Learning Teams:
A communities-of-practice approach to faculty development
and university course design

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ABSTRACT

Success or failure in teaching and learning is often associated with the level of

expertise in individual faculty or motivation and abilities in students. Rarely do

departments or the university as a whole share responsibility (Biggs, 2001). A potential

gateway to change is learning teams, an abridged title for learning-oriented course design

teams (McAlpine, 2002a). Learning teams are intentionally organized around course

design projects that evolve over time to foster learning from experience. They provide an

opportunity to deliberate on course decisions with a strategic group of people – faculty,

pedagogical experts, instructional technologists, librarians, and students – for the purpose

of initiating change. Learning teams represent a systematic process for linking people to

new communities of practice, crossing boundaries we may not even know exist.

The research context is McGill University in Montreal, Canada. Internal funding

was provided to increase access to a core faculty development workshop on Course

Design and Teaching (CDT). The CDT workshop is a five-day intensive experience that

provides a framework for helping professors think intentionally about their instructional

decisions (Saroyan & Amundsen, 2004). A major challenge in the workshop over the

years has been how to model and make explicit issues around the role of technology in

instruction, and more recently information resources, while preserving the theoretical

integrity of the workshop. The redesign of the CDT workshop with these goals in mind

presented an opportunity to experiment formally with the learning team strategy.

A learning team met for one year, generating and reflecting on the results of three design iterations. Grounded theory analysis of interviews with participants proceeded through an initial searching phase looking for variation in perspectives and dominant themes followed by focused coding and the seeking of patterns. Findings were validated through triangulation of different data sources (interviews, observations, documents, products) and two credibility checks (one with a colloquium of the learning team and another with an external consultant). Only findings validated with participants are cited.

A conceptual model of learning teams emerged with a core concept captured in the phrase "a systematic way of talking to each other" and seven related concepts: context sensitivity, mutual goals, diversity, design framework, dialogue, collective self-reflection, and momentum. The model integrates literature from the fields of faculty development, university course design, and educational technology.

What fundamentally happened in the learning team? A WebCT environment now houses a dynamic record of the CDT workshop. People in the Libraries are cued to how they can best inform the course design process. Team members have a deepened awareness and shared commitment to multidisciplinary collaboration. However, in concentrating on achieving explicit goals the team failed to reflect collectively on their own learning that occurred. Focusing attention on team processes provides a way forward on this research agenda. The real problem will lie in scaling out the learning team strategy. A new reality is needed in the professoriate to move people from individual responsibility to collective responsibility in university course design, not as groups of experts but as multidisciplinary teams.

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Introduction

*There can be no innovation in the creation of strategy without
a change in perspective.*

Gary Hamel, 1996

"Imagine having carte blanche, as many resources as needed to improve the academy, would you propose learning teams?" This is one of a barrage of questions posed by my doctoral supervisor, Dr. Philip Abrami, in his role as external consultant on this qualitative study of learning teams. "Forget about tradition", he said. "What does faculty development need to look like? What does course design need to look like? What models really work and why? What would you do? In what ways would you involve senior administration and department chairs in the process?" Answers to these questions gradually converge with my research findings to suggest a new strategy for collaboration in higher education.

In this first chapter, I define the learning team strategy and explain who proposed the idea and why. I consider both the global and local contexts pertinent to understanding this new phenomenon. I explain what interested me in the topic, identify my research questions, and outline how the dissertation as a whole is organized.

Learning teams defined

Learning teams is an abridged title for learning-oriented course design teams, conceived by Dr. Lynn McAlpine as a strategy to support instructional development based on academic priorities. The proposal was presented in January 2002 to McGill

University's Vice President, Academic and Vice Provost, Information Systems Technology. The three areas of faculty development, instructional technology, and the libraries all report to him. There was a shared vision of learning teams that took time developing in conversation with him.

Learning teams are designed to support instructional development needs and to provide a forum for planning for the future. They bring together a strategic group of people – professors, students, and representatives from faculty development, instructional technology, and the libraries – to deliberate on course or program decisions for the purpose of initiating change. Criteria for creating a learning team include at least one of the following: 1) clear potential for enhancing student learning, 2) a department or faculty priority, 3) an enhancement of the institutional climate for teaching and learning. A central tenet of the learning team approach is Shulman's (1993) notion of teaching as community property, that is seeing the improvement of student learning as a shared responsibility: "Central to this model is conceiving the improvement of learning as an activity that is promoted and shared by all in the University." (McAlpine, 2002a, p. 1) It is not just faculty who are learning but all team members and this adds an important organizational development aspect.

A fundamental assumption of learning teams is that growth in professional competence best emerges through conversation and information exchange as people work on specific projects in collaboration with their colleagues. Although it can be argued that this is similar to what takes place under the icon of collegiality, the learning team strategy is different from the way instructional development is traditionally conceived because it

is a mechanism for bringing together people from units who would not normally talk to each other.

Global context: McGill University

The rationale for learning teams is that so many factors influence university teaching today it requires multiple kinds of expertise and experience to make good instructional decisions.

First, an unprecedented renewal of teaching staff over the coming years requires a long-term commitment to new faculty so they can become effective teachers quickly (McAlpine, 2002a). McGill is a research-intensive university in Montreal, Canada, that employs about 1,500 full-time professors who are expected to maintain strong teaching dossiers, even beyond tenure. When this study began in 2003, McGill was entering an era of renewal of its professoriate, expecting to recruit about 100 new faculty members per year over the next ten years. Increased student numbers had also resulted in larger class sizes and reliance on sessional and part-time instructors. This required a long-term commitment not only to accelerating growth in pedagogical knowledge in new faculty, but also to sustaining their effectiveness and preparing other instructors and teaching assistants for the demands of university teaching. A new generation of students with greater diversity of experience, ethnicity, expectations, and preparedness further required the University to be ready to meet the learning needs they bring with them (Shapiro & Levine, 1999).

Second, an increasing commitment to using technology in and out of the classroom to enhance the learning process requires a huge concerted effort in teaching faculty how to use technology effectively. A team approach is cited as the most effective

strategy for helping faculty integrate technology into courses (Epper & Bates, 2001). Technology integration at McGill is driven by a clear vision of teaching in which students will continue to be taught on campus with technology used to enhance both in-class and out-of-class learning. To support this vision, the University provides support for WebCT (the web-based course management system of choice) including the design of on-line discussions, complex learning objects, and other instructional technologies. To optimize teaching and learning opportunities requires a collaborative effort in helping professors and students use these new technologies effectively.

Third, an explosion in the amount of information to be navigated using computer technology requires a proactive approach to developing information-literate web-users (Burge, 2000). This is coupled with the emergence of a knowledge-based economy that depends heavily on the use of information. In 2003, the Subcommittee on Libraries of the Conference of Rectors and Principals of Quebec Universities (CREPUQ) conducted a study on the information research skills of undergraduate students entering Quebec universities. Results show that a significant number of students have difficulty retrieving relevant information, waste time due to inefficient search strategies, and risk plagiarism (Mittermeyer & Quirion, 2003). Like other institutions of higher learning, McGill is committed to educating students in information literacy skills. Such education is only possible with collaborative partnerships between educators and library representatives.

Given these three academic priorities, McGill was prepared to invest in a pilot collaborative approach to faculty development. How can a university handle the unprecedented increase in the complexity of academic work while preserving standards of teaching and learning excellence? Another aspect of the learning team strategy is to

explore this question and others with a view to extending everyone's knowledge about how to create the most positive learning environments for students.

Local context: The course design & teaching workshop

Four programs were proposed by Lynn McAlpine (2002a) in support of faculty and students in the global context described above, each building on the collaborative strategy of learning teams. Funding was requested for release time for professors and compensation for students: 1) to expand the highly successful faculty development workshop on Course Design and Teaching (CDT); 2) to expand pilot work on developing discipline-specific teaching assistants to support instructors; 3) to stimulate and support faculties or departments that undertake broad initiatives to improve teaching and learning; and 4) to provide seed grants to professors to support development of innovative teaching practices that enhance student learning. My study on learning teams describes and examines the first activity.

The CDT workshop had been offered at McGill once a year over the past ten years, with over 200 professors having participated. The CDT workshop is a five-day intensive experience that provides a framework for helping professors think intentionally about their instructional decisions (Saroyan & Amundsen, 2004). A major challenge in the workshop over the years has been how to model and make explicit issues around the role of technology in instruction, and more recently the integration of information literacy in the course design process, while preserving the theoretical integrity of the workshop. Learning teams had first been experimented with in the Management Department at McGill with interesting results. Now there was an opportunity for further exploration at

the alpha level of implementation, in other words, "under the control of the advocate" and "under ideal supportive conditions" (Brown, 1992, p. 172).

The CTD learning team met for one year, generating and then reflecting on the results of three design iterations. A coordinator was hired to oversee development and, with the help of a graduate student assistant, formative evaluation data was collected and discussed at every stage. Redesign of the CDT workshop presented an ideal opportunity for the faculty development unit to collaborate with the instructional technology unit and the libraries and thus experiment formally with the learning team strategy.

McGill has a rich history in faculty development. The Centre for University Teaching and Learning (CUTL) has been in operation for over 25 years. Members of the CUTL have published many articles on faculty learning, and recently a book on the conceptual framework of their flagship workshop on course design and teaching (Saroyan & Amundsen, 2004). The CDT workshop was first offered in the early 90s. Since then, a number of studies of different kinds have been conducted to understand the nature and impact of the workshop that is perceived by participants to be a powerful learning experience. Over the past few years, the impact of the CDT workshop and its follow-up activities have been studied as part of an SSHRC grant held by Drs. Amundsen, Weston, Abrami and McAlpine titled: *A faculty development approach that focuses on learning for the effective integration of technology in higher education.* My study on learning teams was funded in part from this research grant.

What interested me in this topic?

When first searching for a research context I was advised to look for an area in the literature in which I would like to contribute, pin it down to a journal in which I would

like to publish, and then branch out from there. Instead, I got swept along with an opportunity to do research in a particular context related to my work.

I had worked previously on a curriculum project with the Director of CUTL. She welcomed my interest in focusing on learning teams for my Ph.D. research. For the past four years, I have worked in the area of faculty development as a teaching consultant in the Centre for Teaching and Learning Services (CTLS) at Concordia University. Having participated in the CDT workshop at McGill with a view to implementing it at Concordia, I immediately recognized the learning team concept as something new and interesting. What makes it new is the focus on course design as a vehicle for change. What makes it interesting is the situated and collaborative approach to faculty development.

Research questions

The object of my study on learning teams was to observe an interdisciplinary collaborative rethinking of a core faculty development workshop on course design and teaching in response to authentic needs: a) to coherently integrate technology and information literacy, and b) to demonstrate a tripartite collaboration in support of student learning. Inquiry was guided by four questions:

1. What is happening? (What are people doing? What changes occur over time?)

2. What are the pros and cons of this team approach (from both an insider and outsider's perspective)?

3. What triggers (or not) real problem solving (what pushes people to think deeply)?

4. What factors (contextual and other imperatives) mediate implementation of this new faculty development initiative?

The intent of my research was to produce a conceptual model of learning teams generated by grounded theory analysis of interviews with individuals who experienced this new collaborative strategy.

Organization of the dissertation

The dissertation is organized in five chapters. Chapter 2 situates learning teams in the literature of faculty development, university course design, and educational technology. Chapter 3 elaborates on my research methodology and explains what I did and why (where and from whom data were collected, the phases and methods of qualitative inquiry, and analytical techniques from grounded theory). Issues of trustworthiness are also considered. Chapter 4 presents my findings organized around my four research questions with data summaries included as appendices. Chapter 5 identifies points of integration between my findings and the literature. A conceptual model of learning teams is suggested to guide implementation of the learning team strategy in the context for which it is intended and in other contexts. I conclude with a critique of the research process, ideas for further research in this area, and reflections on my experience as a researcher and contributions to knowledge.

