaneous; however, the major challenge involved rethinking the assessment process and how to value outcomes. In a country that is increasing standardised testing, it takes a lot of courage to recognise that self-directed learners are likely to do well on tests without direct "teaching to the test". Once again the most significant change associated with this change in pedagogical approach was in the cooperation and involvement of the students in classroom activity.

To provide a more specific and expansive outline of the impact of a change in pedagogical approach, a case study that follows a group of students through a three-year experience will be used. The students had the same teacher for years one to three and she used a metacognitive approach to develop the student's awareness of how people learn and individual responsibility within the learning structures of schooling.

Case Study- Effective Learning And Teaching Inputs

The school was a small school in Queensland, drawing on a low socio-economic area and, consequently, the group of students were of “low average” academic ability. The foundation for the experiment was aligned with the pedagogical process outlined in the Education Queensland Principles of Effective Learning and Teaching through its five guiding principles:

- Understand the learner;
- Understand the learning process;
- Provide a supportive and challenging environment;
- Establish worthwhile learning partnerships;
- Shape and respond to a variety of social and cultural contexts.
- These principles are based on the following assumptions:
- Every person is a learner.
- Learning is an ongoing and lifelong process.
- People learn within social and cultural contexts independently and through interaction with others.
- What is learned depends on the way it is learned and with whom it is learned.
- The vital aspects of teaching include identifying the ways others learn best and extending the ways they learn, creating learning opportunities, and evaluating learning outcomes.
- Principles of effective learning and teaching provide the basis for ongoing improvement of learning and teaching practices.

These assumptions suggest that the learning-teaching process is multifaceted in terms of what is learned, how it is learned and the role of participants. (From website - Education Queensland/Learning and Teaching/Pedagogy/Principles of Effective Learning and Teaching.)

Understand the Learner

With the agreement of the school, a process called Let Me Learn® (LML), which I was working with in the USA, formed the basis to the pedagogy of the classroom. The most significant thing about this process was that it was a process and not a program. It provided guidance in the way to change the relational process in the classroom, as distinct from a package that provided outline procedures and activities for the teacher on how to implement a change. It focused on the learner, both teacher and student, and the way each interacts with a learning experience. It was very much a metacognitive process, providing an understanding of thoughts, feelings and actions during learning.

The originator of LML Dr Christine Johnston titled her first book *Unlocking the Will to Learn* (Johnston, 1996), to suggest the outcome of the process.

At the beginning of Grade 1, the thematic topic was "Who Am I". During this topic, the concepts of self as a learner were introduced alongside the normal development of sense of identity. This included the students' discussing the role of the brain in thinking/feeling/doing, where and how they like to learn, and learning activities that they like to do. The stimulus for this development was a range of classroom activities. Once the students had developed a basic understanding that there were different ways that individuals approached experiences, they completed a Learning Combination Inventory® (Johnston & Dainton, 1996) through a one-to-one interview.

The outcome of the Learning Combination Inventory (LCI) provides the way in which an individual naturally approaches a learning experience. Four distinct patterns are identified, but all patterns are used; it is the order in which a person uses them that is illustrated - Use First, Use as Needed, Avoid.

The Sequential Pattern is characterised by the desire to follow a plan. An individual's sequentialness is that part which seeks to:

- work following step by step instructions;
- organise and plan work carefully;
- recall previous experiences of a similar nature;
- be neat and tidy;
- take the time necessary to complete a task;
- avoid interruptions, and
- check work for errors and correct them before submission.

A student who "Uses First" his or her sequentialness will tend to become the "organiser" within a group, creating a plan of action for each member to follow. Those who "Avoid" sequence tend to be disorganised and untidy, leave things incomplete and fail to stay on task to the end. The ability to use sequence "As Needed" means that the above characteristics may or may not appear, depending upon the individual's perceived need within each situation, and also upon where, within the range of "As Needed", the individual's scores fall.

The Precise Pattern is characterised by a desire for information. An individual's preciseness is that part which seeks to:

- ask many questions;
- research the detail in questions;
- verify the correctness of information;
- accurately represent both written and visual images;
- memorise facts and figures; and,
- gain recognition for achievements.

A student whose preciseness is in the "Use First" range will tend to enjoy tests plus writing detailed reports, and when in a group will volunteer to be the fact finder. Conversely, those who "Avoid" preciseness will be poor at recalling facts and figures, may dislike reading and writing, and tend to rely on other classmates for information. Students who "Use as Needed" the precise pattern can vary their approach to meet the situation, for example to memorise information for tests.

The Technical Pattern is characterised by the desire to see practical relevance in learning situations. An individual's technicalness is that part which seeks to:

- be concise in approaching problem-solving;
- think in functional and operational terms;
- work with tools and equipment;
- build and make things to demonstrate his or her knowledge;
- understand the way in which the world works;
- keep knowledge gained private, only sharing when necessary, and
- work alone.

The student who "Uses First" his or her technical pattern will want to study a problem alone and take time to figure out how to approach the problem. However, if forced to work in a group he or she will often take charge and try to have the group focus only on the core issues according to his or her interpretation. If a student "Avoids" technical processing, then he or she prefers to be told how things work rather than discover it for themselves, call on others to "fix" things and describe things in theory rather than build them. To use technical "As Needed" is to be able to take a practical approach when necessary or when it resolves the problem more simply.

The Confluent Pattern is characterised by the willingness to take risks. A student who is using confluence seeks to

- use his or her own ideas;
- explore alternative approaches to a problem;
- change the rules;
- discuss issues and provide oral responses;
- be creative in presenting ideas;
- discover answers without fear of failure, and
- is comfortable with change.

A student who "Uses First" confluent processing is unlikely to wait for the teacher to finish giving directions before he or she wants to start the project. Alternatively, he or she immediately requests the opportunity to tackle the process differently to the given directions. While the teacher is likely to describe a confluent student as one who “marches to a different beat” than the rest of the class, within a group he or she provides the creative imagination. A student who “Avoids” confluence will wish to use conventional ideas and present real to life representations. “Use as Needed” confluence means a student is able to develop some alternative approaches if appropriate and tackle problem-solving with some degree of experimentation and willingness to get wrong answers.

For the next three years, follow-up activities that reinforced the student’s understanding and appreciation of his or her learning pattern were carried out. These are illustrated in the outcome section of this paper. At the end of the three years, the LCI was again implemented as a group activity and the clarity and consistency of the learning patterns was highlighted. Students developed Learning Passports to take with them to future teachers, indicating the ways in which they could optimally interact within a learning experience and how they could best demonstrate what they had learned.

Understand the Learning Process

Following the process of discovering each individual’s learning combination, the teacher was in a position to appreciate the diversity of learning approaches within her classroom. This appreciation of the different way that each individual approached learning, along with the associated uniqueness of each approach, formed the basis of a very significant shift in the way the teacher perceived the classroom. Rather than one “correct way”, a wealth of opportunity unfolded that could allow each individual student to be involved in the way that they could best demonstrate learning.

By regularly relating the learning processes required to the content being covered, the teacher created an environment in which “thinking about thinking” became a natural process. The students developed the ability to recognise which pattern was important in the initiation of an exercise. Did they need to be sequential and ensure they had all the instructions first? Could they experiment with a different idea and use their confluence? Would they be precise and write out a response or could they use their technical pattern and make something to illustrate their understanding? As the learner developed the means to articulate who he or she was as a learner, it became natural to develop strategies to use with intention during assigned tasks. A vocabulary for communicating internalised and externalised learning actions for the student became natural, facilitating positive communication with the teacher. Learning journals were used to record many of these activities.

The students were presented with the way in which thinking (Cognition), feeling (Affectation) and doing (Conation) interact in every learning activity. These issues were outlined in the Interactive Learning Model of LML (Johnston, 1996). With each year the students gained increased understanding of the meaning of the process. It was self-evident to them how they felt as they went about their learning; what they developed was the language to discuss these issues with the teacher and an increasing understanding of the need to use particular patterns at times, even if this was uncomfortable. The metacognitive process of learning was also expressed as a series of internal thought actions: mulling, connecting, rehearsing, exhibiting, reflecting and revisiting. Freeze activities at different stages of an activity, in which they reflected on what they were thinking at that time, developed the student's understanding of these phases and what they meant.

An important outcome of this growth in communication about learning was that students could now negotiate alternative ways of demonstrating what they had learned. The teacher could place the need for a particular pattern in the context of the process to be learned or discuss guidelines on how the student's idea could be developed. Understanding the learning process facilitated this move towards accepting individual responsibility for active participation in a learning activity.

Providing a Supportive and Challenging Environment

The benefit to the students of understanding the learning process and themselves as learners was that they became engaged in the learning experience. Rather than waiting for the teacher to tell them what to do, when to do it and at what rate to do it, they became involved in what the activity needed from them as a learner and how they could enjoy doing the work. Negotiating individual reward activities became commonplace.

> *"When I finish this work, can I go on with the story I am writing?"; "I have finished and I would like to read my book"; "I like making things and I am cutting out a paper lamp while I wait for the others to finish"; "I am doing this colouring-in whenever I have some free time to enter a competition at McDonald's", "Can I help Ben with his work?"*

Through these negotiations the teacher was able to support the wellbeing of the students, often easing the tension associated with student's demands for attention experienced in the directed classroom.

Importantly, each student developed a sense of belonging or partnership in the learning activity. The individual way that a student was most rewarded in an activity could be developed on most occasions. Through this sense of individual support, there was a reduction in the tension often felt by students as they tried to complete tasks. Instead of just having to try and copy the way another saw the solution, they could talk about the tension created within their own learning approach to the problem and/or discuss the need for the approach that was being presented. This conversation was often with other students rather than just with the teacher.

One of the changes that occurred in the student's approach was that, as they accepted ownership of the learning activity, they began to consider the challenge of improving the outcome. Part of the metacognitive process of learning that they were taught was the fact that reflection and revisiting were important parts of learning. In their learning journals they were often asked to comment on the quality of the work they had just completed. Combined with the concept of ownership, this activity developed ideas about "doing your best" and how this was a personally rewarding process. The class received many favourable comments on the quality of their work over the three years.

Another important outcome was that the students came to enjoy learning challenges. The teacher could anticipate a wide range of work product to display around the room, to include in learning expositions, and to show to parents. The students also accepted the challenge of entering competitions. These included the English, Mathematics and Science competitions run by the University of New South Wales Educational Testing Centre, which the whole class entered. The outcomes are listed later in the paper, however, they achieved very well in these non curriculum-specific challenges.

Establish Worthwhile Learning Partnerships

The growth of an understanding of learning created a learning community. The students appreciated the teacher's approach to learning and, consequently, her teaching. As she used metacognitive language frequently throughout the school day, the students could develop a learning partnership based upon communication. In non-threatening language they could ask for more instructions, more information, to do it differently or to present the idea in another way to the class. Through this approach the students shared the responsibility for their learning the topic with the teacher.

Partnerships were also formed between students. This was often spontaneous, especially as the students began to appreciate who of the students were able to use which pattern with effect and could help them as a weaker user of that pattern. But deliberate learning groups were also formed. These consisted of creating groups of four from the LCI scores so that there were representatives who led with each of the patterns. This provided a role for each student within the group and a sense of belonging. While a student may not be strong academically, if they can see difference in a situation more easily or provide technical know how on making a project, they can assist to make the outcome stronger than that likely to be produced by an individual on his or her own. As the group process grew in strength, students began to become tutors for other members of the group so that there was a shared sense of achievement.

Another outcome of the introduction of the LML process was that a learning circle formed within the teachers of the school. They met regularly to share reflections on themselves within the teaching/learning context and upon the learning behaviour of their students. This partnership helped them to resolve issues within their classrooms and to enjoy the personal rewards of reflective practice.

Shape and Respond to a Variety of Social and Cultural Contexts

The context of the classroom had been established as a learning community in the Senge sense of one that had gained the commitment of the students while simultaneously developing their capacity to learn (Senge, 1990). This enabled them to develop the capacity to learn through investigating the issues of society. To allow for the diversity in learning approaches, many topics were covered using a thematic approach. To assist with the student's involvement in the topic, these themes were discussed and a relevance to their lives established. As the students came from a wide range of social backgrounds and had lived socially mobile lives, they brought a varying perspective to each issue. The natural process of sharing that had developed in the classroom allowed the students to feel a sense of contribution and reward from their involvement.

The parents had also joined in the sense of a learning community. They attended workshops on the LML process so that they could understand themselves as learners, appreciate their children as learners, and recognise the achievements of their children as they expressed their learning in their own way. Parents reported that this involvement and understanding helped them in their relationships within their family as well as with the teacher.

Outcomes

The following data is provided to illustrate the achievements of the students and indicate the way the metacognitive understanding of their learning grew, leading to a more positive approach to schooling and a wider range of achievements than other similar groups of students. The 16 students who were a part of the class for the whole three years have been included as the target group.

The Learners in the Group

The Learning Connection Inventory (LCI) was applied to the group on two occasions, in Grade 1 and Grade 3. During the first term of Grade 1, the teacher included a significant number of activities that assisted the students to recognise learning as an activity that occurred across their life experiences and not just in school. These activities were easily integrated into the themes "All About Me" and "I'm Special". Students did a "noodle brain" activity in which they glued noodles onto a page printed with an outline of a human head. No instruction was given other than "glue the noodles on the head to show your brain". The way in which the student approached the task became a piece of evidence that would support the teacher's ratification of the learning pattern scores later. The ideas associated with the brain and learning were discussed - I think, I feel, I do - as the students discussed what they thought the brain did and how they felt they went about learning. A real sheep's brain was shown to the students during this activity. A schematic brain was posted on the wall. Questions, such as "How do you like to learn?", "Where do you like to learn?" and "Do we all learn in the same way?", were asked and the answers shared.

The students were provided with a body shape on a piece of paper and asked to dress the person to represent themselves using any pens, pencils or materials they wished. This "figure" became another indicator of the student's learning pattern and was used again later before it was posted on the wall. The concept of choice along a continuum was also introduced during this time. After several games and activities this choice had expanded to the five-grade scale needed for the LCI. During story reading and at any other learning opportunity the concepts of difference were raised. In particular, the story "Stellalunar" was read several times as a popular book that illustrated many of the challenges of difference.

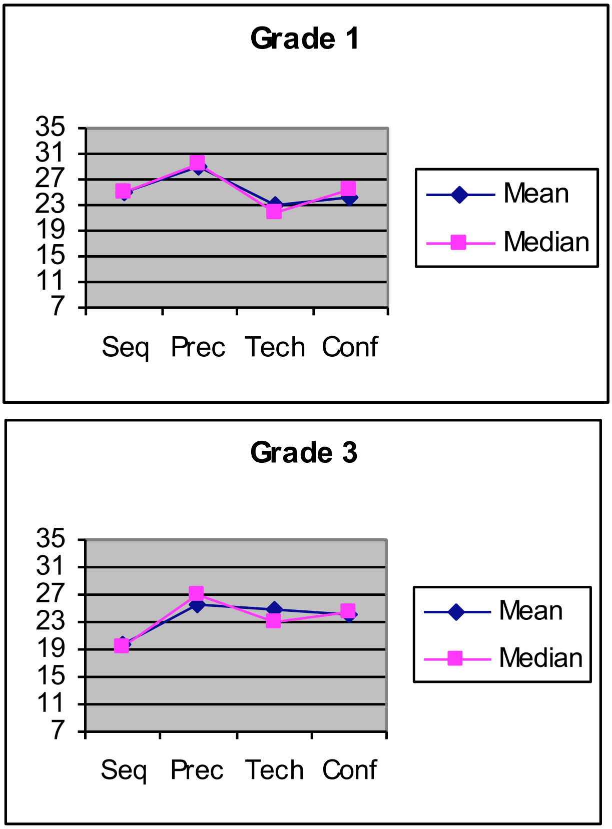
Once it was felt that the students were ready, after Term 1, each student met individually with the teacher or someone else conversant with the LCI and responded to the statements, choosing their response from Never, Almost Never, Sometimes, Almost Always, and Always. They then discussed the three questions at the end of the inventory and the teacher transcribed their answers. When the students were approaching the end of Grade 3, the LCI was applied again, this time as a class group with their indicating their response and writing the answers to the questions. The following table illustrates the scores on each occasion:

Table 23.1

	Seq.	Prec.	Tech.	Conf.	Seq.	Prec.	Tech.	Conf.
Ben	29	33	25	18	19	25	24	26
Caitlyn	24	28	9	17	24	27	22	22
Callum	27	24	22	19	21	27	23	24
Christian	23	30	27	23	23	32	35	28
Jasmin	23	31	19	27	24	27	23	25
Jess	33	30	15	24	27	19	19	15
Josh	18	26	22	27	18	22	23	17
Josh Wh	32	29	27	27	16	27	21	23
Justin	26	33	29	27	15	22	28	22
Kurt	27	27	27	26	18	23	32	25
Nikita	24	27	34	22	20	29	32	25
Sam	16	27	17	27	17	28	34	30
Samuel	26	31	22	25	23	30	22	23
Sarah	23	27	22	27	12	18	14	33
Sean	17	30	30	30	16	23	26	30
Sonya	32	30	21	23	24	32	20	19
Mean	25.0	28.9	23.0	24.3	19.8	25.7	24.9	24.2
Median	25	30	22	25.5	19.5	27	23	24.5
Teacher	23	20	20	20				

The shapes of the two profiles are very similar, indicating that the LCI gave a consistent outcome or did not change significantly over the three years. The pattern of the individual student's scores is also relatively consistent, with variations possibly associated with deeper understanding of the statement's intent. The first graph illustrates a class that uses Precise first in a learning experience, indicating that they were interested in information and detail. The score in Sequence illustrated that they use this pattern on a use as needed basis, with the high scores indicating that they wished to follow directions and adapt to order, while in confluence it illustrated they have a desire to try something different and do it their way. The use as needed score in technical indicated that they could use the technical pattern as needed and would respond to real life experiences comfortably. After three years the sequence score was lower. Perhaps this indicated that as school beginners they were keen to follow the teacher's instructions but, after three years in their learning experience they recognised that they could achieve acceptable performance their own way. The class maintained a use first approach to precision, but had also become clear in their desire to have relevant information and use a hands-on approach through the technical pattern.

Figure 23.1



The teacher's combination of patterns, 23, 20, 20, 20, was indicative of a "bridging person". It illustrated that she used each pattern on a "Use as Needed" basis, allowing her to respond to other's needs without being driven by a "Use First" pattern of her own. Through the summary of the class profiles she saw that she needed to keep the amount of information available to the students at a high level, although with time she recognised that she could give them fewer and fewer directions and allow them to try different things. Also, she recognised that she needed to have plenty of practical resources for them to build items associated with their projects.

Following the LCI, the students wrote their Learning Pattern Scores on the "figure" drawing they had done of themselves and pasted short descriptive statements on the page illustrating how they approached learning. These were then posted on the wall for all to see and discuss. A class profile was also created and placed on the wall. These items formed the basis of many discussions over the next few years about why a particular student was behaving the way they were, or to guide an individual on who could best assist them with a task. The scores also formed the basis of selecting learning groups within the class. These groups of four were designed to have a representative with a focus on one of the four patterns, providing a balanced learning combination. Consequently, each student had a contribution to make; they were looked to by other students in the group to provide leadership in a pattern and through this process each student learned from other members of the group techniques of using each of the patterns.

Reading Ages

Each year the reading ages of the students were recorded using the Waddington Reading Test.

Table 23.2

	CA	RA	Diff	CA	RA	Diff	CA	RA	Diff
Ben	6.00	7.02	14	7.00	8.00	12	8.00	9.09	21
Caitlyn	6.06	6.11	5	7.06	7.06	0	8.06	7.10	-8
Callum	6.11	7.02	3	7.11	8.01	2	8.11	9.02	3
Christian	6.11	6.06	-5	7.11	7.07	-4	8.11	8.10	-1
Jasmine	6.05	7.07	14	7.05	8.04	11	8.06	9.00	6
Jessica	6.00	7.00	12	7.00	8.05	17	8.00	8.10	10
Joshua Wh	6.06	6.07	1	7.06	7.04	-2	8.06	8.02	-4
Joshua Wo	7.00	6.11	-1	8.00	8.02	2	9.00	9.02	2
Justin	6.04	7.03	11	7.04	8.02	10	8.04	9.01	9
Kurt	6.11	6.11	0	7.11	9.01	14	8.11	9.11	12
Nikita	6.04	6.10	6	7.04	7.10	6	8.04	9.02	10
Sam	6.04	6.02	-2	7.04	7.09	5	8.06	10.02	20
Samuel	5.11	7.05	18	6.11	8.05	18	7.11	9.05	18
Sarah	6.07	7.00	5	7.07	7.03	-4	8.07	8.08	1
Sean	6.10	6.10	0	7.10	8.01	3	8.09	9.04	7
Sonya	6.09	7.07	10	7.09	9.02	17	8.09	10.06	21
Av. Diff.			6			7			8

The improving reading age difference contrasted with other classes over the three years where a reduction of the difference was recorded. This result was further reinforced with a higher score from this class in the reading and viewing component of the Year 3 Test.

Understanding of Metacognitive Language

The student's understanding of the concept of metacognition began with the discussions about how, why and where they learned. To be able to complete the activities, they needed to think about how they personally approached learning. Recognising the way in which they each had a unique combination of learning patterns and that there was no "best" way to learn began to establish the student's confidence in their learning ability. Developing the language to articulate their learning needs became something they wanted to learn as it helped them participate in class in a way they enjoyed and felt success.

To assist the development of this language the students discussed learning approaches of characters in stories they were reading. In particular, the characters in the Pooh stories were analysed. Posters were then placed on the wall of Rabbit, Owl, Tigger and Pooh representing Sequence, Precision, Technical Reasoning and Confluence, which could be used as examples when thinking about the characteristics needed for using a particular pattern. The teacher took every opportunity to discuss the underlying thinking behind class or individual actions throughout the day. Parents were also given a workshop on the language so that they could communicate with their children about school and the day's learning. The teacher was also able to discuss student behaviour in terms of the child's learning patterns when parents were discussing student progress.

It was during the second year that the concept of a series of thought actions in the learning process was introduced. This was the process of mulling, connecting, rehearsing, expressing, reflecting and revisiting. The students began to articulate where they were in the process, or where they were having a difficulty in proceeding, in discussions with the teacher. It also established the reflection and revision steps into completing work, an important formative self-assessment process. Once again the teacher's continuous focus on the learning process throughout daily activities supported the benefits of this understanding. The students were also recording thoughts, feelings and experiences that they had reflected upon in their learning journals.

Examples from these journals to illustrate the outcomes

> *Kurt: I am like a rabbit because I like to have neat work and make lists. I like clear directions, sometimes I need the directions about three times or more and I like my room neat.*

> *Ben: What do I know about my learning pattern? I use my precision. I read a lot of books, I ask a lot of questions and I like a lot of details. I love to draw very detailed pictures.*

Nikita: I know my use first pattern is technical. I like to work by myself and I like to build things and I don't like writing things down. So I try to stop. Then I think and I slow down.

Sarah: I am confluent, which Poo Bear is too. Pooh Bear comes up with good ideas and I do too. I love Pooh Bear.

Sam: I like to use my precise pattern. We like to have things neat. We like to be the boss of the game. We know a lot about bugs and insects. I read a lot of books. Next I am sequential. I like writing lots of lists down. I need things done over and over again.

Sean: Maths Problem - What was I thinking? (1 Estimation) I thought that you measured the milk in the buckets. I did not know that there was a,b,c,d down the bottom. I tried to measure it. (2 Patterns) I already knew what to do but I still counted on to see if I still got it right. I think I got it right.

Examples of teacher reflections on how the process has influenced classroom activity

The children are more aware of the fact that they are all different and think differently and that's OK.

Since the beginning of the year we have had many discussions about learning. It has been encouraging to listen to the children talk about how they learn and where they learn. The children are realising that learning takes place everywhere and we learn in different ways.

It has helped my stress levels, as I used to get very frustrated with a child who wouldn't listen to directions, just wanted to get on with the job then ask directions after he had started the task. By looking at their individual learning patterns I am now aware that this is part of the child's learning pattern and make allowances for that and no longer get frustrated.

> *Now, when a child becomes frustrated because they may make a mistake, I understand that in their mind they would rather start again on a whole new page rather than try to correct the one they have started. E.g. Ryan cried because he made a mistake, it was beyond correction and when he was given a whole new one to complete, he did it perfectly and was very happy with his work.*
>
> *I now understand that it is necessary to be patient with some children who need time to complete their work - they are much happier children when you give them this opportunity. Many children would like to take the work home just to make it perfect, as they would like it, rather than be rushed to finish it.*
>
> *When I asked the class, "Why does Caitlyn find this activity difficult or uncomfortable?" the response from a member of the class was, "Because she is highly precise and she is worried about getting it wrong."*
>
> *When I was away one day Christian was asked by the relief teacher what the problem was when he hadn't started working, to which he replied, "Well actually it isn't a problem. I'm mulling over in my head what I need to do to get started."*
>
> *Throughout the whole process we meet with the parents to explain the process and what we are doing, including finding their patterns. The children are constantly going home and saying to their parents things, such as, "Oh, I did that like that because I'm technical first." In the classroom you may hear, "Hey, Josh, let's be really confluent and instead of building our own things let's put all the Lego together and make one gigantic thing".*

Year 2 Net Outcomes

The first comparative assessment profile was provided by the Year 2 Net. The following graphical representation illustrates the relative performance of the Target Group and other Year 2 classes.

Figure 23.2

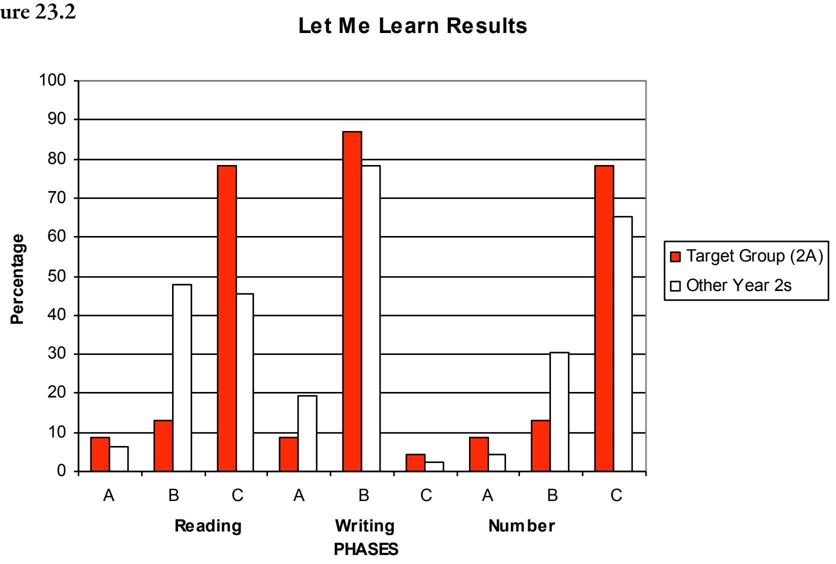


Table 23.3

Children	Percentage of Students achieving level								
	Reading			Writing			Number		
	A	B	C	A	B	C	A	B	C
Target Group (2A)	8.6	13	78.2	8.6	86.9	4.3	8.6	13	78.2
Other Year 2s	6.5	47.8	45.6	19.5	78.2	2.2	4.3	30.4	65.2

These results indicate a much higher aptitude for reading and comprehension but with a larger “tail” of poor readers; a similar level to other classes in writing with slightly higher levels and a smaller “tail”; and, slightly higher levels in number with a larger “tail”. This “tail” is indicative of the fact that the class had a spread of abilities, including some children classified as being in need of support from the Special Education Unit.

Competitions

In year 3, the students were eligible to enter National competitions in English, Mathematics and Science. The teacher entered the whole class, despite the fact that normal practice is often only to enter the more able students. Statewide, only 6% of Year 3 were entered. This was done because it was seen that these were opportunities to illustrate the student's ability to use the processes of learning in a non curriculum-based context. Could they use their learning patterns with an unstructured, unfamiliar, problem solving type of challenge? In preparation, they were introduced to the nature of each competition and how to look for key signs that illustrated the need to use different learning patterns.

The following table illustrates the outcomes:

Table 23.4 UNSW Educational Testing Centre COMPETITIONS (About 6% of Students Participate)

					AVERAGES	
ENGLISH	High Distinction	Distinction	Credit	Total Participation	All Class	Top 50%
Year 3C	3	2	6	22	29.36	36.8
Other Year 3		1	1	16	22.63	
State				4334	25.48	
MATHEMATICS						
Year 3C		2	9	25	22.48	26.64
Other Year 3		2	3	11	21.92	
State				5678	22.02	
SCIENCE						
Year 3C		1	6	24	17.21	21.67
Other Year 3			2	6	18.16	
State				3325	18.87	

These results were very good and well received by the students and parents. They supported the expectation that the students had a good sense of challenge about unseen learning contexts and were able to use their ability to achieve optimum outcomes.

Year 3 Test

The results of the Statewide test at Year 3 are illustrated below. These are based closely on the expected curriculum coverage at this year level. The students were again prepared for the nature of the test and the ways to look for the appropriate approach that would provide the expected answer.

Table 23.5 Year 3 Test

	Read&View	Write	Spell	Number	Meas&Data	Space
Year 3C	541	495	517	547	541	526
Other Year 3	520	454	492	586	568	538
School Av	527	467	499	570	561	534
State Av	530	525	527	544	548	544

The outcomes illustrate that the target group still performed significantly better than the other year 3's in literacy skills. In numeracy they were behind the other classes but close to Sate averages. The teacher reflects that she did not do a lot of numeracy exercise sheets as part of her program and feels this may have been a cause of this difference. The results were certainly out of character with the high standards achieved in the National Mathematics Competition. Similarly, she anticipated higher levels of success in the literacy part of the test and offers the specific nature of the test and the way outcomes are graded as an explanation.

Surveys of Students and Parents

Towards the end of the year all Year 3 students completed a survey. The target group, 3C, had done three years in the program; 3A had one year introductory involvement and 3B had no involvement at all. The class profile of 3C has been discussed above, but it predominantly indicates an interest in information with a strong sense of a need for relevance and the desire to do things differently. The class profile of 3A was determined and indicated that Use First of technical reasoning was the highest average score. This indicated a significant number of students would want practical activity that they saw as relevant to their lives. They may also be reluctant to write a lot and prefer to discuss issues. However, the median scores indicated that sequence and precision had more students using these two first. This was due to the more extreme scores of the students who responded to the technical reasoning questions causing a skew of the data. Such a distribution required a clear understanding of the individual differences in the class and recognition that one process was unlikely to satisfy a majority of the class. The teacher had a high use first in technical reasoning that allowed him to have an empathy with the group of students who led with technical reasoning. While 3B did not do the LCI, the class was taught in a formal and traditional way.

Table 23.6 Class profile scores of 3A

	Sequence	Precision	Technical	Confluence
Mean	24.2	24.5	25.3	23.4
Median	25.5	25.5	24.5	23.5
Teacher	23	20	28	19

Interesting differences can be noted in the responses and related to the children's experience of school. The final column is the response of parents of 3C to the same question about their child. The following table lists a selection of questions and percentage of responses in the Almost Always and Always categories:

Table 23.7

Question	3C	3A	3B	Parents of 3C
1. Do you do well at school?	52	70	80	73
2. Do you like coming to school?	73	40	52	80
3. Do you like to work alone at school?	41	15	28	
4. Does the teacher help you with your work?	18	35	12	
5. Do you like writing?	41	20	52	53
6. Do you like writing about your own topic?	82	65	68	53
6P. Do you feel that your child writes at an acceptable level for his/her age?				60
7. Do you like reading the school readers?	36	30	36	20
8. Do you like to read your own choice books?	82	56	76	60
7. Do you like to read aloud to the class?	45	5	44	
8. Do you like to read to the teacher?	32	25	56	
9. Do you like someone to read to you?	59	40	36	
9P. Do you feel that your child reads at an acceptable level for his/her age?				80
10. Do you like doing work sheets of sums?	36	10	72	67
11. Do you like to solve maths. problems?	50	35	44	53
11P. Does your child show a practical comprehension of number, for example money?				80
12. Do you like to work in a group on a project?	59	45	36	53

13. Do you like projects in which you make things?	71	80	68	
14. Do you like to do projects differently to other students?	68	80	68	
15. Do you like the teacher to tell you how to do your project?	45	50	24	
16. Do you do good projects?	64	55	80	
16P. Do you feel that group projects provide a good learning experience?				73

Comments on responses

Questions 1 & 2

It is interesting to note the different perceptions of how the students feel about success at school. In the more structured and formal environment of 3B there is a perception that they do well, perhaps from a traditional cycle of input and successful feedback that is often touted as good teaching. Meanwhile, the target group has a more modest view of how well they are doing, perhaps from more understanding of goals and outcomes within the learning cycle. Conversely, this target group has a higher percentage who like coming to school, which could be associated with a higher level of involvement and personal sense of success. The parents of 3C confirm that their children appear to be doing well at school and enjoy attending. The students of 3A have a high proportion that do not like coming to school, possibly associated with the high number of students who use technical reasoning and find the processes of school are not relevant to them.

Question 3 & 4

A stronger sense of independence is illustrated by the target group, interestingly balanced by a strong enjoyment of working in a group, illustrated by the 59% response to Question 12. It is interesting to note how low the response to teacher help is for both the target group and the more traditional group. It is hypothesised that this response is from independence in the target group and a culture of being required to do it "on their own" in the traditional group. The higher response in 3A is believed to be the close relationship between the teacher and some students because of their similar learning patterns, which help them recognise that the teacher assists them to find ways to do their work.

Questions 5 to 9P

The responses from the target group illustrate a group of children that enjoy writing and reading, especially if it is of their own choosing. The parents confirm that they are happy with the level of competence of their children. Interestingly they respond less favourably to the more structured activities. These responses tend to be conformed by the competition and test outcomes. The impact of the high number of students using technical reasoning in 3A is highlighted by the scores for writing (20%) and reading aloud to the class (5%), with only a slightly higher score for reading personally to the teacher (25%).

Questions 10 to 11P

The traditional class, 3B, enjoyed work sheets, while the other two classes were less inclined, with 3A feeling a very limited appeal. Conversely, these two groups were more interested in maths. problems than the traditional class, illustrating a desire to work with real problem contexts and a disinterest in repetitive sums in the name of practice and rote learning. The parents of 3A indicated that they felt the children were relatively capable in numeracy and this was supported by competition and test results.

Questions 12 to 16P

The target group indicated a strong interest in working on projects and within groups. The work on group building and contributing within groups is likely to have helped this interest. The traditional group showed a low interest in working within groups, but enjoyed projects and felt they did very well in this area. A comparison of their projects illustrated a much more limited scope and a closer alignment to prescriptive outlines. As would be expected, 3A enjoyed practical approaches to learning and the opportunity to do work that they could make relative to their own lives. The parents showed a more limited support for the idea of their child working within groups, but recognised the value of project work as a learning experience. This may have arisen from past experience of the devaluing of group work within a traditional competitive assessment system.

The Questions in the next table focus directly on the understanding of learning patterns. It is important to note that 3B did not have any direct instruction about learning patterns. The numbers are the percentage of children responding Almost Always or Always.

Table 23.8

Question	3C	3A	3B	3C*
1. Do you like to use the sequential learning pattern with your schoolwork?	50	10	8	84
2. Do you like to use the precise learning pattern with your schoolwork?	86	40	8	100
3. Do you like to use the technical learning pattern with your schoolwork?	41	40	4	73
4. Do you like to use the confluent learning pattern with your schoolwork?	59	30	8	86

Comments on responses

It is important to note that the responses of the target group align with the learning profile of the class. They had their highest Use First score in precise and this is reinforced by the response. Similarly, their other responses are in the order of their average learning pattern scores. The slightly lower score in technical reasoning may be because they recognise that there are limited opportunities to use this pattern. The reasonably even distribution also indicates that the students have recognised that they use all patterns in their learning experiences and not just the ones they have personally at a Use First level. This is further reinforced when we look at the last column, which indicates the percentage of responses if the Sometimes category is also included. The responses of 3A, who had limited experience of the Let Me Learn Process, did not align so closely with the class profile. However, with a very even distribution on the averages of the learning pattern scores, the distribution of highest scores in precision and technical is not unexpected. The low score in sequence may have been a lack of clear understanding of its role as 60% indicated they did not know if they used sequence. While the scores were lower than in sequence, there were a considerable number of students in this class that did not know if they used the patterns. This contrasts with almost no one in the target group. It was to be expected that the traditional class would not be prepared to answer these questions and 80% indicated they did not know the answer to each question.