Chapter 2

Literature Review

To be useful and meaningful, education research must be cumulative;
it must build on and learn from prior research and scholarship on the topic.

Boote & Biele (2005)

A literature review is like organizing a dinner party (Kamler & Thomson, 2006). The reviewer decides who to invite, who absolutely has to be there, and who sits next to whom. We ensure people with common interests sit together and, when possible, balance perspectives and cultural backgrounds. We anticipate the flow of conversation and cue people in at appropriate times. In identifying the issues that compel us we move from passive reviewer to eavesdropper to active participant. Rather than the usual "he says, she says, he says more" style of review, we put our assertions first and other people in brackets where they belong. We are in control of the literature rather than drowning in a sea of citations. Doctoral writing then becomes an opportunity to build our identity as scholars. The placement of this review may give the impression that I organized a gala party prior to selecting my research methodology and collecting and interpreting data. This was not the case.

The place of literature in grounded theory is different than in other research methodologies. The phenomenon being investigated is not framed by a particular theory or tested by hypotheses generated prior to collecting data. Rather, there is a component of grounded theory called constant comparison that involves verification of core categories and concepts as they emerge during data analysis. The researcher moves constantly between the data and the literature to seek explanations and better understanding of

concepts and their relationships. Data is emergent – a continuous source of discovery. Literature is reviewed as it becomes relevant towards the development of theory and integrated in a discussion format or as a set of theoretical propositions (Conrad, Haworth & Lattuca, 2001). This is in fact what I have done. However, the challenge of doctoral writing is to establish one's authority in relation to the literature, regardless of methodology. Glaser (1998) is aware of this dilemma in grounded theory. He suggests using the literature both to frame the phenomenon of study, keeping the mantra "all is data" in mind, and as a source of comparison when conceptualizing the findings.

In this chapter I continue to answer the question: where did the idea of learning teams come from? I respect the advocate's original conception while looking for alternative explanations. My search strategy has been to find examples of research and scholarly reflection in journal articles and books on collaborative models of instructional improvement in higher education. Also included are keynote presentations from conferences I have attended. Instructional improvement is an umbrella term that I associate with my areas of specialization: faculty development, university course design, and educational technology. My review is structured around these three areas.

Section 1: Faculty development

In this first section, I turn to assumptions about teaching and learning that gave rise to identifying the learning team concept as a new faculty development initiative. What is faculty development and why is it important? What are the compelling issues? What models really work and why? What more could we be doing?

What is faculty development and why is it important?

In North America, the term "faculty development" describes professional development activities designed for professors to enhance their teaching and thus create the best possible learning environments for students. Typically, these activities include consultations, workshops, and the provision of tools for teaching. Activities can be further categorized as developing skills in course design, delivery, assessment, classroom management, and graduate supervision (McAlpine & Harris, 2002). This definition has recently been expanded to include sustained activities, such as faculty learning communities (Amunsden et al., 2005b). Some centres (like the one at Concordia University) are also responsible for the administration of course evaluation. Even when they are not, professors have historically seen the role of professionals working in faculty development as providing guidance for improvement based on an interpretation of student ratings, and they will continue to do so under the present climate of judging teaching performance primarily on this measure.

Internationally, the term "academic development" is used to describe the same kind of professional development activities but for a larger audience that includes professors, administrators, and staff. I prefer this term since it embraces concerns as a university community. Although different audiences have different needs and characteristics, professional development in higher education could benefit from a more democratic spirit.

In fact, the trend in the U.K. and Australia is to move away from teaching versus research to reshaping teaching and research to better ensure they connect. This connection is not automatic but has to be designed into courses. Research shows that

involving undergraduate students in research-like activities can develop their confidence as learners and their capacity to think independently (e.g., Baxter-Magolda, 2001, cited in Jenkins, 2003). Moving in this direction helps faculty development practitioners get closer to student learning and involves more of an organizational development aspect.

Rarely, however, do people responsible for faculty/academic development have the mandate or resources to live up to the definition of their field. Universities and faculty clientele generally view teaching centres simply, "as places providing tips for teachers, or as remedial clinics for poor or beginning teachers. Most recently, some centres have even been replaced by training in educational technology, in the confused belief that if teachers are using IT then they must be teaching properly for the new millennium." (Biggs, 2001, p. 227) We would all agree, however, that the scope of professional development in teaching should not be about a few survival tips presented in workshops, "but about a lengthy and demanding progression towards professional competence" (Ramsden, 1992, p. 250).

When centres are viewed (and operate) from a more sophisticated conception of teaching and learning, then a university's approach to quality enhancement changes. Experts in teaching and learning are involved in all central decisions bearing on teaching and learning. They are invited to participate with departments in course and program design in recognition that there is a knowledge base of university teaching to be drawn upon. The work of faculty development changes from focusing on the individual teacher to focusing on teaching within the whole university. (Biggs, 2001)

The Centre for University Teaching and Learning at McGill has worked hard to achieve this kind of recognition (McAlpine & Saroyan, 2004). In another context, the learning team strategy may not have had the same potential for initiating change.

What are the compelling issues?

In the Canadian context, the most compelling issue in faculty development is the absence of formal preparation in university teaching. "The need for change is urgent", says Christopher Knapper (2005), Professor Emeritus of Psychology at Queen's University and past president of the Society for Teaching and Learning in Higher Education (STLHE). In a keynote address to the Canadian Summit on the Integration of Teaching and Research, Knapper assessed university teaching as "one of the very few professions where practitioners receive almost no formal preparation for their work, where there is no process for the accreditation of minimum competence, and where involvement in continuing professional education is uncommon." He defines the problem as stubborn resistance to the precepts of good practice: "overwhelmingly didactic teaching; trivial and inauthentic assessment; curriculum development that relies far too much on disciplinary tradition and faculty interests rather than student and societal needs; and superficial evaluation of teaching effectiveness and learning outcomes." (Schmidt, 2005, August 13, p. 5)

Everywhere university teachers and academic leaders are under the microscope; professors can no longer hide behind their lecterns. "Changes wrought by mass higher education go far beyond larger class sizes, more diverse groups of students, and different student attitudes. They have altered management patterns, public perceptions of higher education, and the whole apparatus of professional standards and accountability."

(Ramsden, 1998, p. 14) Change in academic work and the role of faculty development are ripe for research.

At a keynote address of the American Professional Organizational Development (POD) association, Mary Deane Sorcinelli presented a vision of the future of faculty development (now published in Sorcinelli, Austin, Eddy & Beach, 2006). Based on a survey of nearly 500 faculty developers from all institutional types (53% Canadian and 49% U.S. members; 39% men and 61% women), the 21st century is envisioned as the Age of the Network. The future is characterized by resilience (recovering from budget cuts and other setbacks), responsiveness (meeting individual and institutional needs), and agency (collaborative development). Movement is anticipated towards multidimensional purposes, centralized units, and more measures of impact.

The most striking challenge to emerge from the open-ended responses was the need for more connection between where participants wished to see faculty development move and where they saw it moving, with or without their control.

> Respondents were deeply concerned about what they saw as an over-reliance on
> technology as the teaching and learning 'fix' that everyone must use, and their
> role as technology consultants to faculty subsuming all other roles and issues they
> see as important to address. They also worried about increasing pressure on the
> field to be part of the assessment movement and various evaluation processes
> such as accreditation reviews and post-tenure review. (p. 145)

Having no certification requirements in Canada for university professors (unlike the U.K. and Australia) is another critical issue for research in this area. The voluntary

nature of faculty development means we preach to the converted and have self-identified participants in our research efforts.

What models really work and why?

One of the primary roles of faculty development is to help teachers become aware of their conceptions of teaching and learning, and to continually revise, adjust, and develop their teaching in light of this growing awareness. (Prosser & Trigwell, 1999) Models of faculty development aimed at developing such awareness can be viewed as re-structuring models both in terms of professional and organizational development, as a process of conceptual change, or from an interdisciplinary learning perspective.

Re-structuring models

To analyze the nature of faculty development activities, Hicks (1998) developed a two-dimensional matrix that situates activities as generic or discipline-specific along one dimension, and central or local along the other. The development of generic skills or methods, for example, can either be funded centrally or locally. The advantage of local funding is that it increases commitment of faculty time, money and rewards, and therefore the likelihood of increasing ownership. The disadvantage is that teaching improvement activities are divorced from the total university culture. An integrated approach is called for that involves all four combinations of activities connected and coordinated through a collaborative approach.

Hicks' matrix was used to analyze instructional consultation at McGill with a view to expanding their services from primarily generic central programs to a more integrated approach (Weston & McAlpine, 1999). This shift involves working in "reciprocal partnership with faculty associates to build discipline-specific programs and

create a shared knowledge base" (p. 93). The implications of an integrated approach further include recognizing the contributions of volunteer faculty by incorporating them formally into the consultation network and rewarding them for time spent in an apprenticeship role. "It must be clear to faculty members that attention to teaching is truly valued at the university if they are to devote precious time to working with colleagues." (p. 94) From this viewpoint, Faculties need to take initiative in identifying local instructional development needs and collaborate in planning, implementing, and evaluating the consultations provided.

But how would we plan and evaluate such consultations? A cross-case analysis of academic development initiatives that focused on collaboration with multiple units across campus to address pressing academic issues, for example the retention of first-year students, reveals several characteristics of good collaborations (Chism, 2004). The issue itself must be important to everyone and congruent with the mission and values of each unit and the institution. Successful collaborations result from a "triggering opportunity which represented a particular felt need within the college or community" (Schroeder, 1998, p. 18, cited in Chism, 2004). Participating units also need to commit resources in proportion to their capacity and leaders need to be diligent in balancing contributions, otherwise "it is easy for one unit's enthusiasm or energy to take over" (p. 234).

Those on the team need to be involved in defining the scope of the problem and how it will be addressed. Leaders need to be intentional in identifying who should be invited to collaborate, given the "differences involved in norms, routine ways of acting, status, and values that are deeply entrenched in the positions that various people hold within a campus community" (p. 233). Respect for multiple points of view is an essential

characteristic, as well as a spirit of inquiry. To move collaborations forward, it is further recommended to collect and analyze data, especially findings from the scholarship of teaching and learning, and to derive implications for practice. Finally, sustaining the collaboration involves regular communications, special events, outside recognition, and cultivating group humor. Continuous assessment of impact is also essential to keep people focused and committed. Finally, collaboration with campus units is a key strategy for academic development centers to initiate in response to significant institutional problems.

Schon's (1983) concept of the reflective practitioner implies there is such a thing as an unreflective teacher, when there is no such thing (Zeichner, 1996, cited in Fendler, 2003). A collaborative model of academic development might similarly imply there is an un-collaborative model, when there is no such thing. We cannot work alone, but we can take individual responsibility for our work. A transformative model for designing professional development activities proposed by Langley, O'Connor and Welkener (2004) recognizes the need for both individual learning and collaboration. The model consists of an individual/public dimension and a reflection/performance dimension. As shown in Figure 1, the four quadrants that result provide a framework for faculty developers to design thoughtful programs. "The proposed model recognizes the dialectic between individual and public within an organization; it acknowledges the dynamic between reflection and performance that is crucial to real learning." (p. 153)

Figure 1: Four Quadrant Model for Professional Development
(Adapted from Langley, O'Connor & Welkener, 2004)

	Individual Reflection	*Observable Performance*
Individual needs	Critical examination of professional issues based on a personal perspective. Example: Reflecting on alternative classroom pedagogies.	Observable professional or technical skills necessary for achieving scholarly outcomes. Example: Developing more advanced skills.
Institutional needs	Critical examination of professional issues based on collaborative input. Example: Discussing the merits of a new teaching approach with a colleague.	Scholarly outcomes observable to the professional community. Example: Presenting a paper at a conference.