The following table indicates the percentage of responses from parents of 3C children in the Almost Always and Always categories. The parents of 3C received several workshops on the Let Me Learn Process over the three years.

Table 23.9

Question	Parents of 3C
1P. Do you see your child's learning patterns in action in his/her schoolwork?	87
2P. Does your child talk about the reason why he/she does things in a certain way?	73
3P. Do you feel that understanding learning patterns has helped in his/her schoolwork?	73
4P. Do you feel the learning pattern approach has helped your child succeed at school?	80
5P. Do you feel this approach helped you relate to the teacher about your child's learning?	80
6P. Do you feel that one teacher for three years was beneficial to your child's education?	87
7P. Does understanding your child's learning patterns help in relationships at home?	60

A very rewarding outcome was the strong support and appreciation of the parent group. They enthusiastically participated in workshops and information afternoons over the three years. The group strongly expressed their support for the process through their responses as illustrated in the table. The understanding they developed about learning, in particular their own and their child's approach, enabled the teacher to maintain meaningful dialogue in the development of their child in these formative years. They illustrated that they could see their child's approach to learning in action, that it was part of their conversation about school and that it was beneficial for their child. Importantly, they were able to use the language of learning in their conversations with the teacher. Many could appreciate that the process flowed over into family relationships. In fact the response was close to 100% support, with only one parent expressing doubts about the three-year program.

Student Questionnaire - Written Responses

Three questions at the end of the questionnaire allowed for written responses. The questions were "What is the best thing about school?"; "What do you not like about school?" and, "How do you learn something new?". A summary of the responses is tabulated below:

Table 23.10

Student Questionnaire - Written Responses		**3C**	**3A**	**3B**
			(Percentage of responses)	
What is the best thing about school?	Maths	2.5	2.4	28.5
	Learn	2.5	2.4	14.5
	Hard work	2.5		
	Reading	2.5	2.4	
	Painting/Art	8	5	3
	Free stories	8	2.4	
	Work sheets	2.5		
	Sport	23	15	
	Lunch/break	23	15	11.5
	Fun/good time	10	5	
	Play with friends	15	17	17
	music/PE		5	
	class games		12	
	group projects		7	
	teacher		2.4	6
	writing		2.4	6
	when others are nice to me		2.4	
	when teachers are nice		2.4	
	home time			8.5
	spelling			3
	English			3

Table 23.11

Student Questionnaire - Written Responses		**3C**	**3A**	**3B**
		(Percentage of responses)		
What do you not like about school?	Work	15	14	3.5
	Maths	15	25	3.5
	writing	23	8	11
	Fighting/bullying	27	17	32
	middle session		2.5	
	Nothing	19	6	3.5
	teacher yelling		6	
	uniform		2.5	
	specific subjects		14	3.5
	being inside		6	
	teacher not listening			3.5
	play/not learning			3.5
	Home time/not learning			3.5
	being told what to do			11
	English			7
	sport			3.5
	time out			3.5
	science			3.5
	tests			3.5
How do you learn something new?	listening	18	31	41
	reading	10.5	9	
	drawing	2.5		
	watching	2.5	9	14
	computer	2.5		
	work it out	8		7
	practice	8		3.5
	building	2.5		
	being shown	2.5		
	from mistakes	2.5	6	
	from teacher	29	16	17
	from others	10.5		
	questions		3	7
	writing		3	
	from work		16	3.5
	play a game		3	
	someone yelling at me		3	
	concentrate			3.5
	try and understand			3.5

Comments on responses

The target group indicated that it was the social activity that they liked best about school with over 70% of responses associated with fun, playing with friends, recess breaks and sport. While the traditional group had a 30% response in this area, they had a similar sized response for mathematics. The important issue that it highlights is that this is a time when children are focussing on play and other children rather than the formal curriculum. In contrast, the system of schooling is focussing on graded performance measures of growth in performance.

It is interesting to note that all classes provided the greatest number of responses to what they did not like about school to fighting and bullying. The target group indicated that the formal aspects of curriculum, writing and mathematics, were least desirable. Also from this group nearly 20% did not have anything they did not like about school, while this response had little support from the other classes. While the responses from the target group fell under five headings, the responses from the traditional class were more individualistic and spread over a wide area.

When the children described how they learned, they illustrated that the role of the teacher is central. Together with indicating that they learned from the teacher, they also gave the highest response to listening, which could also be assumed to be the teacher. The target group gave a wider range of responses to this question illustrating that they had learned about how they personally approached learning and what helped them to learn.

Parent Questionnaire - written responses

Parents provided a wide variety of responses to the three questions. Examples of these responses are provided below to indicate the support for the program. No parents indicated they were unsatisfied with the process.

Question 1 - "What is the best thing about school for your child?"

> *"He is in a safe, comfortable environment within his class, able to attempt daunting projects at his own pace - with encouragement. He is valued as an individual learner, receiving praise for his achievements, regardless of size."*
>
> *"The teacher has made learning an easier task as she has understood Nikita and catered for her needs."*

> *"In the three years Ben has become a well adjusted, likeable boy. He loves school, his teacher and is friends with most children. Seeing for myself how well Ben can read, write and is always eager for more knowledge, says to me exactly what he likes about school."*

> *"Erin loves her teacher and usually can't wait to get to school to tell her the latest news. Erin's first year of school (at another school) was very rocky and her teacher used traditional teaching methods rather than working out the best way for Erin to learn. The results were often disastrous and we were very concerned. We told Erin that changing schools would be like starting fresh. Erin's life changed unbelievably when she started in this class. She turned back into the curious, intelligent child we knew. Thank you."*

Question 2 - "What do you not like about your child's experience at school?"
This section was often left blank, or comments of the following type were made.

> *"Josh's learning experiences at school have been mostly positive. Nothing stands out as something I don't like."*

> *"I am concerned about the lack of continuity of this program throughout the school, and losing the benefits gained over the past three years."*

Question 3 - "How would you describe the way in which your child has learned over the past three years?"

> *"Self-awareness has been encouraged - in both strengths and weaknesses, and these have been utilised when appropriate to build confidence. Hands-on, as well as "book learning", keeping his interest level up."*

> *"Sarah has always had the help she has needed. I feel more time has been put into her needs. It has not only helped Sarah, also helped me to understand the way Sarah is, and the way she learns. I have far more patience with her."*

> *"The flexibility of the Let Me Learn Program has certainly made a huge difference. Erin needs time to process information and uses any type of physical activity from cartwheels to going to the toilet, to take time out and process and collect her thoughts. Sitting still rarely works, so activity within learning is of great benefit."*

> *"The main benefit of the system is an aid for teachers to understand each child's particular learning pattern, and hopefully address each lesson to suit. The results of this experiment were truly remarkable as demonstrated by the NSW tests. We must congratulate the teacher for her initiative in this matter."*

Conclusions

This Action Research Case Study has attempted to illustrate the difference in the children's experience of school under a changed pedagogy. As a private and unfunded study it is descriptive in nature as distinct from a comparative analysis of target and control groups. While its primary goal was to show the benefits to the learning experience, it also indicates the need for more detailed study that could focus the issues associated with changing the pedagogy.

The study illustrates how the assumptions associated with Education Queensland's Principles of Effective Learning and Teaching manifest themselves. The critical factor is the way in which the achievement of these processes is assessed and rewarded. On the one hand there is evidence of improved participation, happiness, and sense of success at school, while on the other the change in grades measured against curriculum standards is only marginal and performance can still be below average. It highlights the immense challenge of raising the achievement of a low socioeconomic group in tests that strongly favour a narrow range of learning styles and suffer a definite socioeconomic bias.

The target group learned how each of them was a learner and had contributions to make in how they learned, how they learned with others and how they illustrated what they had learned. The role of learning within the experience of life became an accepted norm and was not isolated within the confines of school. The integrated nature of the curriculum delivery allowed the students to recognise its relativity to their life and enabled them to find real ways to become involved and successfully illustrate their achievement. Critically, they were able to understand the diversity in learning approaches and how each individual has a different way of seeing things and that this could be included in the experience of learning a set curriculum. By working with others and understanding their differences they began to grow in the use of approaches that were not as natural to them and to expand their learning potential. The process of learning included reflective practice, the need to revisit work outcomes after they had assessed ways to improve and developed self-improvement attitudes within the group. The target group became a "lighthouse" class within the school and stimulated the formation of a learning circle of teachers who began to implement the Let Me Learn Process within their own classes.

The reality of this success was measured by the change in performance of the group and their higher level of involvement in the schooling experience. The parents of the group totally supported the experience and recognised the benefits for their children in both attitude and achievement. While the study began under totally supportive administration, the school underwent four changes in leadership over the three years and other programs received support in attempting to improve the outcomes of the school. The strong foundation that these children received at the beginning of their schooling was not regarded as well enough identified and was not implemented across the year levels. Probably most critically, the process of changing the nature of the pedagogy of the classroom was regarded as not prescriptive enough and, therefore, would not easily transfer to all teachers. The very high "partnership in learning" basis of the Let Me Learn Program was regarded as being too radical a change for many teachers to cope with. More prescriptive and curriculum orientated practices were introduced in an endeavour to improve scores at standardised tests.

This demise of the experiment is typical of much of the experience of the Progressive Movement, great philosophical ideas that require too much change to the strongly entrenched roles of the traditional teacher to be implemented over extended periods or in widespread contexts. The continual rhetoric for change that emanates from the Central Offices, while philosophically meaningful and often identified as the practice of "good teachers", is resisted on the grounds that it does not have a direct impact on the assessment scores that are equally loudly demanded as the measure of "success". This conflict is the bane of the innovative administrator as he or she attempts to improve the quality of the schooling experience. While comparative assessment continues to demean the achievement of the student that does not learn according to the patterns of traditional schooling, there will continue to be the growth in an unsettled student population. These students see little relevance in the experience of schooling and are not "baited" by the challenge of "this is good for you, it will get you a better job", while society focuses on quality of life issues and individual responsibility.

References

Education Queensland Principles of Effective Learning can be viewed on http://education.qld.gov.au/curriculum/pdfs/pedagogical-framework.pdf

Grandin, R., G., (1990). *An Evaluation of Government Support Programs to*

Disadvantaged Schools (MEdAdmin), University of New England, Armidale, NSW.

Grandin, R. G. (1998). *Student's Experience of Learning in an Alternative School.* (DEd), University of New England, Armidale, NSW.

Johnston, C., A. (1996). *Unlocking the Will to Learn,* Corwin Press, Thousand Oaks, CA.

Johnston, C.A., (1998). *Let Me Learn,* Corwin Press, Thousand Oaks, CA.

National Assessment Plan Literacy and Numeracy (NAPLAN). Includes Year 3 Test and can *be* viewed on http://education.qld.gov.au/naplan/

Senge, P. (1990). *The Fifth Discipline: The Art and Practice of the Learning Organisation*. Century Business, London.

Stake, R. E. (1973). *Responsive evaluation*. University of New South Wales Tests can be viewed on https://www.eaa.unsw.edu.au/

Waddington Reading Tests can be viewed on http://www.wadd.com.au/files/Reading%20and%20Spelling%20Tests.htm

•CHAPTER 24•

Vee Heuristics, Concept Mapping and Learning Patterns: Merging Metacognitive Tools and Learning Processes to Improve Facilitation of Learning with Primary Children

Jacqueline Vanhear and Christine A. Johnston

Introduction

Education is a journey and a very personal experience which may be enlightening for some but “merely an un-engaging rite passage into adulthood” (Pinar ed., 1998, p.135) for others. Rousseau’s writings emphasised the importance of making sense of the world in our own way: “Childhood has ways of seeing, thinking and feeling peculiar to itself: nothing can be more foolish than to seek to substitute our ways for them.” (Rousseau in Boyd’s translation, 1956, pp. 38-39)

Nonetheless, the transmission model of education is still prevailing in many schools with children being lost to us. Even if students make it academically, Pinar argues that they “graduate, credentialed but crazed, erudite but fragmented shells of human possibility” (Pinar, ed., 1995, p. 519).

In view of this reality, one starts to ask, “How can we help the children experience a journey of education which instills a desire to learn, reflect and act critically? As educators we need to reconceptualise pedagogy and modify the often conventional and restrictive practices in the classroom to a pedagogy where “the child (is) aware of her own thought processes… and aware of how she goes about learning and thinking as she is about the subject-matter she is studying” (Bruner, 1996, p. 53).

But when and how does learning occur? While there are many who have contributed to our understanding of how learning occurs (James, 1904; Snow & Jackson, 1992;

This chapter was first published in the Proceedings of the Second International Conference on Concept Mapping – Concept Maps: Theory, Methodology, Technology in 2006 held in San Jose, Costa Rica.

Sternberg, 1996), there are few who have developed a connected explanation of an individual's mental operations (cognition, conation and affectation) and resulting learning processes, i.e., how an individual takes in the world around him/her, makes sense of it, and responds to it in appropriate ways.

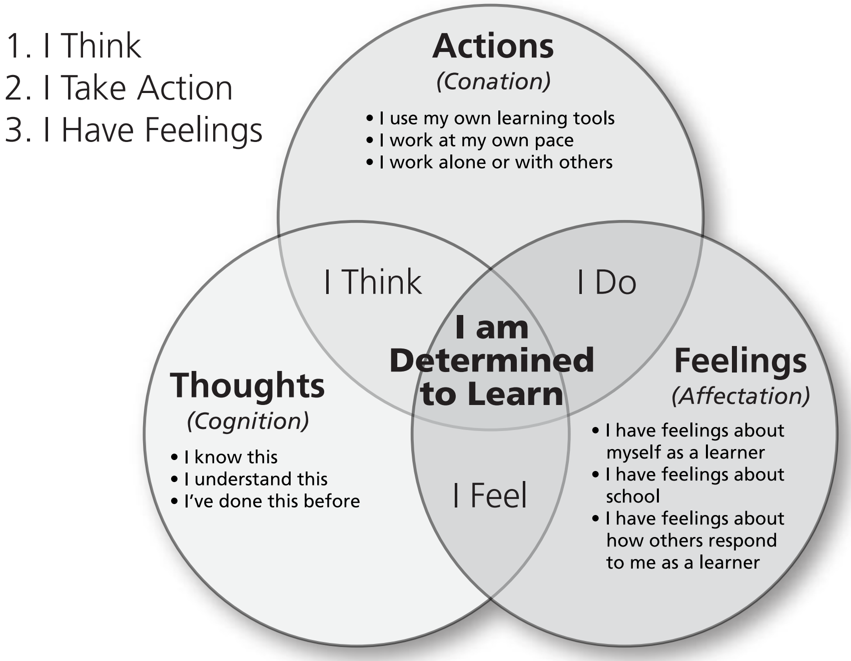
The Let Me Learn Process: An Advanced Learning System

The LML Process® is an advanced learning system whose theoretical basis is the Interactive Learning Model developed by Johnston, 1996. The Interactive Learning Model proposes that learning is a process occurring through the use of three mental processes: Cognition, Conation and Affectation (Figure 24.1) and that these processes are the internal operations of our learning patterns, namely, Sequential, Precise, Technical Reasoning and Confluent and the degree to which each pattern is used varies from person to person. To measure the degree to which each learner uses each of the patterns, Johnston & Dainton (2005) developed the Learning Connections Inventory (LCI) which has withstood empirical and theoretical testing for more than ten years in different countries around the world. The LCI scores reveal whether one uses a learning pattern at a "Use First level, "Use as Needed" level or seek to avoid it altogether.

The Sequential interaction is that aspect of our learning which needs to follow step-by step directions; organise and plan work carefully; and complete the assignment from beginning to end free from interruptions. The Precise interaction is that aspect of our learning which needs to process detailed information carefully and accurately; take detailed notes; ask questions; know exact answers; and write in a highly specific manner. The Technical Reasoning interaction is that aspect of our learning which requires practical application and relevance to any learning task. It is our non-verbal process which sees the mechanics of operations, the function of pieces; and needs to work "hands on", unencumbered by paper and pencil requirements. The Confluent interaction is that aspect of our learning which has us avoid conventional approaches; seek unique ways to completing any learning task; gives us permission to start before all directions are given; and permits us to take a risk, fail and start again (Johnston, 1996).

Let Me Learn Process does not categorise or place a learner into a single quadrant but instead emphasises that every learner uses each of these interactive processes in concert and to varying degrees. These learning patterns, as presented in Figure 24.2, serve as filters through which a stimulus moves from the brain's processing of it to the mind's action upon it. Such action includes translating the stimulus into symbolic representation (words, numbers, musical notes, etc.), sorting and storing it within

Figure 24.1 The Interactive Learning Model



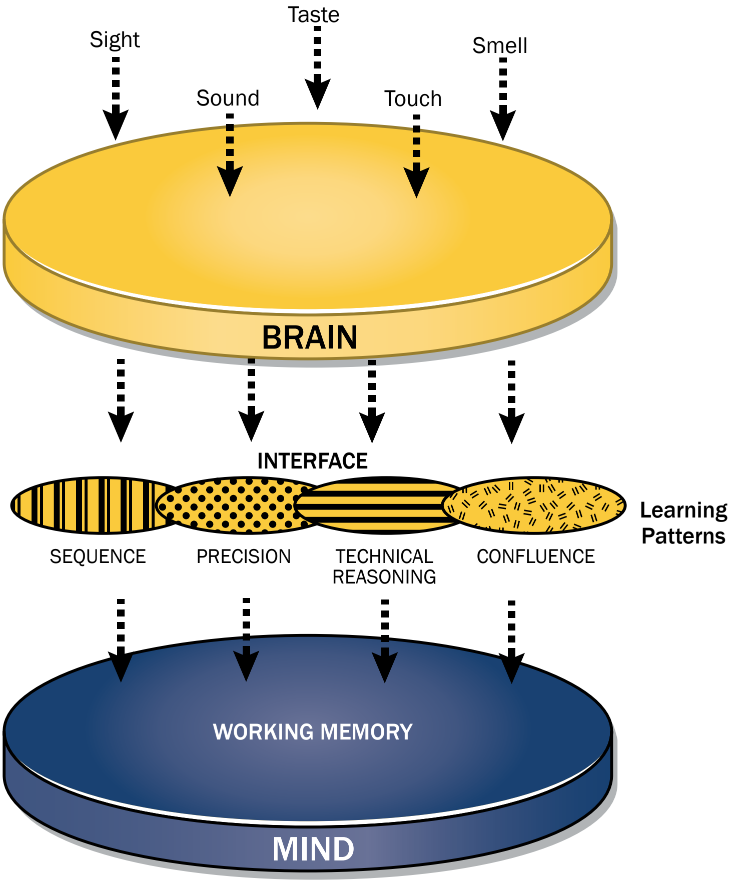
declarative and non-declarative memory, and retrieving it for later use. The Interactive Learning Model is based upon research conducted in cognitive science, brain science, and multiple intelligences (Allport, 1961; Bruer, 1993; Gardner, 1983; Johnston, 1996; Keefe & Ferrell, 1990; Snow & Jackson, 1992; Sternberg, 1996).

The Let Me Learn Process is based on the assumption that taking control of how one learns is powerful and positive (Flavell, 2000) and it provides a lexicon of learning terms and teaches metacognitive/reflective skills (Osterman & Kottkamp, 2004; Johnston, 1998). The LML Process helps learners take responsibility for making learning work for them by using carefully developed activities including a student designed, metacognitively-driven strategy card that guides the learner through various types of learning tasks. Unlike measures of personality, multiple intelligences, or learning styles which leave the learner informed but unequipped to use the information, the LML Process invites the learner to use these processes with intention. This is what makes the LML Process a truly advanced learning system.

The LML Process suggests in Figure 24.2 that when stimuli enter the brain, the brain sends neuro impulses to the mind which translates the impulses into symbols that it can store, process and retrieve while at the same time it checks its prior experience and where it belongs within the declarative or non-declarative memory. This is where metacognition comes into play.

Bruer defines metacognition as "the ability to think about thinking, to be consciously aware of oneself as a problem-solver, and to monitor and control one's mental processing" (Bruer, 1993, p. 67). It is an intrapersonal communication where time is given to quietly think and reflect on what one is learning and on regulating how we go about learning (Vanhear & Borg, 2000). Metacognition challenges the transmissive view of learning and teaching held by certain teachers and the passive views of the role of the learners. While not dismissing the fact that metacognitive

Figure 24.2 The Brain-Mind Connection. ©Let Me Learn, Inc.



tools may be helpful, Georghiades (2000) reveals that primary school children who received metacognitive instruction performed better.

Merging Two Tools with an Understanding of Our Learning Processes

This paper emanates from a Master's research carried out with six-year-old children, in which the following major research questions were constructed: How can I make new meaning relevant and meaningful to the learners? How can I know what's going on in their heads? Has meaningful learning really taken place?

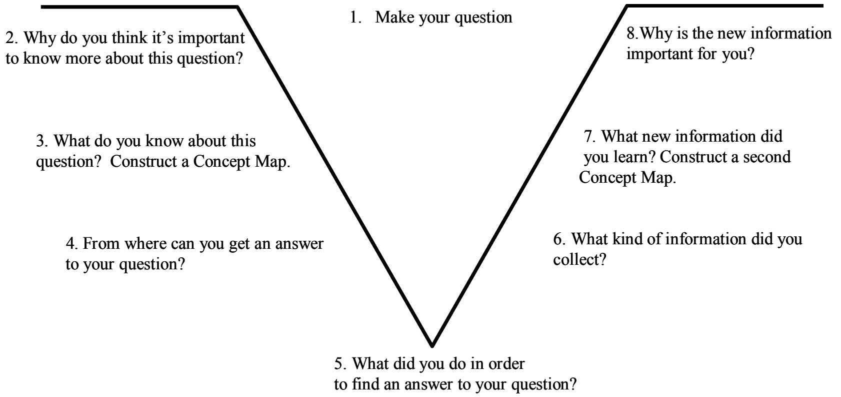
The aim of this research was to focus on the process and technique of Vee Heuristics and Concept Mapping so as to improve meaningful learning. This process and development was captured through semi-structured interviews carried out with selected learners in order to observe details of the diverse children's knowledge, feelings and actions related to a specific focus question. Concept Maps and drawings related to a particular focus question were constructed from the data obtained before and **after** the project. Furthermore, all of this was put within a context of the different learners' learning patterns.

Methodology

The Vee Heuristic presented by Novak & Gowin (1984) was too complex to tackle with six to seven year old children. Therefore, I opted to make use of Ahoranta's adapted version of Åhlberg's improved Vee Heuristics which have withstood theoretical and empirical testing from 1993 to 2006 and have been applied to Environmental Education in Finland for several years (Åhlberg, 2002; Åhlberg in Cañas et al 2004; Åhlberg & Ahoranta, 2002; Åhlberg & Ahoranta in Cañas et al 2004). Nonetheless, considering that Ahoranta's work was with 11-12 year olds, the wordings in the eight steps presented by Ahoranta were adapted so as to facilitate the learners' understanding and application.

In Figure 24.3, one can note that the first step in this process is to select a focus question. In order to capture the children's curiosity and empower them to become 'choosers' (Novak, 1998, p. 51) while also encouraging them to actively take part in their own learning, one of their own questions was used as a focus question.

Figure 24.3 Ahoranta's Vee adapted by Vanhear



1. Make your question

2. Why do you think it's important to know more about this question?

3. What do you know about this question? Construct a Concept Map.

4. From where can you get an answer to your question?

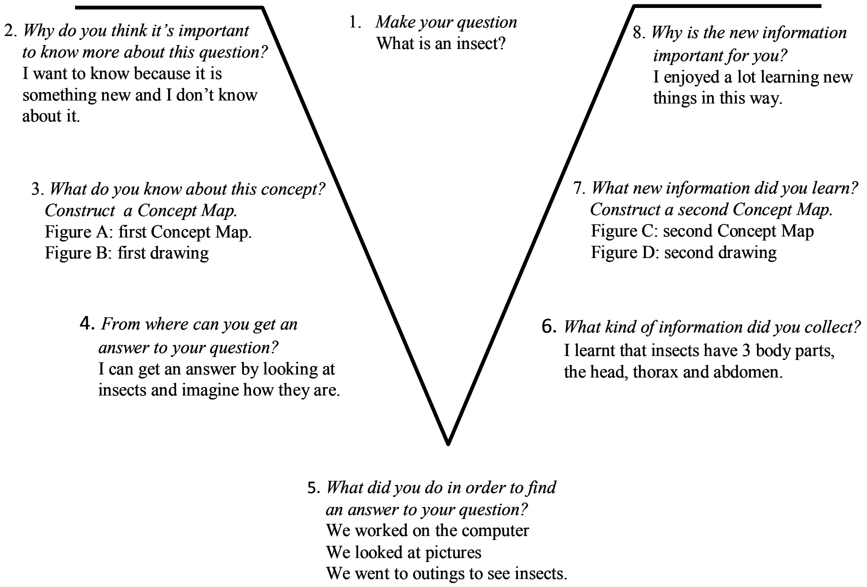
5. What did you do in order to find an answer to your question?

6. What kind of information did you collect?

7. What new information did you learn? Construct a second Concept Map.

8. Why is the new information important for you?

Figure 24.4 Learner 1 Vee Heuristic



1. *Make your question*
What is an insect?

2. *Why do you think it's important to know more about this question?*
I want to know because it is something new and I don't know about it.

3. *What do you know about this concept? Construct a Concept Map.*
Figure A: first Concept Map.
Figure B: first drawing

4. *From where can you get an answer to your question?*
I can get an answer by looking at insects and imagine how they are.

5. *What did you do in order to find an answer to your question?*
We worked on the computer
We looked at pictures
We went to outings to see insects.

6. *What kind of information did you collect?*
I learnt that insects have 3 body parts, the head, thorax and abdomen.

7. *What new information did you learn? Construct a second Concept Map.*
Figure C: second Concept Map
Figure D: second drawing

8. *Why is the new information important for you?*
I enjoyed a lot learning new things in this way.

Data Analysis

From the data collected, it was very clear that, besides revealing that children come to class with prior knowledge and experiences, children process incoming information in different ways, Vee Heuristics and Concept Maps facilitated an awareness of what children already know and how each of them actually processes new information. My prior knowledge of different learning patterns was value added to the process of Vee Heuristics and Concept Mapping. The path that this study has pursued is not to seek absolute truths but rather to shed light upon a pedagogical process which captures personal structures of knowledge and their development. Therefore, I preferred to make use of the same processes used throughout this research, i.e. Vee Heuristics and Concept Mapping for analysing the data collected. Here are two examples from the collection of data.

Learner 1. Her LCI score was Sequence 17; Precision 18; Technical 23; Confluence 27 (7-17= Avoid; 8-24 = Use as Needed; 25-35=Use First)

This learner uses Confluence first, avoids the use of Sequence and uses her Technical Reasoning and her Precision only when needed. This means that detailed instructions and directions do not make sense to this learner; she prefers to learn in a creative and entertaining way, she likes to do things in her own way and differently each time, and she doesn't feel the need to follow any rules.

The left hand side of the Vee Heuristic presented in Figure 24.4 reveals that for this learner the primary reason for wanting to know more about the focus question was because it presented something completely new to her (confluence). From reply No.4 one can observe the different way how this learner planned to learn about this question. She didn't refer to learning from books or detailed information but she referred to imagination (confluence) and observation instead. This is substantiated in reply No. 5 where, although in this learning programme specific lessons and books were available, this learner didn't mention these at all as the primary sources for her learning but, on the other hand, she mentioned the computer, pictures and outings. The right hand-side reveals the new knowledge constructed and how she integrated it within her pre-existing cognitive structure. This learner expressed that she enjoyed learning new things in this way, thus suggesting an increase in her motivation.

By analysing the two Concept Maps presented in Figures A and C, one can easily conclude that the number of concepts and propositions have increased drastically. More concepts and propositions indicate that learning has taken place. The learner also detected her misconceptions and missing information in the first Concept Map and made the necessary changes and additions in the second Concept Map. Being a learner who scores high in confluence and low in precise and sequence, she usually looks unmotivated to learn in the classroom setting. Consequently, this second Concept is amazingly impressive. She was able to demonstrate a high ability for learning new concepts and she also mentioned details, which would have probably passed unnoticed through the traditional way of teaching. I am referring to details, such as the word "arthropods" and its meaning, what insects eat, the concept of pollination etc.... This Concept Map evidences that this learner really enjoyed learning and was motivated to learn in this way.

Figure A First Concept Map

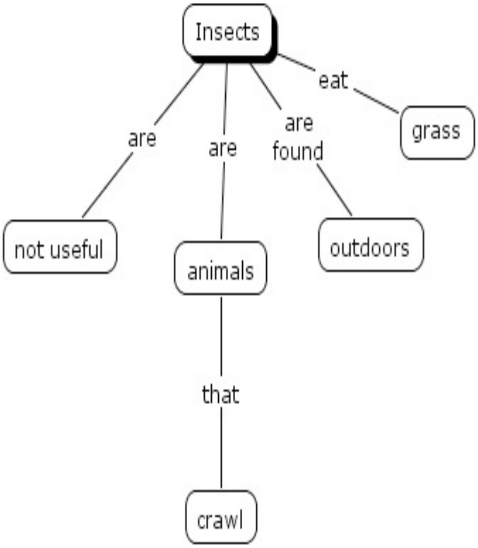


Figure B First drawing before the learning program

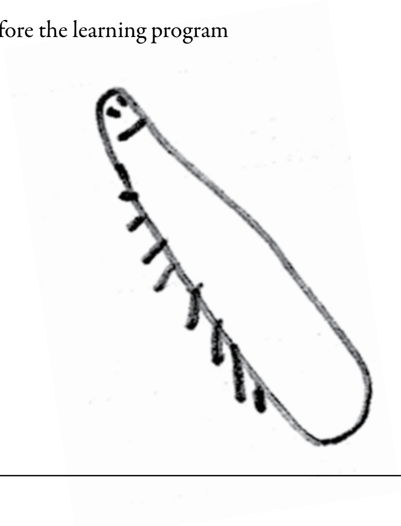


Figure C Second Concept Map

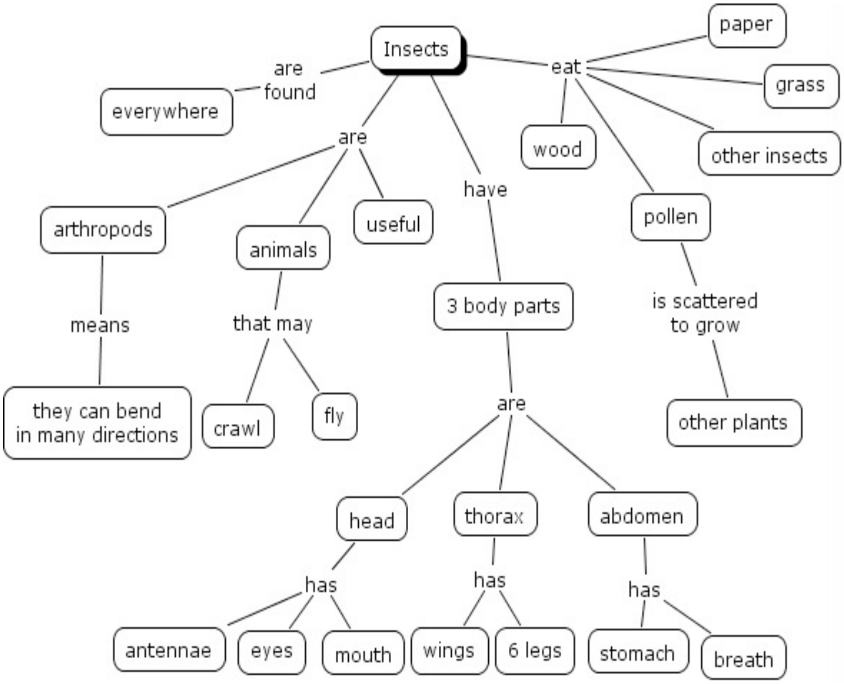
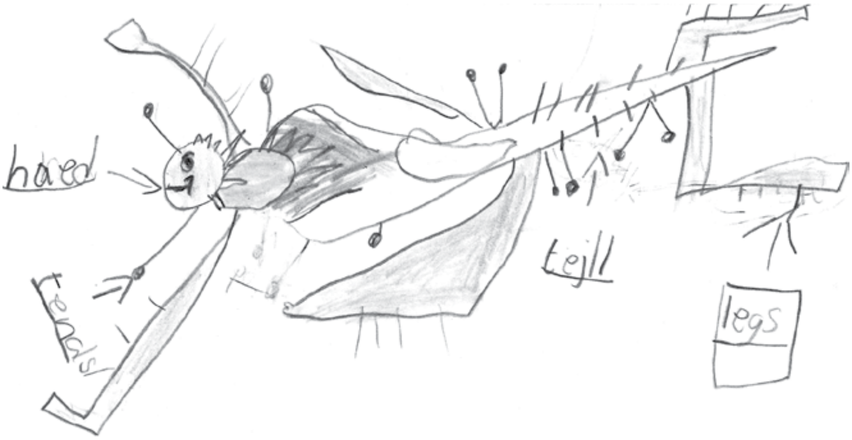


Figure D Second Drawing after the learning program

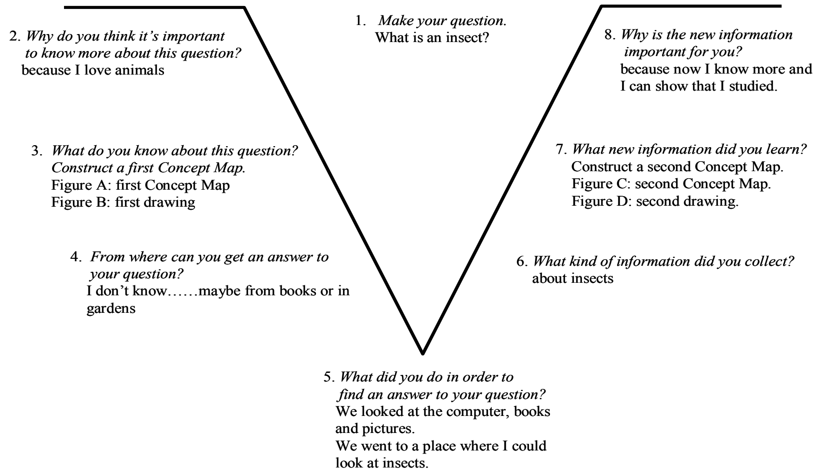


From the difference in the two drawings, one can note some of the new concepts that the learner developed. The first drawing is lacking detail while it represents exactly what the learner's cognitive structure of knowledge was about insects and which is similar to her first Concept Map before the learning project. It also reveals the misconception, present in this learner's cognitive structure, related to the number of legs. On the other hand, the second drawing reveals the development of new concepts and the correction of the previous misconception about the legs. One has to note that in the second drawing the three body parts and the six legs are very distinct. On the head, one can see the eyes and the mouth and the antennae which are labelled. These were all new concepts which were also present in the second Concept Map.

Learner 2. Her LCI score was Sequence 16; Precision 22; Technical 27; Confluence 20.

Here we have a 'dynamic' learner (Johnston, 2005) who makes use of Technical Reasoning at a Use First level. She uses her Confluent and Precise processing as needed while she avoids Sequence processing. From this learning pattern, one can deduce that this learner doesn't like to write in detail, she makes use of very few words to express herself, she prefers to work by herself and needs to see the purpose for what she's doing. Furthermore, she tends not to read directions since she finds following directions quite confusing if not even frustrating.

Figure 24.5 Learner 2 Vee Heuristic



1. *Make your question.*
   What is an insect?

2. *Why do you think it's important to know more about this question?*
   because I love animals

3. *What do you know about this question? Construct a first Concept Map.*
   Figure A: first Concept Map
   Figure B: first drawing

4. *From where can you get an answer to your question?*
   I don't know……maybe from books or in gardens

5. *What did you do in order to find an answer to your question?*
   We looked at the computer, books and pictures.
   We went to a place where I could look at insects.

6. *What kind of information did you collect?*
   about insects

7. *What new information did you learn?*
   Construct a second Concept Map.
   Figure C: second Concept Map.
   Figure D: second drawing.