The above model provides a framework for responding to individual needs at the same time as acknowledging the need for sharing teaching products with a larger audience. The learning team strategy has the potential for moving people into the public/reflection and public/performance quadrants.

Conceptual change models

From a conceptual change perspective, developing teaching competence involves both a process of action, reflection, and feedback, and a theory to guide this process. Schön (1983) is recognized in the faculty development literature as leading the way in terms of process. He distinguishes between reflection-on-action (before or after) and reflection-in-action. The variable of time is important because of the possible disconnect between our espoused theories (made explicit before or after action) and our theories-in-use. It is partly through the process of reflecting-in-action and making the implicit

explicit that provokes changes in our conceptions (beliefs, values, assumptions) about teaching and learning. We get caught in the act of not walking our talk. An essential ingredient in this change process is feedback.

Another term coined by Argyris and Schön (1978) important to an understanding of conceptual change is double-loop learning. Double-loop learning is the process of deepening our awareness of why we do what we do, rather than repeating habitual ways of thinking and acting. It involves being open to criticism and articulating concerns and alternatives, while confronting and correcting errors and monitoring the effectiveness of one's decisions. Argyris (1991) further observes that double-loop learning is something smart people find difficult to do. They either get caught up with the problem or the solution without necessarily aligning the two. This kind of conceptual change requires sustained discussion and reflection that is best not done alone (Biggs, 1999).

In terms of theory underpinning conceptual change models, multiple studies show that the way professors teach and design courses fosters either deep or surface approaches to learning in their students (e.g., Marton & Saljo, 1976; Ramsden, 1992; Samuelowicz & Bain, 1992; Kember, 1997; Biggs, 1999; Prosser & Trigwell, 1999). The original definition of deep learning by Marton and Saljo is a significant positive change in the way a student thinks, acts, or feels. Deep learning requires a number of complex tasks to be performed by students: "Focus on what is 'signified' (e.g., author's argument, or the concepts applicable to solving the problem); relate and distinguish evidence and argument; organize and structure content into a coherent whole" (Ramsden, 1992, p. 42). Likewise, fostering deep learning requires a number of complex conditions to be created by the teacher: an appropriate motivational context; a high degree of learning activity;

interaction with others, both peers and teachers; [and] a well-structured knowledge base. (Biggs, 1999)

The trajectory of growth in teaching competence is similarly conceptualized at different levels of complexity (Biggs, 2001). At level 1, the professor focuses on *what the student is*. Beginning professors in particular are struck by individual differences and view students as "easily teachable" or not. They conceive their responsibility in teaching as content expert and thus rely heavily on the lecture mode of transmitting knowledge. At level 2, the emphasis is on *what the teacher does*. A transmission model of teaching is still prevalent but professors recognize that there are skills to be mastered in presenting complex knowledge structures, for example, in course design and teaching, classroom management, and the effective use of technology.

At level 3, professors' attention shifts from what he or she is doing to *what the student does*. They realize a new capacity for action and take responsibility for the impact of their actions: "Expert teaching in this sense certainly includes mastery of teaching techniques, but unless the appropriate learning takes place, it is an empty display" (p. 224). Professors with a level 3 theory of teaching and learning see that an appropriate framework is necessary to articulate content and learning outcomes clearly, and to align these with appropriate teaching strategies, as well as assessment tasks that support students in reaching the level of learning required.

A study by Drew and Vaughan (2002) illustrates the conceptual change model in practice. They examine the experience of five teachers in the London College of Fashion U.K.) engaged in a collaborative process of course design and reflection. Recognizing the need for a shared language in helping course teams engage in more vigorous discussion

and develop a collective responsibility for learning issues, the teachers take an instructional development program beforehand informed by current research on conceptions of teaching and learning. The study is based on comparative analysis of reflective journals written by the teachers following interaction in team activities over a period of two years. Three categories of concern and reflection are identified: student learning, development of teaching and the curriculum, and teacher professional development.

Journal extracts articulate changes in practice to achieve what Biggs (1999) calls "constructive alignment." This refers to designing learning environments that a) support students in building their own well-structured knowledge base, and b) ensure internal consistency among content, desired outcomes, learning activities, and assessment. The researchers conclude that principles applied in their study mirror Wenger, McDermott and Snyder's (2001) indicators of communities of practice (collective reflection on practice, talking about practice, and sharing problems and issues relating to practice, the context of practice, and cultural aspects of practice), as well as Senge's (1992) essential qualities for staff in a learning organization (personal mastery, mental models, shared vision, team learning, and systems thinking). The course team focus coupled with department and management sponsorship is suggested as crucial for influencing and sustaining changes in teaching practice in line with departmental culture. "What is highlighted in this case is a strategy for linking development activities to course teams to create an integrated approach, informed by current research" (p.183).

A similar case example of a conceptual change model is the Course Design and Teaching (CDT) workshop offered by McGill. As already mentioned, this five-day

intensive workshop provides professors with "an opportunity to discuss their teaching, reflect on it, and initiate change to enhance the quality of student learning" (Saroyan & Amunsden, 2005). The workshop's goal is to change conceptions from a content-orientation (focusing on what should be covered) to a learning-orientation (focusing on how to teach so that students learn well).

In this learning-oriented approach to course design and teaching, decisions on content, outcomes, strategies, and assessment are made with specific reference to the kind of learning desired, and choices are made that best support this kind of learning. Participants engage in an intensive process whereby they articulate and examine their beliefs about teaching and learning through intellectual discussions with colleagues from across the university. A comfortable environment for these discussions is paramount. Grounded in Mezirow's (1991) theory of transformational learning and Schön's (1987) theory of reflective practice, the rationale for this workshop design is that development from novice to expert teacher requires making tacitly held theories about teaching and learning explicit. Realizing the discrepancy between what we say we believe in (espoused theories) and what we actually do (theories-in-use) moves us to transform our thinking and change our teaching practices. Competency is developed through close examination of decisions, which in turn leads to more intentional practices. (Saroyan & Amunsden, 2005)

Research on the effectiveness of the CDT workshop in promoting changes in teacher thinking analyzed data using a conceptual change theory similar to Biggs (Saroyan, Amunsden, & Li, 1997). Findings indicate that after participating in the workshop faculty do change their focus from level 1 theory to levels 2 and 3. The

question raised for future research is: "If we do succeed in effecting change in thinking about teaching, does this mean that there will be actual change in practice too?" (p.108) The link between a sophisticated conception of teaching and improved student learning is one that researchers believe exists, but it is difficult to measure.

A current study on the McGill (and Simon Fraser University) CDT workshop compares participants' course outlines pre and post the experience to determine if the main concepts of the workshop have been applied (Mundy, 2006). Preliminary analysis suggests that alignment of decisions in the course design process (post workshop) is strong except for assessment decisions. This may mean that assessment needs more attention during the workshop or that contextual influences on decisions have not been taken into account. Whatever the conclusion, Mundy's research is moving us in the direction of evaluating impact of the CDT workshop in terms of what is learned (theory-in-use), rather than what is to be learned (espoused theory).

It does not however move us beyond criticism in our field for "telling half the story" since it only examines what teachers say they are going to do rather than observing what they actually do, or verifying the impact of instructional decisions on student learning and perceptions (Kane, Sandretto, & Heath, 2002). In other words, we do not fully test the construct of double-loop learning. Future research in this area "needs to be designed to enhance trustworthiness in the findings. There is also room for more explicit links between studies of teachers' espoused theories of action, theories-in-use, and the implications for the development of tertiary teachers." (p. 205) Goodyear and Kativa (2002) also criticize research in this area for being "poorly connected to objective

measures of valued learning outcomes" (p. 356). We need to get closer to the action and combine our observations with participants' own accounts and data on outcomes.

Interdisciplinary models

Interdisciplinary models of faculty development harken back to the original purpose of a university as a place where great minds come together (Svinicki, 2004). An initiative by the Ohio Learning Network (Hansen et al., 2004) centered on one primary question: How could a young state agency best collaborate with campuses on faculty development efforts that would result in pedagogically robust and technologically enhanced programs, courses, modules, and learning objects such as videos and websites? Their answer was learning communities.

In the Ohio statewide program, five learning communities were established of roughly equal size, interests, and diversity. They each engaged in several special events and a series of meetings. There were many lessons learned. The main lesson is that facilitators of learning communities need preparation because the norms of regular committee work and the dogma of hierarchies can impinge on community building. Another prerequisite for success is time. Faculty learning communities need to respect and work around demanding time constraints. To sustain momentum, they also need authentic campus projects aligned with institutional goals. To be most effective, an institutional commitment to the importance of faculty development is needed.

Another research team has built a series of studies from the idea of faculty learning through interdisciplinary collaboration. They have reframed interdisciplinary collaboration "as about learning and the co-construction of knowledge rather than about efficiencies in practice" (Creamer & Lattuca, 2005, p. 1). Their main premise is that

"much of faculty work can be understood as learning" (p. 9). Learning is defined as changed cognition involving "the personal and shared construction of knowledge; … coming to know something familiar in different ways, or to know something altogether new, from within one's self and often with others" (Neumann, 2005, p. 65). This definition implies learning something, in this case learning to collaborate: "is entirely contingent on their having a subject matter (the knowledge they are constructing and reconstructing) to learn – a subject matter within which, and through which, their differences, even conflicts, take form and then somehow become resolved" (p. 68-69). The subject matter in an interdisciplinary team may be understood then as learning to collaborate: "People struggling to think beyond the patterns of thought that their own disciplinary communities afford" (p. 73).

A further claim in these studies is the importance of context in shaping learning. This goes beyond the usual notions of institutional context, historical context, and local community-of-practice context, to include the "relational dynamics of group members as context (patterns of clash and collaboration), and leadership context (articulated definitions of how to work together)" (p. 77). This view positions interdisciplinary collaboration not only as the subject of learning but also as a problem. When formulated as a problem, interdisciplinary collaboration may be supported and pedagogically framed to intensify learning. Neumann's point is that faculty learning, if encouraged, may touch deeply the learning of students.

In a case study of an interdisciplinary research team whose intent was to find ways to integrate different perspectives, Creamer (2005), also found evidence of a commitment to multiple perspectives: "A commitment to pursue problems from multiple

angles, methods, and theoretical positions" (p.37). Advancing faculty learning further requires a commitment to mutuality and co-equal relationships that make room for multiple leaders on a team. Similarly, in a case study of a university-community partnership, Amey and Brown (2005) emphasize the importance of leadership. Strategies they found effective for team development include: "finding ways to reinforce group goals, trying to develop common language, and leaving situations unresolved for strategic periods of time to build creative tension and interdependence" (p. 32). Leaders also need to cultivate learning within the group. This involves "reinterpreting things already understood and letting go of former understandings and techniques" (p. 33). If learning is not taking place then it is unlikely that a team will advance to the point where "the team is truly greater than the sum of its parts" (p.29). When conceived as an interdisciplinary model for faculty development, learning teams can provide a framework for moving forward on this research agenda.

What more could we be doing?

Ernest Boyer (1990) asked this same question in his Carnegie Foundation Report: *Scholarship reconsidered: Priorities of the professoriate.* In addition to the academy's traditional scholarship of discovery (basic research), Boyer proposed three new forms of scholarship: integration (textbook writing or syntheses of the literature); application (professional service or outreach which draws on scholarly expertise); and teaching (not only transmitting knowledge but transforming and extending it as well). Boyer's thesis was for institutions' to rethink their priority for research over teaching. It has taken time for this thesis to reach practice, but momentum for the scholarship of teaching is growing.