8. *Why is the new information important for you?*
   because now I know more and I can show that I studied.

In this Vee Heuristic it is very interesting to note the difference in the answers on each side. On the left-hand side, which reveals responses given before the learning programme took place, one can note this girl's uncertainty in going through this programme. Reply No.1 is quite vague whereas reply No. 4 shows that she isn't sure from where she can get an answer. This clearly conveys the message how lost this child felt before going through this learning programme.

On the other hand, the right hand side reveals a difference in this girl's confidence. Her response to question 5 was quite immediate, detailed and sure, thus showing that her sense of security and motivation increased along the learning programme. Furthermore, it is quite appealing to note the response to question 8: *"because now I know more and because I can show that I studied"*. One of this learner's main concerns is not what she learnt but how she's going to show it. In fact, this learner's learning patterns reveal that she finds it difficult to express what she knows, especially through tests since she doesn't like writing in detail besides following too many sequential directions. It is no wonder that she is concerned about this; she is aware that she knows but she finds it difficult to express it. From reply No. 8 one can conclude that she was satisfied to be able to show what she learned. Concept Mapping offered her another way of expressing what she knows. When asked what she thinks about her second Concept Map, she replied: *"It shows that I have studied",* something a learner high in the use of technical reasoning is often accused of not doing because they do not see it as important to tell others what they know!

When one compares the two Concept Maps, presented in Figures A and C, it is very easy to deduce that the number of concepts and propositions has increased, thus indicating that learning has taken place. From the interview with this girl, I noted how quickly she was changing and adding on to her map. This revealed her confidence and eagerness to show what she has learnt besides showing how easy it was for her to externalise her cognitive structures in this way. She was enjoying watching her map expand. We can note that she was able to correct all the misconceptions present in the first Concept Map such as *"insects have 2 or 4 legs"*, *"insects are not useful"* or *"insects eat honey"*. She was also able to make changes to the concept of honey.

Referring again to this learner's learning patterns, we are aware that she finds difficulty in expressing what she knows and that she avoids sequence. This is maybe why the misconception *"insects eat honey"* occurred in the first Concept Map. Nonetheless, she was able to adjust this misconception and relate to it appropriately in the second Concept Map. In fact, we can see that this concept appears again in the second Concept Map only this time in the proposition *"bee gives us honey"*.

This learner's motivation through this kind of process of learning is also very explicit in her drawings. Figure B shows the drawing before the learning project and it

Figure A First Concept Map

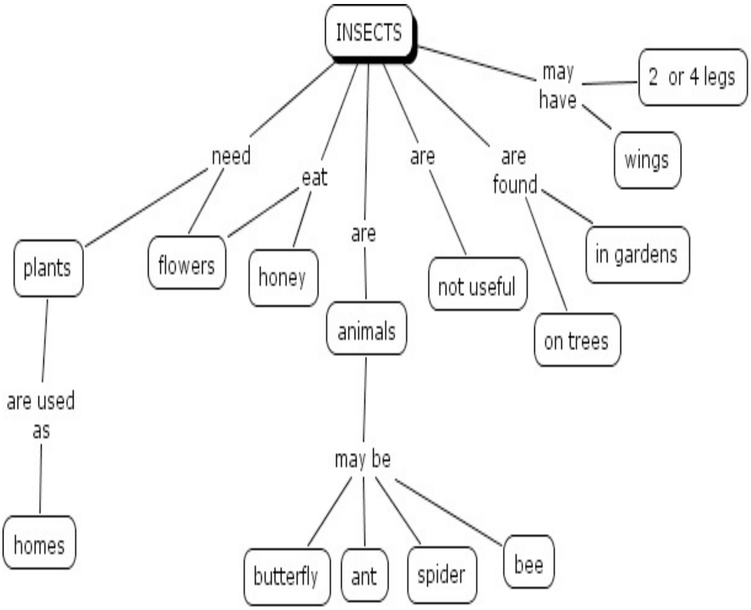


Figure C Second Concept Map

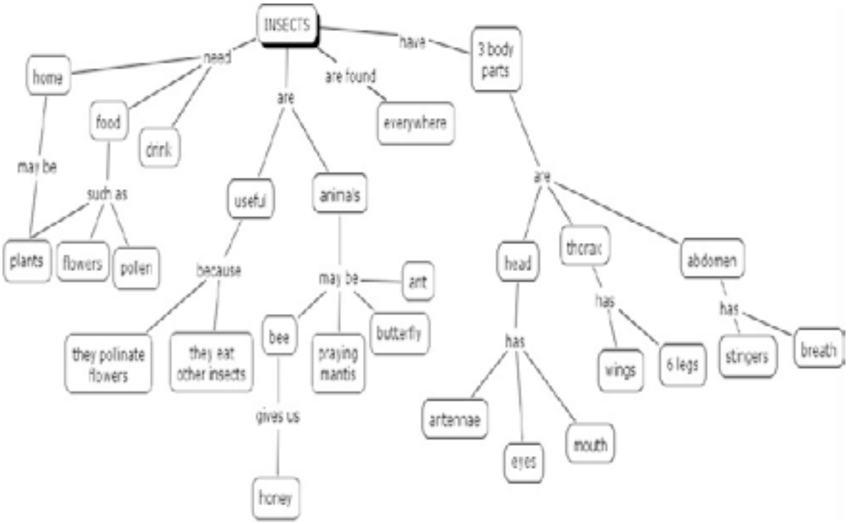


Figure B

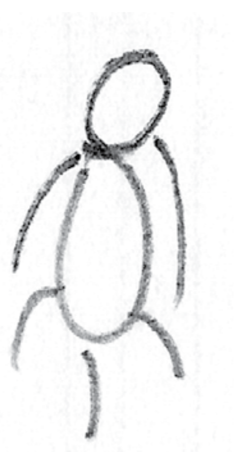
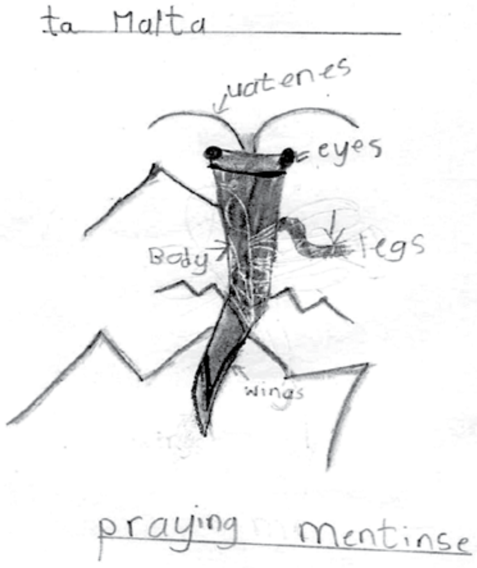


Figure D



is clear to see her motivation and lack of confidence at this stage. Figure D reveals the radical change that took place within this learner's motivation to learn. In fact, the second drawing, gives precise details.

The changes present in the Vee, in the Concept Maps and the drawings clearly demonstrate that learning in this way increased the learners' motivation thus affecting positively on their learning. Moreover, Concept Maps seemed to offer a practical way to exhibit what they learned, though I have to remark that they needed prompting while constructing their second Concept Map.

Discussion

Novak (1998) reveals that the shape of a Vee was chosen above other shapes becausem by using this format, one can clearly recognise and differentiate that both thinking (concepts and theories) and doing (methodology) are implicated in the process of constructing knowledge. The right-hand side of the Vee, reports the action part of knowledge construction taking place. One can, in fact, visually see what the learner is doing to develop his/her own knowledge. In addition, the learner can reflect and observe the development of the new knowledge taking place as opposed to his/her prior knowledge on the left-hand side of the Vee. In this way, prior knowledge was developed; misconceptions were altered while new knowledge was constructed. Thus, the transmission model of education is hereby challenged since the learner is learning on his own, the teacher is only facilitating this process by providing the necessary tools. It is argued that rote learning does not impart meaningful learning and one way of taxing this approach is through the use of metacognitive learning. Research in this study and elsewhere prove that Vee Heuristics promote metacognitive skills. Similarly, Novak argues that *"giving learners the correct information does not displace their faulty conceptions! It takes a lot of negotiation of meanings, a lot of shared experience to help learners reconstruct their internal concept Maps to be congruent with the expert's knowledge"* (Novak, 1998, p.118). This is where the knowledge about Let Me Learn becomes most fruitful, since with an awareness of the diverse children's learning patterns one is in a much better position to negotiate meanings and experiences in a way which make sense to the learners. The cognitive structures represented in this way made it relatively easy to follow the development of new knowledge and the specific changes in the learner's knowledge structure since Concept Maps give a specific picture of what the child has in her/his head (Kinchin, Hay & Adams 2000, Cañas et al 2004).

Moreover, this whole process makes the teacher stop and reflect on his/her own practice. In order to bring about transformation one must be ready to transform oneself first and foremost and the starting point should be to reflect critically for "If we want pupils to learn meaningfully and reflectively, then their teachers ought to first learn how to learn meaningfully and reflectively" (Åhlberg in Cañas et al 2004, p. 39).

Conclusion

My prior knowledge of the Let Me Learn Process and my newly acquired awareness of Vee Heuristics and Concept Mapping led me to study the effects of merging these tools. Through the Let Me Learn Process, I could better understand how the student learns while Vee Heuristics and Concept Mapping visually represented the learners' metacognition throughout their acquirement of new and related knowledge.

When teachers understand what students think about concepts or events under study and are aware of how they learn, they are better able to formulate a partnership in learning based on the learner's needs.

References

Åhlberg, M. (2002). Advanced Concept Mapping and Vee Heuristics as quality learning tools to promote Environmental Education and Education for Sustainability. *Paper presented in ATEE RDC 17 Annual Conference* Aug. 24-28, 2002. Warsaw University, Poland.

Åhlberg, M. & Ahoranta, V. (2002). Two improved educational theory based tools to monitor and promote quality of geographical education and learning. *International Research in Geographical and Environmental Education* 11 (2), pp. 119 - 137.

Allport, G. (1961). *Pattern and growth in personality*. New York: Holt, Rinehart & Winston.

Boyd, W. (1956) *Emile for Today: The Emile of Jean Jacques Rousseau*. London: Heinemann.

Bruer, J. T. (1993). *Schools for Thought: A Science of Learning in the Classroom*. Massachusetts: The MIT Press Cambridge.

Bruner, J. (1996). *The Culture of Education*. USA: Harvard University Press.

Cañas, A. J., Novak, J.D., González, F.M. (eds) (2004). *Concept Maps: Theory, Methodology,Technology. Proceedings of the First International Conference on Concept Mapping. Vol. I & II.* Navarra, Spain: Dirección de Publicaciones de la Universidad Pública de Navarra.

Flavell, J., Green, F., & Flavell, E. (2000). Development of Children's Awareness Their Own Thoughts. *Journal of Cognition and Development.* 1,1, pp. 97-113.

Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences*. New York: Basic Books.

Georghiades, P. (2000). Beyond Conceptual Change Learning in Science Education focusing on Transfer, Durability and Metacognition. *Educational Research* 42 (2), pp. 119-139.

James, W. (1904). *Talks to teachers on psychology: And to students on some of life's ideals*. New York: Norton.

Johnston, C.A. (1996) *Unlocking the Will to Learn.* California: Corwin Press.

Johnston, C.A. (1998). *Let Me Learn*. Thousand Oaks, CA: Corwin Press.

Johnston, C. A. (2004). *Learning to Use My Potential: A Catalogue of Resources*. Turnersville, NJ: Learning Connections Resources.

Johnston, C., & Dainton, G. (2005). *The learning Connections Inventory* (Manual). Thousand Oaks, CA: Corwin.

Keefe, J. & Ferrell, B. (1990). Developing a defensible style paradigm. *Educational Leadership*, 48(2), pp. 57-61

Kinchin, I.M., Hay, D.B., Adams, A. (2000). How a qualitative approach to concept map analysis can be used to aid learning by illustrating patterns of conceptual development. *Educational Research,* 42(1), pp. 43-57.

Novak, J. D. (1998). *Learning, creating, and using knowledge: Concept Maps as Facilitative Tools in Schools and Corporations*. Mahweh, NJ: Lawrence Erlbaum Associates.

Novak, J. D., & Gowin, D. B. (1984). *Learning How to Learn*. New York: Cambridge University Press.

Osterman, K. & Kottkamp, R.(2004). *Reflective practice for educators: Professional development to improve student learning*. Second Edition. Thousand Oaks, CA: Corwin

Pinar, W.F., Reynolds, W.M., Slattery, P. & Taubman, P.M. (1995). *Understanding Curriculum*. N.Y.: Peter Lang.

Pinar, W.F. (ed) (1998). *Curriculum: Toward New Identities*. New York: Garland Publishing Inc.

Snow, R., & Jackson, D. (1992). *Assessment of conative constructs for educational research and evaluation: A catalogue*. Washington, DC: U.S. Department of Education, Office of Educational Research and Improvement.

Sternberg, R. (1996). Myths, countermyths, and truths about intelligence. *Educational Researcher*, 25(2), pp. 11–16.

Vanhear, J. & Borg, A. (2000). *The Interactive Learning Model: Profiling Learners' Learning Patterns*. Unpublished B.Ed. Thesis: University of Malta.

• CHAPTER 25 •

One Size Doesn't Fit All: Achieving Accountability through Application of Learning Patterns

Donna W. Jorgensen

Introduction

In increasingly diverse educational settings, standardisation is becoming the norm. In the era of No Child Left Behind legislation, the focus is on identifying student achievement not through individual learning but through scores on standardised tests. This continues to be true even though "educational researchers have found that such tests have proven to be of dubious value in predicting one's ability to perform on practical tasks that really matter" (Sacks, 1999, p. 2). Even though one size doesn't fit all, accountability is more and more determined by the ubiquitous standardised test. Knowing this does not change the fact that students are often judged more by their test scores than by their actual learning. However, students can learn to decode tasks and apply appropriate patterns to complete them.

One size fits all is a phrase I have come to loathe. It is frustrating enough when it is applied to clothing because we all know that people come in a variety of shapes and sizes, but worse when it is unconscionably applied to teaching and learning. This phrase is an indication that we do not fully acknowledge the individuality of each and every learner. One size does not fit all, or even most, when it comes to our attire. Why is it that assessment of student learning, which we are all held accountable for in our nation's classrooms, seems more likely to be of the one size fits all design than it is to be differentiated to meet the needs of today's diverse classrooms? In order to

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This Chapter was first published in Sims, Ronald R. & Sims, Serbrenia J. (2005). Learning Styles and Learning: A Key to Meeting the Accountability Demands in Education. Nova Biomedical Publication.

meet the diverse needs of today's and tomorrow's students, every teacher and teacher candidate must be taught how to work with students to achieve intentional teaching and intentional application of learning strategies.

Differentiating Instruction

Even though for a very long time we have heard that children learn differently from each other, and attempts have been made to explain the differences, standardisation is the rule rather than the exception when it comes to measuring student learning. Learning in schools generally revolves around reading text and taking tests. In its own way, it is very patterned. Outside of school, learning looks very different. In the "real" world, people are expected to take in and process information, make decisions and produce results, all in ways very different from regurgitation of information on tests or single measures of the learning of all individuals. Tomlinson (1999) makes two statements that should be our mantra as we work with teachers and teacher candidates in assisting them to be prepared for the challenges of diverse classrooms. Where differentiated instruction is in place, she says, "teachers engage students in instruction through different learning modalities [and] teachers are diagnosticians, prescribing the best possible instruction for each student" (p. 2).

It is not simply about what students learn; it is about how they learn. Knowing the goals of an individual lesson as well as those of the overall goals of a unit and the curricular goals of a course is a first step towards differentiating instruction. Intentional teaching requires us to know about both our students and our curricular goals. While we may have the goal of having all students arrive at the same destination, perhaps proficiency on a high stakes standardised test, getting there should be different - one size does not fit all. Pettig (2000) says "differentiated instruction requires from us persistent honing of our teaching skills plus the courage to significantly change our classroom practices... we can slowly shift from the one-size-fits-all paradigm and adopt a differentiated instructional approach" (p. 18). The key to differentiating instruction is determining the learning patterns of individual students. When teachers and students understand what goes on in their brains and minds when learning happens, they will be empowered to take charge of their own learning. Differentiated instruction is a response to differentiated learning and differentiated learning is the product of each person's unique learning patterns combination. Students and teachers share the responsibility for creating the environment in which learning happens. Learners are unique, but they must function in academic worlds where their success or failure is measured by some form of standardised test. If every student processed information and demonstrated knowledge in the same way, this would not be problematical, but this is not the case.

Each and every student brings a contextualised way of looking at learning to every situation. It is possible to assist students to make brain-mind connections so that they use their learning potential with intention. Strategic teaching and strategic learning begin with strategic thinking. Nowhere is strategic thinking more important than on the kinds of standardised tests that are currently mandated under No Child Left Behind legislation. If students are to be prepared for the kind of strategic thinking they need to do for the tests, they need to possess a certain amount of metacognition: self knowledge about how they prefer to demonstrate what they know as well as the ability to access an appropriate pattern to complete an assigned task. Strategic thinking begins with the identification of patterns.

If we want to build a new highway, we look at traffic patterns. If we want to build a new building, we look at use patterns. It follows that, if we want to build new learning, we must look at learning patterns. Each of us has a personal, interactive learning cluster through which we make connections and carry on those internal conversations that lead to our demonstration of what we know. When we understand our learning connections patterns, we can develop appropriate strategies for demonstrating knowledge.

Schools and standardised tests demand the use of particular patterns and, if we lack the awareness either of what the patterns are or how to access them at the appropriate time, we are likely to be identified as either unlearned or not proficient. One size does not fit all; it does not even fit most. Every child must be given the opportunity to meet his maximum potential. One thing teachers can do is to identify the particular learning patterns of the students in their classrooms. This can be done very simply and in a cost-effective manner through the use of the Learning Connections Inventory© designed and used in the Let Me Learn Process®.

Looking at Learning

Since the 1980s, psychologists and education practitioners have identified a variety of ways to look at how humans learn. Among them are things like multiple intelligences, learning styles, and personality measures. Most teachers will have heard of learning styles and modalities. They will often identify themselves and their students as visual, auditory, or kinesthetic learners. I am never confident that these are not simply terms they have heard and apply without any real understanding. After all, unless we are blind or deaf, we are all visual or auditory learners at some point in our educational journey. If we were not, we would quickly fall behind. It is learning how best to use our visual and auditory skills that helps us to become more successful learners. Many teachers and their students will also identify themselves as left-brained or right-brained or posit that they have some strongly developed intelligence from Gardner's multiple intelligences theory® . This knowledge is an excellent foundation, but each is only a single point of view or piece of the puzzle that is the brain-mind connection we identify as learning. There is a program designed to help teachers and students to identify their unique learning combinations and to design instruction and assessment to enhance learning of every student. As a response to her concern that learning styles and personality measures and learning modalities are only part of the picture of learning, Dr. Christine Johnston developed the Let Me Learn Process® (LML) as a way to help all learners identify their unique learning pattern combinations and to recognise what this means in the way they approach learning and assessment tasks. Teachers and students examine their beliefs and assumptions about learning. Using the language of LML, [students] approach learning with meta-awareness; they become intentional learners. Essentially, the LML process, by engaging the learner in reflective practice, enables teachers and students to improve their performance." (Osterman & Kottkamp, 2004, p. 145). With the Let Me Learn Process®, students and teachers will share a vocabulary to talk about learning and to plan for productive outcomes.

Learning becomes a partnership with teachers and students sharing goals and outcomes. The ultimate goal in understanding the LML Process is the focus on "taking responsibility for making learning work" (Johnston, 2005, p. 3). Using the Learning Connections Inventory© (LCI) and the Let Me Learn Process® help teachers and students to determine the degree to which a person uses four different learning processes (patterns) as they act and interact within a learner's mind. "Both students and teachers grow in their understanding of how to align strategies with the requirements needed for successful accomplishment of various tasks" (Osterman & Kottkamp, 2004, p. 173). Helping students to recognise those patterns they prefer to use in demonstrating their learning will help those students to develop their metacognition about which combination of patterns will enable them to successfully meet the challenges of the *No Child Left Behind* era in school and in the real world beyond.

Origins of Let Me Learn Process®

Dr. Christine Johnston sought a way to help students identify the ways they demonstrate learning and to help them be more accountable in knowing exactly what particular learning tasks demanded of them. In using the Let Me Learn Process®, says Johnston, we will be pledging ourselves to "making a difference each day, all year, one learner at a time" (2000, p. vii).

Because this understanding of the diverse learning patterns of our students is integral to our teaching, Johnston wanted a user-friendly, cost-effective method of assisting teachers and students to identify patterns of learning choice. Over a period of nine years with over 9000 6-18 year old students and 5000 adult professionals, Johnston developed and refined the Learning Connections Inventory© (LCI) for use with children at the elementary and secondary levels. Further testing and use led to the development of a professional version for use with adults in education and additional forms for use with adult professionals in other fields. A further modification was designed for use with families to help them understand their interactions. In every instance, the inventory includes 28 Likert scaled items and 3 open-ended questions. It generally takes about one half hour to complete and self-score although there is no time limit. Because inventories do not have to be sent away for scoring, results are immediate. Written responses to the open-ended questions help students and teachers to identify cue words and phrases typical in each of the four Let Me Learn patterns. These answers validate the Likert determined patterns or identify areas to investigate further. Ideally, these responses would be validated by a trained Let Me Learn consultant or teacher; however, user's manuals and guides for use are available so that every teacher can use the LCI. Because this is not a test, students readily accept that the only key is to be completely honest in responding. This is about the chance to tell teachers how they like to learn and to show what they know. Frequently students have "aha" moments when they recognise why they have such an aversion to some assignments but love others. The LCI is a self-report instrument. It doesn't test a quality; it doesn't determine the capacity to learn; it doesn't measure what a learner knows. The inventory reports what learners selected as descriptions of their learning behaviours. It inventories. It takes stock. It identifies the what and how much of each schema. It is as accurate as the person who reports it is willing to make it. It doesn't diagnose what is wrong. It doesn't prescribe how to increase an area of deficiency. It simply tallies what is there. It invites learners to express their thoughts on what frustrates them about assignments, how they prefer to show what they know, and how they would have students show what they learned if they were the teachers. The LCI, by its very format, invites learners to report the patterns of their learning process. By interpreting the results of the LCI in light of who the learner is, rather than interpreting the learner on the basis of normed results, the learner and the teacher can use the LCI to carry on substantive conversations about how the learner learns. (Johnston, 1996, pp. 69-70). Johnston describes what goes on in the brain-mind connection when we are learning as a combination of the cognitive, affective and conative. While these first two terms are readily understood, the conative is a piece that is often overlooked. Simply, it is the doing part of the whole that goes along with the thinking/knowing cognitive process and the feeling, affective process. It is important to have students honestly explore these three elements when they approach a task. We find it easy to express what we feel about assignments; in fact spontaneous outbursts from our students will often tell us exactly what they are feeling. It is also not terribly difficult to get students to talk about what they think, but it is sometimes harder to get them to concretely state what they do to complete a task. The most important thing to remember is that the Let Me Learn Process® helps students to accept responsibility for their own learning. It "emphasises the importance of taking responsibility for making learning work. In over 10 years of research, involving 40,000 learners, [it] has shown that students can use information about their own learning processes to focus their effort, make informed career choices, and overcome years of underachievement" (Johnston, 2004, pp. 2-3).

Let Me Learn Process®

The Let Me Learn Process® captures the brain and mind interactions as they work to create a system of learning. In each learning situation, a stimulus enters the brain and from there, neuro impulses are converted into symbolic representations that the mind can process. This processing allows a learner to make connections with information already stored or to store information as new. Four operational patterns are at work in this processing. The patterns work synchronously and in a very personal way in each of us. The mental processes of cognition, conation and affectation are present in each of the four patterns and they interact in each operational pattern to enable us to respond to a stimulus. Using the internal talk of the patterns (metacognition), these mental operations begin to mull, connect, rehearse, express, assess, and reflect on whether they are interacting and responding appropriately to the learning event with which they are confronted. Each time we accept stimulus into our system, our bodies, brains, and minds are under stress to read the situation and react or respond in a manner that at the very least keeps us safe and at the very most brings us success in the completion of the task we have undertaken (Johnston, 2005, p. 13). Developing awareness of this internal "talk" among the patterns will enable us to use our patterns with intention. When we can use patterns with intention, we can raise the probability that we will be successful with an assigned task. Intentional use of patterns is critical in the standardised testing area. It is relatively easy to identify which patterns are needed to complete certain types of assessment tasks. Using the learning patterns, students are able to decode assignments. A student who is able to correctly decode the message of the assignment has a distinct advantage in being able to complete it successfully. Key words repeat themselves within each of the patterns and students become able to quickly identify the words, connect them with the correct pattern, identify the skill or strategy necessary to complete the task and access that pattern themselves. They can be taught to circle cue words and code them for the pattern needed and then to draw on their own strategy cards to complete a task. Johnston (2005) contends that students can be taught to invest in their own success and to put forth intentional effort to complete a given task. In this way, students themselves are held accountable for the results of an assessment. They know exactly what they must do to complete a task and they know which personal strategies they must access with intention to make it easier.

Students will ask themselves what a task requires of them and will identify what the task requires of each of their patterns. Additionally, they will begin to recognise and respond to the difference between natural use of a pattern and intentional use of a pattern that would not normally be a pattern of first use. They employ a FIT technique. They will Forge, Intensify or Tether patterns as necessary. In order to fully understand how FIT works, we should take a deeper look at each of the patterns.

Let Me Learn identifies four patterns and the LCI identifies for us our personal learning connections combination. The four patterns are sequential, precise, technical, and confluent. What each of these terms means in terms of what a learner thinks, feels, and does in the act of learning will be explained a bit later. "Each pattern exists in all of us to some degree and contributes to our unique learning combinations" (Johnston, 2000, p.35). "Once I know my combination of learning patterns, I can use them with greater intention. I can analyse work responsibilities, learning tasks, and project assignments always asking myself, 'What processes am I being asked to use? How will I direct my learning processes so that what I do and how I do it matches the expectations of my instructor, my supervisor, or my teammates?'" (Johnston, 2005, p.16).

Each of the four patterns may be a use first, as needed or avoid pattern as demonstrated by the score on the Likert scaled items of the LCI. When a pattern comes up as a use first pattern (scores between 25 and 35), this means that a learner will gravitate to that pattern to demonstrate learning. It may or may not be the most appropriate pattern for a particular task, but it is the pattern of choice for the student. An as needed pattern (scores between 18 and 24) is one that students can access when appropriate given a little guidance and support even though it might not be the pattern of first choice. The as needed pattern could lie dormant until needed and students could need a little help to find a trigger for "waking up" the pattern at the appropriate time. An avoid pattern (scores between 7 and 17) is just that one that a learner will avoid using even when it is obviously the best one to use in a given learning situation. It is crucial that students and teachers learn to note the signals that they are using an inappropriate pattern and correct themselves. The program requires students to become responsible for their own learning and the choices they make. School tends to value patterns of sequence and precision and students (and teachers!) who have these as use first patterns will often be very comfortable in educational environments and will be higher achievers. It should be noted that teachers teach to their own use first patterns and, where there is a strong match between teachers and students, overall grades for a class will generally be higher (Nickels, 2002).

Sequential processors are seekers of clear directions, practised planners, and thoroughly neat workers (Johnston, 1996). They become frustrated with unclear or incomplete directions or changes in requirements once an assignment is underway. They have little patience with teachers who are disorganised or move too fast. They want examples to follow. They need time to go over material that is assigned in class and they require sufficient time (in accordance with their own interpretation) to complete a task thoroughly. They generally want their work to be neat and tidy. Often they will make lists and will either number or bullet items.

Precise processors are information specialists, into-details researchers, answer specialists, and report writers. They want to know all the answers and will constantly request clarification. They want to be "right" and need reassurance that they are. They hate confusion and want lots of details in explanations. Frequently they will ask that directions be repeated numerous times. They become frustrated when they do not have sufficient information to complete a task or cannot find the information they need in their texts. They have a strong capacity for trivia and will often take very detailed notes. They are the students who will, if permitted to do so, answer every question the teacher asks. They like to write answers in the form of tests, quizzes, and reports. They may prefer written manifestations of their knowledge to oral presentation. They need time when they are working on written assignments.

Technical processors place relevance as paramount. They are hands-on builders, independent private thinkers and reality seekers. They love activity and may want to move around while they are learning. They much prefer hands-on work to doing book work, either reading or writing. They like the challenge of a real world project and want to be left alone to complete the project. They want to live and experience what they are learning about, not read about it. They tend to keep things to themselves and do not particularly care if they show the teacher what they know so long as they know themselves. These are the learners who might do homework but never turn it in because they have satisfied their own need to prove to themselves that they can do it. The technical processor thrives on field trips into the real world to see the relevance of what he is learning. If information is extraneous, the technical processor will discard it. Any task needs real world validation for the technical processor to invest his time in learning it. They keep both physical and mental distance while they complete tasks.

They do not like to be part of a group unless the group members allow them to go off and complete some portion of the task alone.

Confluent processors are those who truly march to the different drummer. They are labelled as creative imaginers and unique presenters. Sometimes they seem to be a million miles away from where everyone else is during a lesson. They don't like to be "trapped" in the teacher's ideas or ways of doing things. They might not even listen to directions because they already have their own idea about how something should be done. They like variety in interpretation of assignments and feel confined by having to do something in one certain way. They often chafe at rules and regulations. They like learning to be fun and even artistic and crafty. They love to stand up and talk and might prefer to do a dramatic presentation, participate in a debate or give some kind of oral presentation. They frequently like to write stories, but they write the same way they would speak. This is the pattern of the imagination. Table 25.1 shows some of the things we might expect to evidence themselves when each of these is a use first pattern and Table 25.2 shows what we might expect when each of these patterns is an avoid pattern.

Once the LCIs have been scored, it is important to look for certain types of learners in your classrooms. One particular type is called the strong-willed learner. A strong-willed learner is one who has three or four use first patterns (scores 25 or above). This is the learner who will often let you know that he would prefer to work alone because he knows he can do any of the parts of a project better than anyone else. Having more than one strong-willed learner in a group can be a disaster. It is equally probable that disaster will follow if you put all the strong-willed learners in a single group; you are likely to get as many products as you had group members because each will be unable to compromise with the others.

Another type of learner is the Bridge. This learner has all scores between 19 and 24 and therefore has all as needed and no use first scores. The bridge learner frequently feels that he is not especially good at anything and may simply fade into the background. What the bridge learner needs to understand is the marvellous contribution he/she has to make to group work. While working alone means that this learner can access whatever pattern is needed to complete a task, this skill can be a tremendous asset to a group. It is the bridge learner who is the facilitator who sees the whole picture and is able to keep the plan on target. It is rare to find more than one bridge learner in a class, so if there appear to be several in a class, it is essential to go back over the LCI to determine whether the student had difficulty committing to a choice in the Likert continuum or has conflicting written responses. If you do find a bridge learner, however, encourage this student to come out of the shadows.

Table 25.1 When I Have a Use First Pattern

	How I think	How I do things	How I feel	What I might say
Sequential	• I organize information • I mentally categorize data • I break tasks down into steps	• I make lists • I organize • I plan first, then act	• I thrive on consistency and dependability • I need things to be tidy and organized • I feel frustrated when the game plan keeps changing • I feel frustrated when I'm rushed	• Could I see an example? • I need more time to double- check my work • Could we review those directions? • A place for everything and everything in its place • What are my priorities?
Precise	• I research information • I as lots of questions • I always want to know more	• I challenge statements and ideas that I doubt • I prove I am right • I document my research and findings • I write things down • I write long e-mail messages and leave long voice mail messages	• I thrive on knowledge • I feel good when I am correct • I feel frustrated when incorrect information is accepted as valid • I feel frustrated when people do not share information with me	• I need more information • Let me write up the answer to that • Wanna play trivia? • I'm currently reading three different books • Did you get my e-mail on that? • Did you know that… • Actually…
Technical	• I seek concrete relevance—what does this mean in the real world? • I only want as much information as I need— nothing extraneous	• I get my hands on • I tinker • I solve the problem • I do	• I enjoy knowing how things work • I feel good that I am self sufficient • I feel frustrated when the task has no real world relevance • I enjoy knowing things, but I do not feel the need to share that knowledge	• I can do it myself • Let me show you how… • I don't want to read a book about it, I want to do it • How will I ever use this in the real world? • How can I fix this? • I could use a little space…
Confluent	• I read between the lines • I think outside the box • I brainstorm • I make obscure connections between things that are seemingly unrelated	• I take risks • I am not afraid to fail • I talk about things—a lot • I might start things and not finish them • I will start a task first— • then ask for directions	• I enjoy improvisation • I feel comfortable with failure • I do not enjoy having my ideas criticized • I feel frustrated by people • who are not open to new ideas • I enjoy a challenge • I feel frustrated by repeating a task over and over	• What do you mean, "that's the way we've always done it"?! • The rules don't apply to me • Let me tell you about… • I have an idea… • I have another idea…

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Table 25.2 When I Avoid a Pattern

	How I think	How I do things	How I feel	What I might say
Sequential	• These directions make no sense! • I did this before. Why repeat it? • Why can't I just jump in?	• Avoid direction; avoid practice • Can't get the pieces in order • Ignore table of contents, indexes, and syllabi • Leave the task incomplete	• Jumbled • Scattered • Out of synch • Untethered/unfettered • Unanchored	• Do I have to do it again? • Why do I have to follow directions? • Does it matter what we do first? • Has anybody seen. . .?
Precise	• Do I have to read all this? • How am I going to remember all of this? • Who cares about all this 'stuff'?	• Don't have specific answers • Avoid debate • Skim instead of read • Take few notes	• Overwhelmed when confronted with details • Fearful of looking stupid • Angry at not having the 'one right answer'!	• Don't expect me to know names and dates! • Stop asking me so many questions! • Does it matter? • I'm not stupid!
Technical	• Why should I care how this works? • Somebody has to help me figure this out. • Why do I have to make something; why can't I just talk or write about it?	• Avoid using tools or instruments • Talk about it instead of doing it • Rely on the directions to lead me to the solution	• Inept • Fearful of breaking the object, tool, or instrument • Uncomfortable with tools; very comfortable with my words and thoughts	• If it is broken, throw it away! • I'm an educated person; I should be able to do this! • I don't care *how* it runs; I just want it *to run*!
Confluent	• Where is this headed? • Where is the focus? • What do you mean, imagine?	• Don't take social risks • Complete one task at a time • Avoid improvising • Seek parameters	• Unsettled • Chaotic • No more changes or surprises, please!	• Let's stay focused! • Where did that idea come from? • Now what? • This is out of control!

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Finally, we identify the dynamic learner who has one or two patterns at a use first level and then any other combination of as needed or avoid patterns. This is the learner we most often meet and the learner who could have difficulty knowing which pattern to use at a particular time for a particular task. Sometimes the patterns get in the way of each other and students need a strategy for accessing the appropriate pattern at the appropriate time. Because of the dynamic quality of this learner, there could be difficulty making correct choices.

In the Pedagogy Class

If our goal as educators is to foster student learning, it is crucial that we have a working idea of how different students, and we ourselves, learn. In the beginning of a pedagogy course, I start the semester by asking my students to answer a basic question: What does learning look like? Many are surprised by this even though they already have strong reasons for wanting to be teachers. I pose the question in this way because our accountability depends on our ability to recognise that learning is indeed happening. For many this will be the first time anyone has asked them to figure out how they are going to know if what they are doing in the classroom is actually leading to student learning! For the most part, they have not considered this very crucial piece of what it means to be an effective educator. Before I permit any oral response to the question, I pass out a drawing of an "empty" head with its brain, crayons and coloured pencils, and I request that my students fill "their" brain with a personal interpretation of what learning looks like for them. We then do "show and tell" and record on transparencies for later reference the statements and key words each contributes to explain what learning looks like. This phase of the instruction I end with Henry David Thoreau's famous quote: "If a man does not keep pace with his companions, perhaps he hears a different drummer. Let him step to the music which he hears, however measured or far away." If I have heard it said once, I have heard it a hundred times in recent years: kids learn differently. If we do not accept that and work with those differences, we are doomed to fail in creating classroom environments where all students have an equal chance to succeed at learning. This is a powerful first lesson in helping students to identify the reason for us to be educators. They see immediately the magnitude of the challenge they are accepting.