Ideas behind the scholarship of teaching have been well supported in the literature (e.g., Cross, 1990, 1996; Shulman, 1992, 1995; Brookfield, 1995; Schön, 1995; Hutchings & Shulman, 1999; Kreber & Cranton, 2000, and Kreber, 2001). There are some unresolved issues however. These have to do with agreeing on a broadly acceptable definition and language for communicating the competencies of "scholarly" achievements, as well as the incentives and standards by which to promote them (Kreber, 2001).

In search of a common definition, Hutchings and Shulman (1999) distinguish between three levels of university teaching. The first level is an obligation that all faculty have to teach well and to engage students in important forms of learning, i.e., excellent teaching. The second level entails the first as well as classroom assessment and data gathering that is informed by current thinking about teaching in the field and invites peer collaboration and review, i.e., scholarly teaching. The third level entails the first two as well as opening ourselves to public scrutiny in a published form that others can build upon, i.e., the scholarship of teaching. Level three is "the mechanism through which the profession of teaching itself advances, through which teaching can be something other than a seat-of-the pants operation" (p. 3). A fourth attribute implied by the other three is an inquiry ethic. In their work for the Carnegie Scholars Program, Hutchings and Shulman "call for projects that investigate not only teacher practice but the character and depth of student learning that results (or does not) from that practice" (p.13), i.e., the scholarship of teaching and learning.

Motivated by continued confusion over definition, Kreber (2001) conducted a Delphi study that sought consensus from eleven experts on the competencies associated

with the scholarship of teaching. Her results suggest that faculty who practice the

scholarship of teaching:

- carefully design ways to examine, interpret, and share learning about teaching;

- are curious about the ways in which students learn and the effects of certain

  practices on that learning;

- are driven by an inquiry ethic;

- are always learning both about knowledge in their field and how to make

  connections with students; and

- know that people learn in diverse ways; hence they know that instruction

  should be diverse as well.

Incentives and standards for promoting the scholarship of teaching are sadly

lacking. Arguing for a reflective institutional system grounded in the scholarship of

teaching, Biggs observes: "many institutions in their policies, practices and reward

systems actually downgrade teaching (2001, p. 15)."

In a landmark article titled "From Teaching to Learning", Barr and Tagg (1995)

advocate that a university's mission is not simply to improve teaching and research, but

to empower and improve student learning. Change efforts and criteria for success should

thus focus on the quality of learning outcomes. This change is characterized as a

paradigm shift in instruction:

> ...from the Darwinian notion of 'advancement of the fittest' to the more
>
> spiritually and humanistically defensible one of 'advancement of all' ... the
>
> paradigm of *instruction* has to change from standardization to customization,
>
> from a focus on presenting material to a focus on making sure that learners' needs

are met. … It requires a shift from teacher initiative, control, and responsibility to

shared initiative, control, and responsibility. It requires a shift from

decontextualized learning to authentic, meaningful tasks. And, most importantly,

it requires a shift from holding time constant and allowing achievement to vary, to

allowing each learner the time needed to reach the desired attainments.

(Reigeluth, 1999, p. 19)

The teacher in this new paradigm is described as a facilitator of learning who

relies more and more on well-designed resources, instructional design theory, and

instructional technology. This does not mean we ignore what has been learned about

making learning easier and more successful. Rather, basic teaching methods known to

improve learning under given situations (e.g., generalities, examples, and practice with

feedback), need to be distinguished from variable methods (e.g., problem-based learning,

tutorials, and apprenticeship). Our job as change agents is to offer flexible guidelines on

when and how learners need to be self-directed, work in teams on real-world tasks,

choose from alternative methods, use advanced technologies, and persevere until

appropriate standards are reached. A paradigm shift in instruction, particularly the need

for customization and flexible guidelines, is probably the most powerful ingredient of any

new faculty development initiative.

A recent study on what the best college professors do (Bain, 2004) is an

exemplary of what we need to be doing in faculty development research. It includes 63

professors from across the disciplines and from two-dozen institutions in the United

States. Evidence was collected from multiple sources: interviews with professors,

interviews with students immediately after a course and some time in the future,

classroom observations, student ratings, student products, course outlines, course

materials, collegial comments, etc. Data varied from participant to participant but there

were two inclusion criteria: evidence of student satisfaction and remarkable learning in

students, defined as Marton and Saljo's concept of deep learning. We need to write a

book on what the best faculty developers do based on the same criteria for inclusion!

Summary

This summary includes the main ideas from the faculty development literature

that have made their way into my analysis (level 4 of the data display in Table 13, p.

132). Implementing a collaborative faculty development strategy like learning teams in

another context will require a sophisticated theory of teaching and learning that focuses

on faculty learning. It is important for this level of faculty development to be valued by

the university. There also needs to be a commitment to responding to both individual and

institutional needs. Time spent in team activities must be recognized and rewarded by the

institution. It is further recommended for resources to be shared by campus units

according to their capacity to avoid any one unit taking charge.

When getting started, collaborative faculty development initiatives need to

embrace authentic projects aligned with institutional priorities. It is best if the whole team

is involved in defining these goals. To build successful collaborations will require being

intentional about team composition in terms of the personal qualities of members,

demonstrating a commitment to diversity, and having a leader skilled in community

building. It is also important to strive for co-equal relationships. Sustaining collaborations

further requires the collection of formative evaluation data and a spirit of inquiry, both in

the sense of individual learning and some form of public display of learning outcomes. In

the long-term, professional development opportunities need to focus on interdisciplinary collaboration as the subject of learning, model the scholarship of teaching and learning, and share lessons learned with a wider audience. It will be interesting to see if the learning team initiative has the same or different characteristics.

Section 2: University course design

At different times, the curriculum reform work of Joseph Schwab (1969), the re-structuring ideas of James Bess (2001), and the course framework of Susan Toohey (1999) have been cited as informing the conception of learning teams. In this section, I juxtapose these three perspectives with the McGill course design model (the object of the learning team redesign project) and discuss each in relation to issues and ideas in the literature on university course design.

The curriculum reform work of Joseph Schwab

During a time of student rebellion in the United States in the 1970's, Jospeh Schwab was heavily critical of school curricula for being insufficiently grounded in practical discussion over what to teach. He advocated for multiple perspectives and the method of deliberation not only in curriculum decision-making but also as an ethic for schooling. (When Schwab writes about curriculum design, I read course design. When he writes about schools and children, I read universities and students. His ideas are relevant in both contexts and as revolutionary today as they were 20 years ago.) This year's book prize from the curriculum division of AERA honors a re-interpretation of Schwab's work

from the perspective of Judaism (Block, 2004). It further highlights the importance of an eclectic approach and argumentation in his theory.

Schwab held that the proper content of teaching and learning is not theoretical knowledge but the practical application of that knowledge and the wise decision-making that has led to present conditions: "Not the theory itself but the context in which the theory arises is the matter of education" (Block, 2004, p. 91). Schwab has a very distinct view of context. "Theories of curriculum and of teaching and learning cannot, alone, tell us what and how to teach, because what and how to teach arise in concrete situations loaded with concrete particulars of time, place, person, and circumstance." (Schwab, 1971, p. 494, cited in Brock, 2004, p.56) This is coupled with a distinct view of diversity. "Above all, the supposed beneficiary is not a generic child, not even a class or kind of child out of the psychological or sociological literature pertaining to the child. The beneficiaries will consist of very local kinds of children, and within the local kinds, individual children. The same diversity holds for teachers and what they do." (Schwab, 1969, p. 12)

Because all theories are incomplete or partial, Schwab also argues for a community approach and deliberation on curriculum matters. "The point of the [curriculum] meeting is not to make the decisions or to set policy but to learn the method of deliberation so that we can make decisions readily outside of the meeting." (p. 215) Likewise, students need to be intellectually challenged to understand how decisions are made in each discipline, so they may develop the ability to make informed decisions. Schwab believed engagement in this kind of practical curriculum would

develop in students "an awareness of diversity, and an understanding of the complexity of knowledge construction and decision-making" (p. 130).

There is an art to such practical deliberation. Designing a Physics course, Schwab believes, should include the English teacher, the Biology teacher, the learning theorist and the science educator. On receiving their advice, the Physics teacher will be confronted with an intellectual and moral obligation: "His problem will be to listen, to master the new vocabularies, to appreciate the effect of new terms, and to begin to discern and honor the relevance of 'alien' considerations to his problems and interests" (Schwab, 1969, p. 9). People giving advice also have the obligation not to influence decisions in the direction of their own part-interests but to honor the interests of the whole. The person most concerned with the problem has delegated power to make the final decision.

Schwab's criticism of the academic enterprise as anti-intellectual in regard to teaching and teacher education still holds. He bemoaned that in many places "there is an intellectual community, but the students don't belong to it, not even as second-class citizens" (Schwab, 1969, p. 3, cited in Block, 2004, p. 163). What Schwab calls for is "a test which would evaluate not only that students learned, but that what they learned had practical application and was presently true" (p. 108).

Applying the principles of context, diversity, deliberation, and equality to the design of professional development for teachers represents the kind of change in perspective needed for the learning team strategy to succeed. Applying these same principles to the process *and content* of a course design project would transform the learning team strategy beyond its original definition.

Re-structuring ideas of James Bess

In his book, *Teaching Alone, Teaching Together,* James Bess (2000) proposes a

re-structuring of teaching "that would involve the talent and input of many persons

instead of the one faculty member per course that is the prevailing common technology"

(p. xiii). He unpacks the complexity of faculty roles to reveal a critical set of teaching

skills: designing and preparing courses, lecturing, facilitating group work, advising

students, advising and mentoring colleagues, assessing learning outcomes, researching

new techniques and technologies, and linking academic and nonacademic pursuits. Each

one of these skills has a chapter devoted to explaining what is involved.

For example, tasks of the expert pedagogue in designing and planning courses

include: explaining educational goals, understanding the institutional context,

understanding students, providing the disciplinary context, providing a learning

community, and establishing student responsibility for learning. In the process of creating

a learning community, openness and a willingness to collaborate are important

characteristics. And the list goes on. "[T]he need to understand and develop a working

vocabulary of post-secondary pedagogy becomes essential." (Donald, 2000, p. 35) Bess

does not believe we should expect any one person to be an expert in all these areas but

rather to build on the collective strengths and talents in a team-based academic

organization. He believes that building expertise in each of these areas can take a very

long time; traditional faculty development programs do not even scratch the surface.

Some observations on a team approach may inform the learning team strategy. In

terms of team membership, Bess suggests that diversity in the sense of ethnicity, gender,

and age is not as important as "preferences for tasks and individual talents,

temperaments, and social skills" (pp. 237-8). In a conceptual article on interdisciplinary inquiry, Petrie (1976) supports the observation that certain psychological traits can facilitate the exploration of biases and interests. People need to be secure, fully competent, and capable of exhibiting humility. They need a taste for adventure and broad interests in terms of what is of importance, as well as internal motivation.

Bess also cites research on decision quality and commitment that suggests true diversity of membership will involve conflict, occasional loss of trust, and diversions of attention (Dooley & Fryxell, 1999). He concludes with reference to research by Leavitt (1996) on how to reshape internal structures by capitalizing on decentralized small groups of workers. These groups are characterized by such descriptors as democratic, visionary, and unpretentious where "excitement, ideas, and innovative research bubble all over the place" (p. 289). Bess believes such groups in academia would be "a model of teaching that can result in ever higher achievement for students" (Bess, 2000, p. 243).

Such a claim could be the focus of future research on learning teams. The practical challenge of changing perceptions from "my" work to "our" may mean that the learning team strategy best fits at the department level where curriculum and course decisions are made. "Operating at the department level, with the course as target, means that the reluctant under-performing teacher is drastically redefined. Teaching is now the focus, not individual teachers." (Biggs, 2001, 227) Engaging in quality enhancement projects with departments and providing evidence of enhancement is a goal for faculty development providers if they are to survive budget cutbacks or, worse still, exclusion as teaching and learning experts from the main business of their university. We need to learn as much as we can about how best to structure formal collaboration.

Course framework of Susan Toohey

In her book, *Designing Courses for Higher Education,* Susan Toohey (1999)

proposes a model for developing units of study by course teams. She takes course

decisions out of the realm of the individual and opens them up for examination and

critique to highlight the benefits of a team approach. The first stage of her model involves

determining the course framework (broad agreement about approach, goals, structure,

content, and assessment). The second and recursive stage involves a typical decision-

making process (objectives, teaching/learning methods, materials and resources,

assessment) aligned with the course framework. Case studies on this model suggest that

academics feel uncomfortable at first re-conceptualizing their work and having it

examined by others, but they soon come to appreciate different perspectives and

suggestions. The model is intended for major program reviews as well as exploring

beliefs about teaching and achieving clarity and coherency in design at the individual

course level.

Toohey views course design as a vehicle for changing people's beliefs, values and

ideologies. She facilitates this process by differentiating between five conceptions of

teaching (traditional or discipline-based, performance or systems-based, cognitive,

personal relevance or experiential, and socially critical) in terms of different elements of

course design (view of knowledge, the roles of teacher and students, the goals of

learning, how content is chosen and organized, the purpose and methods of assessment,

and resource and infrastructure requirements). The resulting framework (summarized in

Table 1) can provide a tool for developing awareness and making explicit differences in

approaches to course design and teaching in learning teams.

Table 1: Beliefs, Values And Ideologies In Course Design
Toohey (1999)

Approach / Design	Traditional or Discipline-based	Performance or Systems-based	Cognitive	Personal Relevance or Experiential	Socially Critical
View of knowledge	• Knowledge exists independently • Knowledge consists of information, facts and concepts	• Understanding exemplified in action • Purpose of learning is to expand one's repertoire of skills	• Knowledge personally constructed • Rigorous thinking needs developing	• Knowledge valued is personally significant and personally useful • Identify gaps in knowledge and skills	• Knowledge constructed within historical/cultural frameworks through interaction
Roles of teacher & students	• Teacher transmits what is important; provides practice • Students conceived as prepared and diligent in learning	• Teacher structures content so new learning builds on previous learning • Students follow learning path	• Teacher uses real-world examples and recognizes misconceptions • Students examine own understanding	• Teacher creates climate for learning: respect, encouragement, authenticity • Students set their own learning goals	• Teacher helps students under-stand where their views come from • Students/teacher critique together
Goals of learning	• To acquire broad knowledge of field	• To become a skilled performer	• To think analytically and critically	• To achieve own learning goals	• To develop critical consciousness
How content is chosen and organized	• Breadth over depth • Logically structured according to nature of the discipline	• Selected on the basis of research into the nature of expert performance	• Depth over breadth • Concepts worked at through reasoning and problem solving	• Teacher & students plan course together • Formalized in learning contract	• Drawn from social problems of the day • Organized around investigations/themes
Purpose and methods of assessment	• Confirms and ranks students against their peers • Tests (multiple choice, short answer and long essays)	• Frequent to provide feedback to teacher and students • Failure = need for remedial action • Criterion-referenced	• Complex problems • Not easily graded • Assessment criteria is clearly articulated • Self and peer assessment	• Students present evidence of achieve-ment and assess their own work • Large projects • Formative evaluation	• Teacher-students negotiate criteria • Collaborative work • Group projects • Self and peer assessment
Resource & infrastructure requirements	• One expert lectures to large numbers • Tutorials, labs and marking assigned to teaching assistants • Textbooks and lecture notes distil important content	• Lends itself to use of multi-media and distance education • Simulated work settings for practice of requisite skills • No examination of ethical issues	• Adequate teacher-student ratio • Small group work • Questioning skills of teacher important to challenge thinking • Need resources for independent inquiry	• Access to teacher, resources and professionals • Teacher-student ratios low • Teacher's time high • Students need freedom to choose	• High degree of interactive small group work • Community-based projects • Knowledge translated into action

It is important to remember that some people suspect course design models that involve conceptual, long-term planning because the main task of teaching is preparation for classroom interaction that is spontaneous, short-term planning (e.g., Nunan, 1992). From this perspective, teaching is sacrosanct, traditional and grounded in tacit knowledge. This is what makes it so special. If you have not taught (at the same level and in the same discipline) you cannot know how to teach (at the same level and in the same discipline). In other words, in the context of pedagogy, practical knowledge has primacy over theoretical knowledge but without sensitivity to diversity and the complexity of instructional decision-making. The learning team strategy will come up against this same challenge.

Despite the fact that course design is an important faculty role, there is little research in this area. Most attempts to improve learning in higher education have focused on the teacher as classroom actor rather than as academic planner (Stark, 2002). To fill this gap, Stark and her colleagues pursued a three-year study that explored faculty's underlying assumptions about planning an introductory course and their decision-making processes. This was a large national survey of teachers from across the U.S. Results suggest that differences in course planning are "closely related to enduring assumptions embedded in the disciplines and educational beliefs to which faculty members have been socialized" (p.142).

Stark proposes a model of course planning that separates content (faculty beliefs, purposes, and disciplinary view); from context (the most prominent influence being student characteristics); and form (the final course decisions made based on content and context). The model reflects a three-dimensional perspective on course planning that

characterizes the kinds of choices faculty make and the sequence in which decisions are made. Unlike Toohey's model, it highlights the need for sensitivity to disciplinary differences and an understanding of contextual influences that might provoke revisions.

The McGill course design model

The McGill course design model (and central focus of the learning team's redesign project) combines personal experience with the generic thinking of Toohey and the disciplinary sensitivity of Stark, as well as the research-based approach of Drew and Vaughan (cited earlier). The sequence of both the model and the workshop focuses on different aspects of course design: analyzing the content, clarifying learning outcomes, selecting teaching strategies, and evaluating learning as well as teaching. There are also microteaching sessions in which professors experiment with interactive teaching strategies and benefit from self and peer critique. Participants engage in a course design project whereby they articulate and examine their beliefs about teaching and learning with like-minded colleagues from across the university. The first activity in the CDT workshop, and an important variable in the design, involves creating a concept map of course content. Concept mapping is seen as a mindtool for helping faculty re-examine their subject matter (Amundsen, Weston & McAlpine, 2005). Research on the use of concept mapping suggests that starting from a disciplinary stance enables participants to connect generic pedagogical principles to their content and thus develop what Lee Shulman (1989) calls "pedagogical content knowledge."

In the foreword to a recent collection of essays on the scholarship of teaching and learning (Huber & Morreale, 2002), Shulman shares a story of how more than 30 years ago he engaged in a decade-long research project with colleagues to search for a general

method of expertise in medical diagnosis. To their surprise there was no evidence of a universal pattern in medical problem solving, rather they discovered the power of domain specificity, the importance of content and context, in expert practice. As his attention shifted to the investigation of teaching expertise, Shulman came to the same conclusion and invented the concept of pedagogical content knowledge to mean "the blending of content and pedagogy into an understanding of how particular topics, problems, or issues are organized, represented, and adapted to the diverse interests and abilities of learners" (1987, p.8). This deep level of discipline-specific knowledge is what separates the expert from the novice and profoundly influences one's ability to represent knowledge, structure learning, and evaluate performance.

Summary

This summary includes the main ideas from the course design literature that have made their way into my analysis (level 4 of the data display in Table 13, p. 132). This thin slice of the literature suggests that the learning team strategy, if it is to be considered a collaborative course design strategy, needs to highlight specific principles. These principles include: the importance of context, diversity, and deliberation; commitment to collective responsibility in instructional improvement that includes departmental sponsorship; conceptual tools for discussing individual beliefs and values about teaching and learning; and disciplinary sensitivity. Research in this area would benefit from evidence of impact on student learning and perceptions.

Section 3: Educational technology

Educational technology can be defined as "an identity that's very much at the boundary of different things: technology, change management, learning theory, etc." (Downes, n.d.). I have used this definition as a way of organizing literature relevant to my research on technology integration, communities of practice (an example strategy of change management), situated learning, and design research (the "etc." in my case.)

Technology integration models

Universities are investing heavily in technology infrastructure with high hopes in its power to improve access to learning opportunities. But it is not enough that more students than ever before have access: "You have to follow people through to see what happens once they get in the door", says Patricia Gumport, Executive Director of the National Center for Postsecondary Improvement (cited in Trei, 2003, p. 1). We need robust models for research and practice in higher education, especially for linking knowledge about the process of learning to the practice of teaching. Research on models of technology integration all point to the need for a collaborative approach that focuses on course design as a process for linking theory and practice.

Tony Bates (2003), building on his experience in distance education, advocates that all professors should have a vision of how to teach and technology should figure prominently in it. Curriculum plans are not enough. We need teaching plans that articulate: Who are the learners? How is the course to be delivered? What role will technology play? He emphasizes the need to find ways to support mixed mode delivery for campus-based education. To move beyond early adopters to the sustained and widespread use of technology, we need less technical help and more manageable and cost

effective methods that do not drive people into the ground. We need alternatives to the

lone ranger model of using technology as a classroom aid and the boutique model of on-

demand technical support. A project management model with schedules and budgets,

although cost effective, is too out of sync with the degree of autonomy faculty members

normally have in teaching. We need new models of collegial course development and

overall strategies that create a context for teaching faculty how to integrate technology –

not as a problem to be fixed but as collaborators.

A recent empirical study (Lowerison, Sclater, Schmid & Abrami, 2003) on

student perceptions of technology use in higher education points to the catalytic role of

technology in enhancing the learning process. Results indicate a positive relationship

between course structure and the design of student-centered learning that emphasizes

self-regulation and intrinsic motivation and critical thinking skills. However, as the

researchers observe, faculty are using technology more and more without basic

pedagogical knowledge of how technology supports learning. Burge (2000) also argues

that "the challenge of teaching with technology is to create a learning design that cues

and supports the full repertoire of learning strategies" (p. 18). She proposes a framework

for reflective and strategic thinking about learning technologies that emphasizes the

importance of providing course design components to mirror, activate, and support

strategies for effective learning. She also highlights the important role e-librarians can

play in this context. However, she fails to address the link between learning strategies and

learning technologies.

Laurillard (2002) provides a coherent framework for engaging faculty in

conversations about how students learn in relation to all types of technology. The only

prescriptive implication is that there must be "a continuing iterative dialogue between teacher and student, which reveals the participants' conceptions, and the variations between them, and these in turn will determine the focus for further dialogue" (p. 71). To improve the quality of teaching and learning with technology similar iterative conversations need to take place at all levels in the university so that people can learn from everyone else's experience. The value of the feedback generated depends on the depth of conversations. Involving students as well as colleagues with expertise in pedagogy, technology, and information literacy in faculty conversations about technology is, I believe, the value added of the learning team strategy.

Interestingly, a team approach is cited as the most effective strategy for developing technology-based courses in a major study on best practices in the U.S., even though only four of the 35 institutions (12%) surveyed actually use teams (Epper & Bates, 2001). Two possible reasons are suggested for this gap between what is considered best practice and reality. One is faculty guarding their autonomy in teaching, often interpreted as a preference to work alone. The second is lack of support mechanisms and rewards to encourage faculty to work in teams. These are probably the two biggest cultural changes needed for the effective use of technology (and learning teams).