Once my pedagogy students have completed their "show and tell" about their brains, they complete and score the LCI. They look back at the statements they made when they described their brains and they find similar statements in their LCI, open-ended written responses. We then connect these to their pattern scores by discussing exactly what each pattern means and what we might hear from students who manifest these patterns as either use first or avoid patterns. (Refer to Tables 25.1 and 25.2.)

Because I want students to appreciate how these patterns translate into teaching/learning situations, I have them make hats that will demonstrate their personal learning connections combination. It does not take long for their use-first patterns to manifest themselves. I provide activity boxes containing scissors, paste, rulers, crayons, coloured pencils, compasses, protractors, construction paper, staplers, and paper clips. I generally stock six of these boxes for an average size class — they must share. This can be a problem for the highly technical student who prefers to work alone and it is common to see a highly technical processor gather what he/she needs and retreat to a separate corner and complete the task with little or no interaction with the group. It is also quite common to see a highly sequential learner plan and organise while the confluent processors just let their imaginations take over and they "just do it," frequently without any reference to the written or oral instructions. The use first precise processors will need assurance that what they are doing is "right," and they will often seek clarification of directions.

Following construction of their hats, they reflect in writing about the process of completion of the task. Once again they share and are confronted with the differences in approach and performance of a task. They begin to see and hear the key pattern language as it emerges. Throughout this discussion, it is typical to hear such things as "I'm not creative, so I just..." or "First, I...; then I...; finally I..." and "I had too many ideas and couldn't settle on one, so I didn't really finish" or "I didn't have enough time." These are all obvious correlations with their use first patterns. Seated in a circle and wearing their hats, the candidates begin to recognise the very real diversity present in the class and begin to recognise the implications of their patterns for them as future teachers.

The next step is to make the first connections to teaching and learning, so the next question is posed: If these are *my* learning choices, how will that translate into what I value as a teacher and in the way I teach? The candidates begin to recognise the importance of being able to have a conversation with students about how they learn. They begin to recognise that they are most likely to craft lessons that value manifestations of learning that come out of their own patterns. It is here that I have the first clue about how I will need to approach a class. If my class is predominantly use first sequential students, they are going to want a well-ordered syllabus and they are going to expect me to stick to it. I quickly learn which of my students will find keeping logs and reflective journals onerous because they simply do not like to write. Others will write pages more than required or necessary.

With Students in the Classroom

Think about the students in your classes who can regularly drive you crazy. Is it possible that this is not something they have set out to do simply to make your life miserable, but rather that it is a manifestation of clashing patterns? Might knowing the learning pattern combinations of your class(es) make you more aware as an instructional planner of ways that you could differentiate instruction to ensure maximum opportunity for success for each and every student in your class(es)?

Nickels (2002), a high school teacher from the Midwestern United States, wondered whether there might be a correlation between student learning patterns, his learning patterns and the students' grades. In his small study he discovered that his own LCI scores were high in sequential processing and precise processing. His students with low sequential and precise preferences had lower grades in his classes. As students' patterns more closely matched his, their grades rose. This is indeed food for thought for the beginning teacher to take into the field with them. We can look at certain cue words that teachers use in the creation of assignments. These cue words often reveal the teacher's use first patterns, but more importantly they help students to identify which patterns must be accessed for successful completion of a given task, including those tasks that are a part of standardized assessments. Figure 25.3 shows typical cue words for each pattern.

Once students have experienced the LCI and discussed its implications for both teaching and learning, they take with them the knowledge about differences in learning pattern combinations. They can make educated guesses about the use first patterns of many of the students they see each week, not to mention the use first patterns of their mentor teachers in the field. This is where they begin to learn about lesson planning and how the learning patterns of both teacher and students will have an impact on instructional decisions. Teacher candidates and teachers begin intentional usage of pattern language and assist students to decode assignments. They begin to recognise whether the language they have used in the creation of the assignment actually matches what they expect of students in their responses. There are times that the language of a use first pattern of a teacher shows a value the teacher did not intend in an assignment.

Knowing the characteristics of their learners enables teachers to design instruction around their dominant patterns — giving every student the opportunity to work in their use-first patterns often, but not exclusively, challenging learners to identify the pattern needed for success and to use it. It is really about holding the student accountable for his own learning, but he cannot be held accountable if we do not work with him to define his patterns and create plans for forging those patterns he is less comfortable with. The Let Me Learn Process® does not ask teachers to create a multitude of different lesson plans for every day's instruction; rather it requires us to

Figure 25.3 Let Me Learn Pattern Cue Words

SEQUENTIAL WORDS	
Alphabetise	Order
Arrange	Organise
Classify	Outline
Develop	Plan
Distribute	Put in order
Group	Sequence
In a series	Show a sample
List	Show an array

PRECISE WORDS	
Accurately	Explain
Calibrate	Facts
Certainty	Identify
Describe	Label
Detail	Measure
Document	Observe
Exact	Specific
Examine	Write

TECHNICAL WORDS	
Assemble	Erect
Autonomy	Experience
Build	Figure out
Concrete	Illustrate
Construct	Just do it
Demonstrate	Make
Draw	Problem-solve
Engineer	Tools

CONFLUENT WORDS	
Brainstorm	Improvise
Carefree	Incredible
Create	Independence
Different	Invent
Dream-up	Risk
Far fetched	Take a chance
Ideas	Unique
Imagine	Unusual

offer opportunities to students to use their patterns judiciously and to assist students to create personal learning plans for identifying when a particular pattern is needed and to access that pattern successfully. This is the point at which teachers and learners work on FIT. If they are going to be able to attack a learning task, they will need to learn to *forge* those patterns that are avoid patterns but are necessary for given tasks, *intensify* the as needed patterns so that they become more immediately accessible and natural, and *tether* those use first patterns that might get in the way of accurate and successful completion of the task.

Traditional classroom assignments have a great deal of reading and writing, including many skill and drill worksheets. These are necessary but can be roadblocks for certain kinds of learners. For those learners who are not precise processors, the sheer magnitude of reading and writing required, especially in secondary classrooms, can be daunting if not completely overwhelming. Let me assure you that I wholeheartedly endorse writing and reading across the curriculum, but I also know that certain students will tune out, shut down, and eventually drop out (mentally if not physically) because they have little opportunity to show what they know in the ways most productive for them. Often we will find that there is little choice in the manner in which assignments are completed and we will see that what is valued by any given teacher tends to correspond with that teacher's use first patterns.

If we are going to help students to take advantage of their use first patterns and to aid them in developing their as needed and avoid patterns, we must engage in intentional teaching. This means that we must know our own patterns and be self-critical and self-analytical about the assignments we create. Sitting still in a library, researching, reading and ultimately writing a research paper may be so antithetical to a student's patterns that he will accept a failing grade rather than subject himself to this torture. Students can learn to forge the precision necessary to complete the assignment. That is not to say that because students prefer other ways of working and showing what they know, they should always be permitted alternative assignments. We do, however, need to recognise that the vast majority of assignments teachers give favour the sequential and precise processors and this is especially true when those are the use first patterns of the teacher. We must intentionally look at options when we are crafting assignments. We must ask ourselves whether there is a way students can show us what they know other than our first instinctive choice. Then we must permit these other possibilities. This can be very hard to do because it does mean creating multiple rubrics and ensuring that all the possibilities are of equal difficulty and value.

Students could make a movie, write and perform a piece of music, create an advertising campaign, design a game. They will still need to do research to ensure accuracy, but the end products of different students will look very different. They may certainly find doing the research less tedious if they know that the end product is going to be something other than that dreaded written research paper. I have students who have created movie style posters for plays, novels, and events in history or science. Other students have written picture or alphabet books to teach a concept to others, particularly younger students or their parents! Students can perform skits or construct models to demonstrate understanding of a concept or theory. Candidates are encouraged to keep open minds about the many options available to them to aid in assessment of student learning.

One of the key methods being used in today's classroom is cooperative or collaborative learning. In this type of group work, all members of the group have roles and tasks to perform. Let Me Learn patterns can make grouping much more fair and productive. Having a precise processor who loves to do research and write working with a technical processor who loves to build, along with a confluent processor who sees the imaginative possibilities and a sequential processor to keep everyone else on task and on target for deadlines can make collaborative work far more productive. It can minimise the complaints about students who do not carry their share of the burden or the complaint about the one person in the group who takes charge and wants to do everything. Creative teaming of students, using their use-first patterns, can enable a teacher to ensure that all students contribute to a project, each accessing pattern strengths.

Standardised measures of assessment are those that are used to define the accountability of teachers and schools. If students can be taught to decode the tasks and to intentionally apply the needed patterns, success is virtually assured for those students who have the necessary knowledge. Teaching our students to forge, intensify, and tether their patterns to match assessment requirements will enable their success. When a student with an avoid pattern in sequence or precision is confronted by typical standardised tests, he will need immediately to forge these patterns. He will need to make conscious choices in decoding the task and in applying strategies for successful completion. Helping students to decode and forge patterns throughout a school year will give them the skill and confidence to do the same thing during standardised testing situations. When patterns are at as needed levels, there will be the necessity to intensify them. It is not that students do not have these patterns available, but rather that they need to consciously identify the need for them and intensify their use. Sometimes students are at a disadvantage because their use first patterns are not the patterns of need on standardised assessments. When this happens, students must be able to tether the tendency to use the inappropriate patterns because they are patterns of first choice and to forge or intensify the correct patterns. When students can do this, they are intentionally taking charge of their own learning. They are in charge of displaying what they know through intentional choice.

Conclusion

I firmly believe that every teacher wants students to be successful both in and out of the classroom. Teachers do not go to school each morning with the intention of leaving children behind. If they do not recognise their own learning patterns and those of their students, teachers can unintentionally do exactly that. The Let Me Learn Process® offers teachers and students a way to understand each other and learning. It enables teachers to differentiate instruction and it provides students with ways to access the appropriate patterns to ensure that they will be more successful in every learning situation. Once students become comfortable with their own patterns and how to forge (bring out the weaker but needed) patterns, intensify (turn up the heat), or tether (hold back a strong but not necessarily correct) patterns, both teachers and students will find that the learning environment is more positive and more productive.

References

Johnston, C. & Dainton, G. (1997). *Learning Connections Inventory.* Thousand Oaks, CA: Corwin Press, Sage Publications.

Johnston, C. (1996). *Unlocking the will to learn.* Thousand Oaks, CA: Corwin Press, Sage Publications.

Johnston, C. (2000). *Let Me Learn: A personal guide to implementing the LML process K-12.* Brooklyn, CT: KGM Print Services.

Johnston, C. (2005). *Learning to use my potential.* Turnersville, NJ: Learning Connections Resources.

Nickels, J. (2002). *Using the learning combination inventory to connect teaching methods with student learning strategies: An action research project presented to the Shawnee Mission Board of Education.* Unpublished.

Osterman, K. & Kottkamp, R. (2004). *Reflective practice for educators.* Thousand Oaks, CA: Corwin Press.

Pettig, K. L. (2000). On the road to differentiated instruction. *Educational Leadership, 58*(1).

Sacks, P. (1999). *Standardized minds: The high price of America's testing culture and what we can do to change it.* Cambridge, MA: Perseus Books.

Tomlinson, C. A. (1999). Mapping a route toward differentiated instruction. *Educational Leadership, 57*(1).

Tomlinson, C. A. (1999). *The differentiated classroom: Responding to the needs of all learners.* Alexandria, VA: ASCD.

Biographies of Authors

Dr Lois Addy is a senior lecturer in the Faculty of Health and Life Sciences, at York St John University, and has specialised in paediatrics for over 28 years. She co-author of the *Write from the Start: Unique Programme to Develop the Fine Motor and Perceptual Skills for Effective Handwriting* and *Making Inclusion work for Children with Dyspraxia: Practical Strategies for Teachers*. She is author of the *Speed-up! A Kinaesthetic Handwriting Programme, How to Understand and Support Children with Dyspraxia'* and *Get Physical*: An Inclusive, therapeutic PE Programme to Develop Motor Skills (a physical education programme which won the NASEN/TES Teaching and Learning book of the year in 2006). She is a contributor to *Developing School Provision for Children with Dyspraxia* and is also editor of *Occupational Therapy Evidence in Practice for Physical Rehabilitation*. Lois is on the medical committee of the Dyspraxia Foundation, editorial board of COT-SS-CYPF and committee member of the National Handwriting Association.

Dr Michelle Attard Tonna is a teacher educator working within the Directorates for Education and is currently heading the Learning Outcomes Framework project, which sees the writing of the curriculum through a learning outcomes-based approach. She is a Research Support Officer at the Euro-Mediterranean Centre for Educational Research and a Visiting Lecturer within the Faculty of Education at the University of Malta, wherein she lectures Sociology of Education and primary classroom instruction through Let Me Learn. She has completed a PhD with the University of Aberdeen, focusing her research on teacher learning in Malta. Her primary research interests include the professional learning of teachers and has carried out research on teachers in local contexts, mainly through a comparative approach. She has also participated in various conferences, European networks and national studies in which she has presented her research and expertise.

Cathy Burke was introduced to Let Me Learn in 1997 and has used it in classroom teaching over the following ten years. She lectured at the University of the Sunshine Coast in Primary Curriculum, the Middle Years, Reading and Writing and tutored in Learning about Learning and began a doctorate study into The Move to Home-schooling.

Dr Colin Calleja is a lecturer at the University of Malta, Faculty of Education. He is the Head of Unit for Inclusion and Access to Learning and the National and European coordinator of the Let Me Learn Programme. He is the author of *Differentiating Instruction in the Primary Classroom: A Whole School Approach in Achieving Excellence* (2005), co-editor of the book *Understanding Children and Youth at Risk: Narrative of Hope* (2006) and co-author of the handbook for teacher trainers entitled *Differentiated Teaching Module: Preparing Trainee Teachers to Respond to Pupil Diversity – Teacher Trainees Handbook* (2007). He has authored a number of academic papers including ones dealing with the Let Me Learn Process.

Professor Dr Antoinette Camilleri Grima is Professor of Applied Linguistics at the University of Malta. After having received training in the Let Me Learn Process by Prof. Johnston at Rowan University (USA) she embarked on a project in order to discover how appropriate and useful the Let Me Learn Process was in language learning. Within the framework of her teaching and research on learner autonomy she realised that there is great potential, and yet unchartered territory to be discovered, about the potential of the Let Me Learn Process in language pedagogy.

Joseph Coleman holds Masters in Higher Education Administration. He is an Ohio licensed educational social worker. As an adjunct instructor at the University of Akron, he incorporated Let Me Learn in the course "Technical Career Search". He is a certified Let Me Learn consultant and facilitator of LML K-16 since 2000. He is presently conducting a systemic effort to infuse Let Me Learn into a new STEM high school through differentiated facilitation delivered to individual teachers at the classroom level.

Professor Dr Kevin Dahm is a Professor of Chemical Engineering at Rowan University. He received his B.S. from Worcester Polytechnic Institute in 1992 and his PhD from Massachusetts Institute of Technology in 1998. He has published educational papers on pedagogically sound uses of process simulation, assessment of student learning, and the teaching of design. He has received the 2003 Joseph J. Martin Award, the 2004 Raymond W. Fahien Award and the 2005 Corcoran Award from the Chemical

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Dr Ruth Falzon is a lecturer within the Department of Counselling at the University of Malta. Her areas of expertise include Personal and Social Development (PSD) and Learning Disabilities/Specific Learning Difficulties. She coordinates the PSD teacher-training programmes and modules at the University of Malta. Dr Falzon is treasurer of both the International Association for Counselling and of the Malta Dyslexia Association and secretary to the Malta Association for the Counselling Profession and a member of the Executive Councils of the Malta PSD Association. Her publications include studies on PSD, Emotional Literacy, dyslexia and quality of life, and counselling skills and dyslexia.

Dr Bob Grandin met Christine Johnston in 1997 at the EARLI Conference in Greece and began an on-going association with Let Me Learn. He worked in The Centre for Learning at Rowan University for 2 years and organised a Let Me Learn Conference in Australia in 2007. Used Let Me Learn when lecturing at the University of the Sunshine Coast in Learning about Learning, Diversity and Inclusion and Alternative Pedagogies. Recently completed an International Study into Promoting Mental Health in School: Cross-Cultural narratives and perspectives focusing on those being excluded from traditional schooling. Currently working on a second PhD titled *The Crisis in Traditional Schooling from the Voice and Perspectives of Students who have been Excluded,* utilising Let Me Learn to include the role of learning approaches in the failure to engage at school.

Dr Roberta Harvey is Vice President for Academic Affairs at Rowan University. She taught writing in engineering at Rowan from 1998 to 2009. As a faculty member in the Department of Writing Arts, her interests include engineering education, especially multidisciplinary perspectives, liberal education, communication, design, and teamwork, pedagogy and assessment. She holds a PhD in English with a specialisation in Composition and Rhetoric from the University of Wisconsin-Milwaukee. She earned her M.A. in English, B.A. in Anthropology, and B.S. in Biology from the University of North Dakota.

Professor Emerita Dr Christine Johnston, originator and lead researcher of the Let Me Learn Process® continues to conduct Let Me Learn related workshops and expand Let Me Learn outreach in higher education, the workplace, and career pipeline programmes for urban youth. She has recently authored two texts: *Intentional Learning for College Success* and *Finding Your Way: Navigating Your Future by Understanding Your Learning Self.* She also devotes time to staff development at Compass Academy Charter School, the Let Me Learn K-5 elementary school where faculty, students, and school leaders live out the school's vision: "We speak the language of learning."

Professor Emerita Dr Donna Jorgensen is a retired Associate Dean of the College of Education, Rowan University, continues to use the Let Me Learn Process and principles in her adjunct teaching. She also works with student tutors in the Tutoring Centre to help them understand and apply the Process. In addition, Donna also works with the patterns of her students as they are available through the Rowan system, helping to ensure that struggling students see a way to use their patterns for more efficient and effective learning. Currently, Donna is actively presenting on mentoring and the importance of mentors, using pattern knowledge to strengthen mentoring relationships.