The major lesson learned with regard to faculty development is that: "instructional technology needs to be integrated within the wider context of how best to teach in higher education" and "seems to work best when it is embedded in actual teaching projects" (p.145-6). This requires a huge effort: management commitment to change, understanding the limitations and benefits of teaching with technology, major funding to provide pedagogical and technical support, appropriate rewards, faculty

commitment to teaching and exploring new ideas, and a willingness to make mistakes and do something about them (double-loop learning).

Learning teams are not the first attempt at providing a framework for making learning-oriented technology decisions. The University of Central Florida has created a model of faculty development and infrastructure support that "engages faculty in a recursive process of research, design, development, and assessment that leads to research-based, technology-supported, student-centred learning environments" (Smith, 1997, p. 40). Their experience shows that professors can be moved through a process from education to development to creative independence when introduced to research insights on memory functions, learning styles, motivation, etc. Moreover, professors do not need to fully understand this body of research to apply basic principles of learning.

A technology-based solution to achieving a more complex vision of teaching and learning suggested by Hatch and colleagues (2004) is the convergence of networked environments for sharing knowledge. For example, the Gallery of Teaching and Learning, the Visible Knowledge Project, and the AHA/AAHE Teaching Portfolio Project have developed multimedia applications and web-based tools for capturing pedagogical expertise. These digital databases provide easy access to critical dimensions of teaching and learning: course materials, including assignments and lesson plans; evidence and analysis of student learning; and faculty reflections on the context and rationale for design decisions. Faculty can learn quickly about the successes and struggles experienced by colleagues in other contexts. In examining the work of others "faculty are able to discover deep similarities across projects that might, on the surface, appear dissimilar" (p. 48). They can compare the performance of their students with comparable

classes on other campuses. They can join cross-disciplinary communities of practice to share methods and pool ideas.

These learning environments address the problem of faculty development initiatives being viewed as too generic to be meaningful, or worse, as an administrative tool for directing educational change. However, as the proponents of networked environments recognize, they come at a price. If, for example, small classes and community-based projects are demonstrated as being significantly more effective will universities invest in the additional support needed? Faculty, students, parents, and the public at large will have to make the necessary choices to drive such change.

Communities of practice

The concept of communities of practice (CoP) developed by Wenger, McDermott and Snyder (2001) is an example of a strategy for driving educational change. CoPs come in many forms: small and big, long-lived and short-lived, co-located and distributed, homogenous and heterogeneous, within businesses, across business units, across organizational boundaries, spontaneous and intentional, unrecognized and institutionalized. Despite this variety, they share three basis elements: domain of knowledge, community of people, and shared practice.

The domain of knowledge creates a common ground and sense of identity, inspires participation, guides learning, and gives meaning to action. A well defined domain affirms purpose and value: "Knowing the boundaries and leading edge of the domain enables members to decide exactly what is worth sharing, how to present their ideas, and which activities to pursue" (p. 28). Community represents the social dimension of learning. Interaction and relationships need to be firmly based on mutual respect and

trust, thus encouraging "a willingness to share ideas, expose one's ignorance, ask difficult questions, and listen carefully" (p. 28). Shared practice represents the knowledge base, frameworks, ideas, tools, etc. produced by the community. "Whereas the domain denotes the topic the community focuses on, the practice is the specific knowledge the community develops, shares, and maintains" (p. 29).

To ensure that these three elements function well together, a set of seven design principles are suggested for successful CoPs (summarized in Table 2): design for evolution, open a dialogue between inside and outside perspectives, invite different levels of participation, develop both public and private community spaces, focus on value, combine familiarity and excitement, and create a rhythm for the community. "The goal of community design is to bring out the community's own internal direction, character, and energy" (p. 51). The community coordinator plays a critical role in providing leadership – focusing on important issues, informally linking people, and developing best practices.

In regard to inviting different levels of participation, people participate for different reasons: some because the community directly provides value, some for personal connections, others for opportunities to improve their skills. These different motivations lead to different levels of participation. The "coordinator" organizes events and connects members. A "core group" actively participates in discussions, takes on projects, identifies topics, and moves the learning agenda along. An "active group" attends meetings and participates occasionally without the same intensity as the core. A "peripheral group" rarely participates. They watch interaction either because they do not feel their own observations are appropriate or they do not have time to contribute. A further group of "outsiders" take an intellectual interest in the community.

Table 2:
Principles For Successful Communities of Practice

(Summarized from Wenger, McDermott, & Snyder, 2001)

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1. Design for evolution

This means building on existing networks and not imposing structure. Start with simple structures, for example, regular meetings. Once people are engaged in a topic then begin introducing more elements one at a time. A dynamic nature is key. New members bring new interests and changes in the organization place new demands. "Alive" communities reflect on and redesign themselves naturally.

2. Open a dialogue between inside and outside perspectives

Good community design requires both an insider and outsider's perspective. A leader who knows who the real players are and appreciates the issues, the knowledge that is important to share, the challenges in the field, and the potential in emerging ideas and tools. An outsider helps members see new possibilities; brings information in about what the community could achieve.

3. Invite different levels of participation

People participate for different reasons: some because the community directly provides value, some for personal connections, others for opportunities to improve their skills. These different motivations lead to different levels of participation. The "coordinator" organizes events and connects members. A "core group" actively participates in discussions, takes on projects, identifies topics, and moves the learning agenda along. An "active group" attends meetings and participates occasionally without the same intensity as the core. A "peripheral group" rarely participates. They watch interaction either because they do not feel their own observations are appropriate or they do not have time to contribute. A further group of "outsiders" take an intellectual interest in the community. It is important to design activities to encourage movement between different levels, for example, create opportunities for active members to take on limited leadership roles as the focus shifts to their areas of interest and expertise.

4. Develop both public and private community space

Public events involve informal discussions of current issues where members exchange tips, solve problems, or explore new ideas and tools. The coordinator must also "work" the private space between meetings; make sure topics are valuable and people have something to add.

5. Focus on value

Because participation is voluntary, value is key. Early value comes from focusing on current issues and needs. As the community grows it becomes important to develop and easily access a systematic body of knowledge. Create events, activities, and relationships that help potential value emerge. Encourage members to be explicit about the value of membership.

6. Combine familiarity and excitement

A pattern of meetings provides stability and a level of comfort for candid discussion where members can listen to advice with no obligation to take it. Divergent thinking and activity is also required, e.g., a controversial speaker to challenge normal ways of thinking, conferences, and workshops. Facilitate different kinds of spontaneous contact.

7. Create a rhythm for the community

Regular meetings, website activity, informal lunches all provide a sense of movement and liveliness. If movement is too fast people are overwhelmed, if too slow they become sluggish. Give the community a beat. Create milestones, e.g., key projects and special events. Mix idea-sharing forums and tool-building projects; casual conversation and directed action.

A key concept in communities of practice is that of legitimate peripheral participation

(Lave & Wenger, 1991). Based on case studies of apprenticeship learning in such areas of

expertise as tailors, butchers, and midwives, Lave and Wenger observed that newcomers

to a community of practice begin their apprenticeship on the periphery and then gradually

become more active members as their expertise grows. This led them to propose that

significant learning can take place on the periphery of action as novices learn from expert

practice. It further suggests a developmental process in the life of a community of

practice, as depicted in Figure 2. Hung and colleagues (2005) suggest that situated

learning can be designed so that learners first experience a simulation of practice and then

participate more actively before interacting fully in terms of codetermining how their

learning proceeds. In the context of professional learning, the simulation component

might be an experiential experience like the CDT workshop. The participation component

might be attending learning team meetings on the periphery of action and then the

interaction component might be participating as an active or core member of a learning

team.

Figure 2: Scaffolding Learners Through an Evolving Continuum
Hung, Chee, Hedberg, & Seng (2005, p. 163)

Legitimate peripheral participation   Central participation

Learner as a novice   observer   participant   active contributor

Simulation model ———▶   Participation model ———▶ Codetermined
                                                      Interactions model
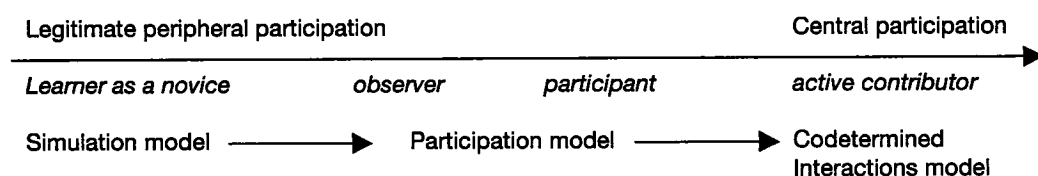
Wenger et al's (2001) model of CoPs also has stages. They view community

development proceeding over time from early to mature stages with different issues to be

addressed in each of the three areas of domain, community, and practice. Early stages

focus on launching a CoP with energy directed at realizing potential (defining the scope, finding the people, and identifying common needs) and coalescing (establishing value, developing relationships, and discovering specific knowledge to be shared). Mature stages focus on sustaining the CoP with energy directed at maturing (defining its role in the organization, managing the boundaries of the community, and organizing the community's knowledge base), stewardship (maintaining relevance, keeping the tone lively and engaging, and keeping the community on the cutting edge), and finally the stage of transformation (fading away or turning into a social club, splitting or merging with other CoPs, or becoming institutionalized).

A cross case analysis of four doctoral dissertations criticizes research on CoPs for not going beyond the potential stage (Schwen & Hara, 2004). CoPs are a useful description of situated learning patterns but not a prescription: "Wenger's work is a provocative ideal to achieve and useful as a tool for dialogue ... it is not a recipe for construction of such phenomena" (p. 163). It is also only a positive notion of community. Research on learning teams could be similarly critiqued.

Insights from a research-based model of team learning distinguish between time as a resource vs. time as a dimension of learning. When teams reach a synergistic learning stage, time functions in three ways: as an ingredient of learning "members take time to explore ideas for which relevance is not immediately apparent"; as an incubator "learning proceeds in cycles of reflection and action that often cannot be accelerated"; and for shared history "when teams share the joys and pride of achievement" (Kasl, Marsick & Dechant, 1997, p.243). In a book on leadership from the business literature, the following practical suggestions are made for more effective team learning: work must be

interdependent and relatively complex; leaders must understand group process and

provide direction; the right kinds of training, feedback, and recognition must be provided;

the location of team members and size of a team are crucial; and teams should be

responsible for customer satisfaction. (Lawler, 1996)

Situated learning

A fundamental assumption of the learning team strategy is that individual (and

organizational development) best emerges through conversation and information

exchange as people work on specific projects in collaboration with their colleagues. This

assumption combines the concepts of experience (Dewey, 1997), interaction (Vygotsky,

1978), and context (Lave & Wenger, 1991) into what is known as situated learning.

Situated learning, also known as workplace learning, stresses "opportunity to learn within

a current situation" and "looks to the workplace and the dynamics of opportunity and

participation within it as the focus point" (Glick, 1997, p. 261). People change their

habitual ways of thinking and doing through exposure to the constraints and affordances

of diverse problem-solving situations and multiple perspectives (Greeno, 1997).

In a collection of essays, Resnick, Säljö, Pontecorvo and Burge (1997) redefine

what is generally understood about how people learn in terms of discourse, tools, and

reasoning. Building on the Vygotskian tradition, they view "thought and reasoning as

inherently (and throughout the lifespan) social activities in which talk and social

interaction are not just means by which people *learn* to think, but also how they *engage*

in thinking ... discourse *is* cognition *is* discourse ... one is unimaginable without the

other" (p. 2). Their concept of tools goes beyond physical artifacts to include "structures

of reasoning, and the forms of discourse that constrain and enable interaction within

communities" (p.3). Reasoning is a "fundamentally social activity in which ideas and

concepts are literally constituted in interactive discourse" (p. 4). Professional competence

thus emerges through social interaction and collaboration situated in specific settings of

demand, opportunities for practice, and accountability.

In defining workplace learning, Eraut (2005) distinguishes between implicit

learning, reactive learning, and deliberative learning. Implicit learning is the unconscious,

near spontaneous acquisition of knowledge. Reactive or opportunistic learning is

intuitive, it occurs when there is little time to think. Deliberative learning is intentional in

terms of having a definite learning goal and time set aside, and it involves "engagement

in deliberative activities such as planning and problem solving, for which there is a clear

work goal with learning as a probable by-product" (p. 4). As depicted in Table 3, these

different types of informal learning not only require a different time investment but also

result in different actions.

Table 3: Interactions between Time, Mode of Cognition and Type of Process
(Eraut, 2005, p.14)

Type of Process	Mode of Cognition		
	Instant/Reflex	Rapid/Intuitive	Deliberative/Analytic
Reading of the situation	Pattern recognition	Rapid interpretation	Review involving discussions and/or analysis
Decision-making	Instant response	Intuitive	Deliberative with some analysis or discussion
Overt activity	Routinised action	Routines punctuated by rapid decisions	Planned actions with periodic progress reviews
Meta-cognitive	Situational awareness	Implicit monitoring Short, reactive reflections	Conscious monitoring of thought and activity Self-management Evaluation

Deliberative learning involves normal work activities rarely regarded as learning activities even though important learning occurs. Learning teams can provide a framework for understanding and promoting this level of informal learning in an academic context. To do so, goals need to be set for different types of processes. Goals for meta-cognitive processes are most critical to the learning team model:

> Under conditions of rapid interpretation and decision-making, meta-processes are limited to implicit monitoring and short, reactive reflections. But as more time becomes available, the role of meta-processes becomes more complex, expanding beyond self-awareness and monitoring to include the framing of problems, thinking about the deliberative process itself and how it is being handled, searching for relevant knowledge, introducing value considerations, etc. (p. 14)

Situated/workplace learning is a view of experiential learning, learning by doing, that emphasizes the connection between individuals and their communities of practice, making it distinct from other learning theories that focus on designing learning experiences for instructional settings (Fenwick, 2001). Research on learning teams can contribute to the dialogue on situated learning in an academic context.

Design research

Design research, also known as a design experiment, can help to explain the iterative, collaborative and inquiry-based nature of the learning team process. The original model of design experiments articulated by Ann Brown (1992) assumes successive iterations between a laboratory setting and a classroom, capturing the benefits of both. Research and development progress through cycles of research-share-perform activities (Brown & Campione, 1996). At each stage, it is incumbent on the

researcher "to create a culture of science that includes ruling out competing hypotheses, that fosters skepticism about knowledge claims (including their own), and that encourages powerful tests of rival conjectures" (pp. 27-28). Taking the time to think before doing, to learn from doing, and to test in a rigorous way are necessary stages in design research that make it genuinely new in an educational context.

The design research methodology represented in Figure 3 below is employed by Columbia University's Center for New Media Teaching and Learning (n.d.) to ensure that multi-media project development proceeds in a scientific and purposeful manner. Activities on the circle (initial understanding of the curriculum, challenges, hypotheses, design of educational experience, educational experience, and research report/evaluation) I associate with a research cycle.

Activities outside the circle (study/analyze, formulate/articulate/clarify, design, develop and interpret/reflect) represent a cycle of sharing. Activities inside the circle (discovery, design, development, deployment, and communication of new pedagogical understanding) represent a cycle of performance. Thus multiple levels of activities proceed simultaneously representing another feature of design research.

It is believed that design research can create "… a domino effect of insights that are not simply progressive enhancements of the initial instructional vision. The results are often dramatic shifts in thinking and insight that can extend contemporary theories of learning, pedagogy, and curriculum." (Hay, Kim & Roy, 2005, p. 6) Significant learning gains are also reported in students who engage in augmented inquiry-based learning environments. In a rare critique, Shavelson, Phillips, Towne and Feuer (2003) question how design research is different from curriculum development projects and formative

evaluation exercises. They recognize a distinctive feature is giving up control of variables

in favor of emersion in a complex social setting that requires documenting a

comprehensive account of an evolving process over time. They challenge, however,

claims to knowledge based only on retrospective analysis.

Figure 3: Design Research Methodology

Columbia's Center for New Media Teaching and Learning (CNMTL)
[Online] Available at http://ccnmtl.columbia.edu/dr/page_methodology.html
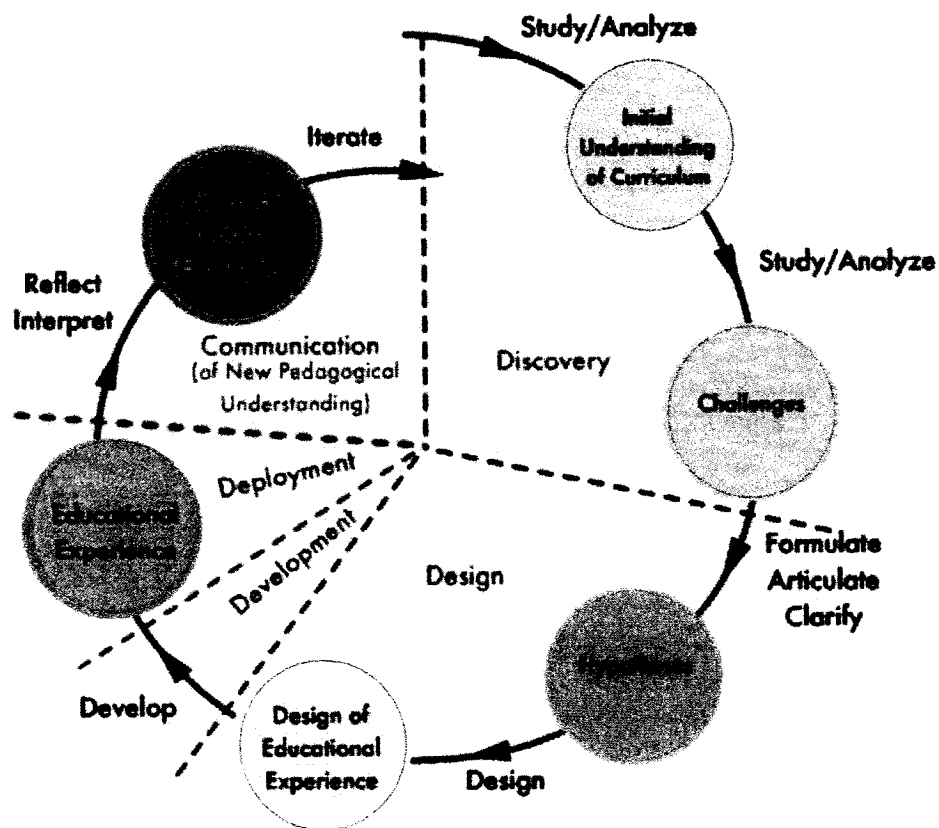
Bereiter (2002) further defines successful design studies in terms of communities

of practice having certain characteristics: "innovativeness, responsiveness to evidence,

connectivity to basic science, and dedication to continual improvement" (p. 10). The

research carried out has a further set of imperatives: a) close collaboration with designers; b) research is interventionist – researchers move from observer to actor in trying to make something happen; c) a community of practice in which "people both believe in what they are doing and pay close attention to negative results;" and d) a visionary quality, "a research community driven by potentiality" (p. 11).

Summary

This final summary includes the main ideas from the educational technology literature that have made their way into my analysis (level 4 of the data display in Table 13, p. 132). When focused on technology integration, the learning team strategy would benefit from technology support, a technology plan, and a digital database of case examples. In terms of situated learning and in particular a communities-of-practice approach to collaborative faculty development and university course design, the learning team strategy would need to build a sense of identity (knowledge domain), be sensitive to the social dimension of learning and different levels of participation (community of people), and have a product outcome (shared practice). There is also the critical role of leadership (and leadership training) to consider. Design research is a possible methodology for learning teams that highlights the importance of complex challenges, innovativeness, the domino effect of insights, and a developmental process of research-share-perform activities that takes time. The variable of time is a common theme throughout the three areas of literature reviewed.

Chapter 3

Methodology

There is no higher or lower road to knowledge, but only one,
flowing out of experimentation.

Leonardo de Vinci

In an innovative field like educational technology, it is expected that experimentation combine both a quest for fundamental understanding and considerations of use (Stokes, 1997). Defined as use-inspired basic research, this dual goal is distinct from curiosity-driven pure research (only a quest for interpretive understanding) and pragmatic applied research (only the pragmatic use of results). It takes time and resources to achieve use-inspired basic research beyond what is available to a Ph.D. student. Thus, I have conceived my systematic exploration of learning teams as part of something larger, both in a real sense in relation to the SSHRC program of research described earlier, and in view of the possibilities for future research and development to be discussed later.

Exploring *in situ* the potential of learning teams as a new faculty development initiative is the type of research problem that lends itself to qualitative inquiry. I will elaborate further on this methodology before describing what I have done and why: the research questions guiding inquiry, where and from whom data were collected, phases and methods of qualitative inquiry, and analytical techniques from grounded theory (coding, comparative methods, memo writing, theoretical sampling, and narrative description). I conclude with a discussion on issues of trustworthiness in relation to the predictive power of my findings.

Research questions guiding inquiry

Charged with developing a framework for supporting scientific research in education, Shavelson et al. (2003) identify three stages of design research and link different research designs to each stage. At the exploratory stage, the generic question is: *What is happening?* This question invites rich descriptive information, for example, characterizing a population, understanding the scope of a problem, or identifying changes in design over time. Both quantitative and qualitative methods for description can be used (survey, interview, ethnographic or case study) and "combined with information about context and motivations into a narrative to communicate to practitioners. Such a narrative might suggest possible explanations and ways for redesigning learning environments or instructional artifacts" (p. 28).

Although I have not embraced the methodology of design research, my research design aligns with this exploratory stage and thus the essential question guiding inquiry is: *What is happening in the learning team?* In interviews, I prompted for goals, roles, decisions, and process observations. When making my own direct observations, I looked for what people were doing and what changes occurred over time. Digging deeper in terms of how members felt about their collaborative experience, I asked: *What are the pros and cons of this team approach?* I prompted for what worked and what did not work, and what people learned. Exploring further what pushes people to think hard and to change their habitual modes of thinking, I asked: *What triggers (or not) real problem solving?* I prompted for reflections on what makes people try to solve the big issues, to really go beyond what they are comfortable doing and do something innovative. Finally, to re-focus attention on the learning team concept as a whole, I asked: *What factors*

mediate implementation of this new faculty development initiative? I prompted for

contextual influences and motivational factors to inform guidelines for the future.

The main premise underlying my inquiry is that a fresh approach is needed to

move people from individual individual responsibility to collective responsibility in

university course design, not as groups of instructors but as an multidisciplinary team.

Where and from whom data were collected

As mentioned, the context of my research was the Centre for University Teaching

and Learning (CUTL) at McGill University. A learning team was formed to redesign a

core faculty development workshop on Course Design and Teaching (CDT). The idea

was to meet over the period of one year and to reflect on the results. The primary goal of

this redesign project was to preserve the theoretical integrity of the CDT workshop while

exploring the different choices and possibilities learning-oriented uses of technology can

afford. A secondary goal was to consider how information literacy might be addressed in

the course redesign process.

Established prior to my study, the CUTL learning team comprised seven

members: the director of CUTL, responsible for providing leadership; a full-time

coordinator and graduate student hired to ensure careful implementation and evaluation

of the project; the original conceiver of the CDT workshop who participated by

teleconference from Simon Fraser University (SFU) in British Columbia to oversee

changes in design; a science professor who provided a disciplinary perspective; a

technology consultant to provide information on the development of web-based

resources; and a librarian to ensure informed discussions on information literacy.