Professor Emeritus Dr Robert Kottkamp worked at Hofstra University. He was Christine Johnston's doctoral advisor/dissertation chair, began his Let Me Learn involvement soon after Professor Johnston gave it birth, and contributed to Let Me Learn's evolution in K-12 schools, higher education, and corporations. He co-authored *Intentional Teaching: The Let Me Learn Classroom in Action*. He currently contributes via phone to Joseph Coleman's LML facilitation of an Ohio, STEM high school.

Dr Patricia Maher's experience as an educator spans 38 years and has included classroom teaching, consulting, administration, university instruction, and research. As the Director of the University of South Florida Academic Success Center, her current focus is the development of learning with university students of all levels.

Professor Dr Patricia Ann Marcellino is a Professor of Educational Leadership and a former (Interim) Associate Dean of Academic Affairs at the Ruth S. Ammon School of Education at Adelphi University, Garden City, Long Island, New York. Dr Marcellino utilises the Learning Connections Inventory (LCI) to set up diverse teams in her graduate educational leadership classes. She has also utilised the LCI to set up teams with MBA students. She has written about her students' experiences as they develop their action-research team-building projects in an effort to understand their learning as well as to improve her own learning.

Dr Betsy McCalla-Wriggins uses her professional skills honed when she served as Director of the Centre for Career and Academic Planning Services at Rowan University and as president of NACADA, the Global Community for Academic Advising. Currently she consults with institutions of higher education working primarily with administrators, faculty and staff who support student success. She focuses her expertise on incorporating the Let Me Learn Process® into the integration of academic and career components.

Dr Heidi Newell served as the Assessment Coordinator for the College of Engineering at Rowan University She earned her PhD in Educational Leadership (Higher Education Administration) from the University of North Dakota in 1997 and worked for the Bureau of Educational Services and Applied Research as a graduate student. She began her work in the field of engineering programme assessment with the Chemical Engineering Department at UND as the Assessment Coordinator during the self-study year. As a graduate student she completed her training in focus group leadership at the University of Minnesota. She earned her Masters of Science in Applied Psychology (Industrial and Organizational) from Clemson University in 1993. She earned her Bachelors of Arts in Sociology at Bloomsburg University of Pennsylvania in 1991.

Dr Jim Newell is the Provost and Senior Vice President for Academic Affairs at Rowan University. He holds a B.S. in Chemical and Biomedical Engineering from Carnegie-Mellon, an M.S. in Chemical Engineering from Penn State, and a PhD in Chemical Engineering from Clemson University. He has published a textbook *Essentials of Modern Materials Science and Engineering*; authored more than 30 refereed journal papers, more than 65 conference presentations, given 12 invited lectures, participated in grants that have resulted in over $2,000,000 of external funding, written the chapter on Carbon Materials for *The Encyclopedia of Polymer Science and Technology* (3rd edition) and has received multiple national awards including the 2001 Raymond Fahien award for "Outstanding Teaching Effectiveness and Educational Scholarship" and the 2005 Corcoran Award for the best paper published in the journal *Chemical Engineering Education*. He is also co-author on the fourth edition of the largest selling textbook in chemical engineering, *Elementary Principles of Chemical Processes*.

Dr Kathleen Pearle is Chair of the History and Social Science Department at Middlesex County College in New Jersey, which houses 18 programmes and schedules 400 classes per semester. Her dissertation charted the significant cultural shift that occurred among Foothill College faculty who applied the Let Me Learn Process® to learning and teaching. Her leadership is strongly influenced by the realisation that learning is a diversity issue.

Professor Dr Ruth Powers Silverberg, currently Associate Professor in Leadership Education at the City University of New York, began utilising the Let Me Learn Process in her doctoral studies at Hofstra University. She continues her commitment to improving the school lives of children with activist research including most recently "Dominant Discourse, Educational Research, and the Hegemony of Test Scores" in journal *Critical Education*.

Jacqueline Vanhear is the current Director – Quality Assurance Department within the Ministry for Education and Employment, Malta, began utilising the Let Me Learn Process in her Bachelor of Education dissertation. She followed upon this research for her Master studies by exploring the use of the Let Me Learn Process merged with the use of Concept Mapping and Vee Heuristics with primary school children. This research was further developed through her PhD studies which focuses on Higher Education. Merging Let Me Learn with Concept Mapping and Vee Heuristics is an innovative teaching and learning model which facilitates meaningful learning for learners of any age while also responding to learner variability.

Glossary of Let Me Learn Terms

Accelerated coursework: refers to an intensive immersion into the Let Me Learn Process and practice through workshops, reading, reflection, and interactive activities with certified Let Me Learn practitioners and facilitators for the purpose of gaining additional expertise and greater facility using the Let Me Learn Process.

Advanced Learning System: refers to the Let Me Learn system for developing intentional learners. The system includes a specific learning theory (the Interactive Learning Model), learning tools (the Learning Connections Inventory, the Learner Profile, the Metacognitive Drill, and the Strategy Card), an array of skills for decoding, metacognating, and FITing, and a specific learning lexicon of terms that make up the Let Me Learn Process.

Affectation: refers to our feelings of worth and value as learners. This mental process focuses our emotive response to a learning task.

Assess: refers to an individual's means of weighing his/her performance against another's expectations for a specific task. This is the phase within an individual's metacognitive cycle which launches reflective practice.

Avoid Pattern: refers to LCI scale scores that range from 7-17. An Avoid pattern has a volume equal to a Use first pattern. It will make itself heard in a learner's internal metacognitive chatter. When an individual avoids a pattern, he/she will feel stress whenever he/she is asked to use that pattern without the benefit of intentional strategies.

Bridge Learner: refers to a learner whose LCI scores fall between 18-24 in all four patterns, and can apply each pattern on as-needed basis. I learn from listening to others and interacting with them. I am comfortable using all of the patterns. Sometimes I feel like a "jack of all trades and a master of none," but I also find I can blend in, pitch in, and help make things happen as a contributing member of the group. I weigh things in the balance before I act. I lead from the middle by encouraging others rather than taking charge of a situation.

Cognition: refers to our internal processing of information. This mental process focuses on thinking.

Conation: refers to the pace, skill, autonomy, and manner with which we perform a task. This mental process focuses "doing" of a learning task.

Confluence: refers to the pattern which describes the way we use our imagination, take initiative and risks and brainstorm ways of approaching things in a unique manner. Confluence allows the learner to link disparate pieces of information into the "big picture."

Connect: refers to relating the current learning context to prior learning experiences, gathering and reading information, asking questions and reviewing previous learning. It also may mean linking up with a peer in the classroom who can model what needs to be done and how to do it. This is the phase within an individual's metacognitive cycle which launches reflective practice.

Decoding: refers to analysing a task to determine which combination of the four patterns is required to complete the task successfully. Used as a way for learners to assess how to apply their patterns, i.e., tether, intensify, or forge their use.

Dynamic Learner: refers to the LCI scale scores of an individual who uses one or two patterns at the Use First level and any other combination of Avoid or Use as Needed for the remaining patterns. The combination of Use First with the other Use as Needed or Avoid patterns creates a dynamic learner, different than either a Bridge Learner (one whose all four scale scores lie between 18-24) or a Strong-willed Learner (one who uses three or more Use First patterns resulting in the learner's sense of being his/her own team).

Express: refers to the public performance of knowledge and/or a specific skill. This is the phase within an individual's metacognitive cycle which typically follows Rehearsing. Publicly performing the task opens the individual to receiving public feedback.

Forge: refers to increasing the use of an individual's Avoid level of a specific learning pattern so that the person would succeed in completing a specific task. An individual can forge his/her use of a pattern by as much as five points for a limited period of time. Forging requires intention, strategies, and focused energy.

Group Covenant: refers to a written agreement among members of a team to work as a cooperative unit for the purpose of achieving a specific goal. Implicit in the covenant agreement is the willingness to honour each others' learning patterns and resolve pattern differences as they arise. Most importantly the Covenant includes how its members will support and mentor each other in the use of their patterns.

Intensify: refers to increasing the use of an individual's Use as Needed pattern more forcefully. An individual can intensify his/her use of a pattern by as much as five points for a limited period of time. Intensifying requires intention, strategies, and focused energy.

Intentional Learning: refers to making the learning experience work for the individual by decoding the task, matching the pattern-use required to the individual's patterns, and then strategising how to forge, intensify or tether the individual's patterns to meet those of the task.

Intentional Teaching: refers to the teacher knowing his/her learning processes and how they shape the learning environment and activities the teacher brings to the classroom. Next intentional teaching involves a conscious effort on the part of the teacher to respect, value, and mentor the personal learning processes of his/her students. Finally intentional teaching relies on communicating with students about their learning processes vis-à-vis their peers and their teacher. Intentional teaching creates a dialogue about learning inside and outside the classroom.

Interactive Learning Model (ILM): refers to the simultaneous interaction of three mental processes, identified as cognition, conation, and affectation which operate concurrently within each of the four operational patterns that make up each learner's brain-mind interface. The model developed by Christine Johnston (1994) is based on research conducted in cognitive psychology, learning theory, multiple intelligences, and neuroscience.

Internal Chatter: see Metacognition and Metacognitive Process

Interpreting Learning Connections Inventory Scores: refers to interpreting the scale scores of an individual for each of the four learning patterns. As a result of the interpretation, an individual can anticipate how he/she will respond to a particular task based on his/her patterns.

Learner Profile: see Personal Learning Profile

Learning: refers to our ability to take in the world around us and make sense of it so that we can respond to it in an efficient, effective, and appropriate manner.

Learning Connections Inventory (LCI): refers to the instrument (a two part, twenty-eight question self report tool with three open response written questions) which is administered to identify an individual's combination of Learning Patterns. Responses to the 28 items are tallied forming a "score" representing the degree to which an individual uses each of four Learning Patterns: Sequence, Precision, Technical Reasoning, Confluence. Each score is placed on a continuum which indicates the "range" or level of use of each Pattern: Use First, Use as Needed, Avoid.

Learning Patterns/Learning Processes: are used interchangeably to refer to Sequence, Precision, Technical Reasoning, and Confluence. Within each of these Patterns, the source and degree of the cognitive, conative, and affective characteristics of each determine the level to which an individual naturally "uses" each of the Patterns.

Let Me Learn cohort: refers to those individuals who have experienced LML accelerated coursework as members of a sustained learning community.

Let Me Learn community: refers to those individuals and organisations presently using the Let Me Learn Process with intention.

Let Me Learn integrated system: see Advanced Learning System

LCI Charts: refers to a visual tool used to present LCI scores of individuals, showing each of their four patterns, typically expressed in the following order: Sequence, Precision, Technical Reasoning, and Confluence.

Mental Processes: refer to cognition, conation, and affectation occurring within each discrete Learning Pattern.

Metacognition: in its traditional use refers to thinking about one's thinking. The term means much more when used within the context of the Let Me Learn Process. Metacognition as a LML term refers to the ability to hear the "talk" (sometimes referred to as internal chatter) among one's learning Patterns and respond to the "talk" by using personal strategies to intervene in negative "talk" and respond positively to use one's learning processes with intention.

Metacognitive Drill: refers to the seven terms LML uses to explain what the learner is experiencing as he/she is completing a learning task. These terms include Mull, Connect, Rehearse, Express, Assess, Reflect, and Revisit.

Metacognitive Process: refers to the phases of internal talk (internal chatter) which occurs among an individual's four patterns as they consider the task before them

Mull: refers to considering, contemplating, even wallowing in the description or directions of an assignment until the learner is able to understand the expectations of the task and how he/she can make a conscious effort to begin his/her learning. Mulling may take minutes, hours or even days depending upon the nature of the task to be accomplished and the patterns of the learner seeking to respond to the task.

Patterns: see Learning Patterns/Learning Processes

Pattern Bias: refers to the belief that someone's pattern combination is not desirable. The root of pattern bias is frequently an unintentional preference for one's own use of learning patterns. Pattern bias affects an individual's appreciation for, and acceptance of, another's approach to completing a task or producing work product. Pattern bias is usually associated with assumptions about someone else's Use First and Avoid patterns.

Pattern Characteristics: refers to the results of factor analysing the responses of over 5000 nine-to-eighteen year olds and 4000 adults who responded to the various iterations of the Learning Connection Inventory during its development. Those factors that clustered together were then given a categorical label. The labels chosen were the following: Sequence, Precision, Technical Reasoning, and Confluence.

Pattern Combination: refers to any combination of an individual's four learning Patterns.

Pattern Conflict: refers to the negative interaction of individuals as a result of pronounced pattern differences; the conflict which is generated as a result of individuals' lack of communication concerning their differences in how each approaches learning.

Pattern Difference: refers to the difference of pattern combinations between/among individuals.

Pattern Driven: refers to an activity which becomes overwhelmingly associated with the use of one pattern not a balance of four patterns used in consort.

Pattern Fit: refers to the appropriate use of patterns to undertake a task successfully; the match between the task to be done and the pattern levels available to do the job.

Pattern Validity: refers to matching pattern scale scores to what the person has written as his/her short answer responses. This process known as "validating the LCI scores" uses a protocol for identifying words reflective of specific patterns (See word wall below). This internal validity check helps strengthen reliance that an individual's learning profile (LCI) is accurate for that individual.

Pattern Volume: refers to equating a pattern's use with a voice volume to demonstrate the degree to which a pattern's attributes influence the learner's behaviour. Use first patterns are equated to being "playground" volumes; use as needed as "classroom" volumes; and avoid usage are the "soft-spoken or whisper" volumes. Individuals learn to make "adjustments" to the volume to match the pattern combination to the task at hand through metacognitive awareness and intention.

Personal Learning Profile: is a record of your learning Patterns described in your own words. It is a way of translating the Pattern scores into an authentic profile of yourself as a learner.

Precision: refers the learning pattern which seeks information and details, asks and answers questions, researches and documents facts.

Range: see Learning Connections Inventory (LCI).

Reflect: refers to looking in a hand-held mirror, facing oneself, and asking, "What specifically did I do or not do that resulted in this learning outcome?" Reflection is an inward directed activity which reinforces the ownership of the individual's learning strategies and intentional behaviours. This is the metacognitive phase that follows Assessment. This is the heart of becoming an intentional learner. This is where the buck stops.

Rehearse: refers to privately practising a response to a learning task. The only audience (and critic) is the learner him or herself.

Revisit: refers to revisiting the original learning task, a similar task, or an extension of that task (new assignment) and applying what was learned through the metacognitive phases of Assessment and Reflection. This is where transferrable skills are applied to a specific task with the intention of demonstrating improvement over the previous performance. This is the metacognitive phase that fosters measureable improvement based upon the implementation of new learning strategies.

School patterns: refers to patterns that are frequently honoured in school and/or classroom settings because of the bias of teachers for their own patterns. Elementary-Middle School patterns honoured are usually Sequence and Precision because the overwhelming majority of these teachers lead with Sequence and Precision themselves.

Score: see Learning Connection Inventory (LCI)

Sequence: refers to the learning pattern which needs to organise, plan, and complete work assignments without interruption using clear instructions, as well as a time-frame which allows for checking work.

Strategy Card: refers to a charted representation of the gap between a learner's patterns and a particular task to be completed. A strategy of specific actions is written by the learner for those patterns which the learner recognises need to be tethered, forged, or intensified in order to undertake the task successfully.

Strong-willed learners (SWLers): refers to learners whose scores are 25 or more in at least three out of four patterns. "I am my own team. I prefer to work alone so that I can control the plan, the ideas, the talk, the decisions, the process, and the outcomes. I lead from out in front. Sometimes others find it hard to follow my lead."

Team of Patterns: see Pattern Combination.

Technical Reasoning: refers to the pattern which describes the way we seek relevant real world experiences and practical answers. This pattern is the pattern of the fewest words. It emphasises the ability to problem-solve using independent private thinking and hands-on interaction.

Tether: refers to restraining the use of a Use first learning pattern. This is done with intention to allow the learner's other patterns to be heard metacognitively and to operate more effectively.

Use as Needed: refers to LCI scale scores that range from 18-24. These are the patterns which tend to be lost among the more vocal pattern chatter of Use first and Avoid patterns.

Use First: refers to LCI scale scores that range from 25-35. A Use first pattern has a volume equal to an Avoid pattern. It will make itself heard in a learner's internal metacognitive chatter. Learners use this pattern first and begin their learning task relying on it.

Word Walls: refers to posters or charts which list words associated with each of the four patterns: Sequence, Precision, Technical Reasoning, and Confluence. The posters provide learners with assistance in doing task analysis and creating strategy cards.

Working memory: refers to one of our memory functions which receives stimuli that has passed through the interface of our Learning Patterns and requires translation into symbolic representation (words, numbers, musical notes, etc.) and direction for storage for ready retrieval.

A Learning Paradigm
Informed by Knowledge of the Learning Self

"Let Me Learn, could well be the next 'big idea' for enabling student success."
JOHN GARDNER - KEYNOTE SPEAKER, JANUARY 8, 2007, 1ST ANNUAL FORUM ON HIGHER EDUCATION LEARNING ISSUES, PHILADELPHIA, PA

"The Let Me Learn Process works! This is a compass of more value than diamonds and gold. It affects life more profoundly by enabling us to learn effectively. It has affected my colleagues and me personally and professionally. Whether I am working with blue collar workers, disaffected youth, at-risk community college students or doctoral students, I have been able to use the Let Me Learn Process® to help those who are lost, confused, overwhelmed in the process of learning."
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"I was really impressed this morning with both the children's and the teachers' ability to articulate how they learn and to apply it to their class work. You have really made the connection here big time. You remind me of the importance of continually examining what schooling and learning ought to be about. You have brought these all together through the Let Me Learn Process® – that is unusual, to a degree that I haven't seen before."
REMARKS BY THE NEW JERSEY STATE COMMISSIONER OF EDUCATION, DR. LEO KLAGHOLZ, JUNE 1, 1998

"I am a believer in the message of Let Me Learn. Its message resonates with my experience as a learner; its message is one that I have seen in the voices and actions of learners within classrooms; its message can be universally applied; and its process frees teachers to let their children learn!"
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"The US Embassy in Malta is pleased to recognise and commend the service Let Me Learn has provided to this nation. What we celebrate here today is the achievement of the past ten years during which time you have developed LML as a productive joint venture with long term effects on this nation's schools"
ANTHONY H. GIOIA - US AMBASSADOR TO MALTA IN 2004

ISBN 978-99957-38-90-7
9 789995 738907

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