At different times, CUTL staff and co-instructors of the workshop were present at meetings but these additional people were not included in data collection. I had sufficient perspective variation without adding more data for the sake of completeness. The librarian did not participate in meetings after the second iteration of the workshop due to administrative responsibilities. There were three iterations in total. (The two library representatives who joined the team late were not interviewed. Their perspectives on joining an existing team would have been useful if I had collected data over a longer period of time.)

As participant observer, I attended all of the learning team meetings except one that was recorded for me. I took notes on the flow of conversation and decisions reached and gave regular summaries of meetings. I interjected occasionally to clarify a point of discussion.

Phases and methods of qualitative inquiry

Both quantitative and qualitative approaches to design research are valid. It is the purpose and rationale for choosing one over another and the methods and tests of validity that vary: "Fitness for purpose is the key" (Gorard, Roberts & Taylor, 2004, p. 586). Given the small number of participants in my study and the unknown nature of the object of inquiry, a qualitative case study is an appropriate choice of methodology.

> The real business of case study is particularization, not generalization. We take a particular case and come to know it well, not primarily as to how it is different from others but what it is, what it does. There is emphasis on uniqueness, and that implies knowledge of others that the case is different from, but first emphasis is on understanding the case itself. (Stake, 1995, p. 8)

To use Stake's distinction, the question then becomes whether the case study is "instrumental" – a means to answering a research question, or "intrinsic" – driven by curiosity to learn about the commonalities, uniqueness, specificity, and boundedness of a particular case. In both instrumental and intrinsic case studies, there is commitment to interpretation, organization around stories, need for validation, and aim toward naturalistic generalizations (acknowledging variability). In the case of intrinsic case study, there is an added focus on issues. I would define my study of learning teams as an intrinsic case study.

According to Lincoln and Guba (1985) there are three phases to such qualitative inquiry: phase one, orientation and overview, involves getting a handle on what is salient; phase two, focused exploration, requires finding out about it; and phase three, verification, demands checking initial findings with members and others external to the situation. In the case of my own study, these phases also mark the use of different sources of data.

In the *orientation* phase, I observed fifteen learning team meetings and the morning sessions of three CDT workshop implementations. I was absent for one meeting that was tape recorded for me. Learning team activities fell into three clusters paralleling the three iterations of the workshop. I also reviewed documentation relating to the original proposal and meetings of the learning team, including observations by the coordinator. I had access to all workshop materials, in-class activities (including video and audio recordings of presentations and PowerPoint slides), and the online WebCT learning environment. The strength of these direct observations is that I covered events in

real time and engaged with the context. The weakness is that my presence may have confounded the processes observed.

In the *exploration* phase, I interviewed the seven learning team members immediately following the third cluster of activities. The coordinator was interviewed twice. Interviews generally took up to one hour and questions were linked directly to my research questions. Interviews were tape recorded, transcribed and transformed into summaries. Interviewees were e-mailed both their full transcript and summary for approval. In some cases words were corrected or changed but for the most part I was free to select what was salient from this vast collection of data. The strength of these interviews is that I focused on issues related to the object of my study and participants provided insightful inferences. The weakness is that responses were biased by the questions asked and participants may have expressed what they thought I wanted to hear or recollected inaccurately.

In the *verification* phase, I brought the learning team together for a colloquium (group member check) to discuss my initial findings. The purpose of a colloquium is to develop consensus among participants. Research indicates that a group colloquium is more powerful than debriefing interviews "in generating information from the participants, both in terms of the object of study, reflection, and the research design" (McAlpine, Weston & Beauchamp, 2002, p. 412). The learning team colloquium was held on 7 April 2004, in our usual meeting space. Everyone was present, including the faculty developer who participated by teleconference from Simon Fraser University and the librarian who had not participated in the third cluster of activities. For the purpose of discussion, I prepared a poster with key points from the individual interviews related to

my four research questions. The poster was pinned on the wall as a visual aid. My purpose of forcing the data into one poster was to use the 90-minute colloquium to discuss the learning team experience as a whole.

I explained that I had clustered and depersonalized individual responses as an attempt to see patterns or dominant themes emerging. In the background of the poster was the CUTL concept map and components of Wenger's communities-of-practice model as well as some recommendations that had emerged from my interviews. This was to remind everyone that I would be interpreting their words and integrating them with ideas from the literature. I needed a sense from them that I was heading in the right direction. I apologized for the loss of meaning from what they had said in interviews to what appeared on the poster.

The final step in data collection was to discuss initial findings with my supervisor, Dr. Philip Abrami, who acted as an external consultant (credibility check) on the study. We met on two separate occasions. I tape recorded and transcribed our conversations. Although external to the institutional context in which this study took place, my continuous involvement in learning team meetings and the CDT workshop made my inquiry vulnerable to researcher bias. To help me articulate my own perspective on what happened, he asked me the same questions I had asked learning team members. He played devil's advocate to help me address both my own and the learning team's underlying assumptions. He challenged me "to step back and critically analyze the situation, to recognize and avoid bias … and to think abstractly" (Strauss & Corbin, 1990, p. 18).

Analytical strategies from grounded theory

There are a range of strategies for drawing meaning from data in qualitative inquiry: comparison/contrast (noting of patterns and themes, clustering, use of metaphor) and confirmation (triangulation, looking for negative cases, following up surprises, checking results with respondents). It is further recommended to have a multiple, iterative set of strategies linked over time rather than relying on one or two (Huberman & Miles, 2001). A simple way to approach analysis is to highlight findings, display them, flesh out the analytical framework that guided data collection, identify patterns in the data, compare with other cases (or perspectives), evaluate (compare with a standard), contextualize in a broader analytical framework, critique the research process, and propose a redesign for the study (Wolcott, 2001).

More detailed analysis requires a coding process. One approach to coding is to read through an interview transcript asking, "What is this about?" Topics are listed and similar ones clustered together into major topics, unique topics, and leftovers. Topics are then abbreviated and the remaining data coded to see if new codes emerge. Descriptive words are given to topics to turn them into categories. Five to seven categories or themes are generated to become the major findings. Categories or themes are then developed into a storyline or theoretical model or analyzed across cases. The most popular approach to narrative description is chronology and final interpretation of data, either personal or derived from the literature, is based on the question: "What were the lessons learned?" (Creswell, 2003)

In my case, the learning team intervention was not the researcher's idea. I am studying another person's intervention, the theoretical intent of which is only tacitly

understood. I am not validating an existing theory of learning teams but looking for knowledge to be constructed through an emerging process. I am reconstructing events and their relative importance that lends itself to analytical strategies from grounded theory.

Briefly, theory that is inductively derived from studying the phenomenon it represents is known as grounded theory. "The grounded theory method stresses discovery and theory development rather than logical deductive reasoning which relies on prior theoretical frameworks" (Charmaz, 1983, p. 50). There are different approaches to grounded theory analysis from letting participants speak for themselves; to accurately weaving descriptions, participants' own words, and the researcher's interpretations into a rich narrative description; to building theoretical formulations that can explain reality and provide a framework for action (Strauss & Corbin, 1990). The main criteria for judging the adequacy of an emerging theory is that it fits an existing situation and that it works – it helps people in the situation make sense of their experience (Glaser, 1998).

Contrasting the objectivist approach of Strauss and Corbin with her own version of constructivist grounded theory, Charmaz (2000) emphasizes that the aim of grounded theory is to develop fresh interpretations of data not a final or complete analysis. Strategies she recommends include: a two-step coding process, comparative methods, memo writing, theoretical sampling, and narrative description.

A two-step coding process

There are various suggested practices for coding in grounded theory (e.g., Strauss & Corbin, 1990; Glaser, 1978, 1992; Charmaz, 1983, 2000). Citing Glaser, Charmaz describes a two-step coding process: "an *initial* searching phase precedes a later phase of

focused coding" (p. 1983, p. 51). In the initial phase, she explains: "First, I attend to the general context, central participants and their roles, timing and structuring of events, and the relative emphasis participants place on various issues in the data ... Second, I construct codes to note what participants lack, gloss over, or ignore, as well as what they stress ... Third, I scrutinize the data for in vivo codes [catchy words or phrases used by participants themselves] ... Fourth, I try to identify succinctly the process the data indicates " (pp. 51-52). An important strategy in the initial analysis is line-by-line coding to deter researchers from imposing existing theory or their own beliefs on the data.

In the second phase, the researcher applies a limited set (or families) of focused codes to summarize large amounts of data: "this coding is more directed, and typically more conceptual, than line-by-line coding" (Charmaz, 2000, p. 516). The aim is to understand underlying assumptions by keeping studied life in the foreground and using active codes and subsequent categories that preserve images of experience. Categories are not looked at separately but weave together discrete events, statements and observations into a process. The literature is integrated during this phase not as a measure of truth but as a source of questions and comparisons.

In my own case, line-by-line coding of seven interview transcripts (roughly ten pages each of single-spaced text) did not seem feasible. It was agreed instead to code interview summaries and to produce what Carliner (2003) refers to as a grounded description. This process is outlined below:

- Focus immediately on identifying the process (what is happening)
- Directly link interview questions with research questions (analytical framework)

- Interview participants twice (an initial interview and a follow-up interview)

- Distinguish between core and peripheral members

- Ask only core members about product changes and implementation issues

- Produce a "coarse grain" analysis – five to six categories per research question

- Look for variation in perspectives and calibrate perspectives visually

- Synthesize findings into one process (my perspective)

- Cite only what is said and direct observations

- Integrate the literature only after the initial analysis

- Wait until the final chapter to ask: "So what does this mean?"

This is the global process of analysis that I followed. The process of interpreting data was more complicated. Having chosen a grounded description approach, I also needed further analytical techniques to strengthen (triangulate) my findings.

Comparative methods

A major strategy in grounded theory is to compare different people's views, situations, actions, accounts, and experiences: "we must look for views and values as well as for acts and facts" (Charmaz, 2000, p. 525). This involves comparing people with themselves over time, comparing one incident with another, comparing within categories, or comparing one category with other categories. Strauss & Corbin (1990) propose other methods: dimensions (locating properties on a continuum), axial coding (making connections between categories involving conditions, context, action/interaction, and consequences), and the conditional matrix (viewing a phenomenon from international, national, community, institutional and sub-institutional levels, as well as in relation to group, individual and collective interaction and action).

After a time one category (occasionally more) will be found to emerge with high frequency of mention, and to be connected to many of the other categories which are emerging. This is your core category. It is hazardous to choose a core category too early in the data collection. ... When a core category is identified, you cease coding any sentences which do not relate to it. ... You now code for the core category, other connected categories, and properties of both. ... You record any identified connections between categories ... until you achieve saturation. (Dick, 2005, p. 7)

Figure 4 replicates a diagram of what Dick (2005) has called grounded theory diagnosis. It highlights the different action paths for agreements vs. disagreements found in the data. It encourages the researcher to seek exceptions when there is agreement and to seek explanations when there is disagreement. It models a way of thinking when constantly moving back and forth from the data to the literature. I did various such comparative analyses. I first reduced the amount of data to be analyzed by highlighting the main points, characterizing responses of each learning team member to my four research questions. The relative emphasis members placed on each point was addressed by looking for patterns in the data, and where there were none considering issues of variation.

Figure 4: A Diagram of Grounded Theory Diagnosis
(Dick, 2005, p. 11)

```
        _____
       /    Data set 1       \
      (                       )
       \___Overlap_____/
       /                     \
      (     Data set 2        )
       _____/
         /                \
   Agreement          Disagreement
         |      this generates  |
         V      ___↗            V
   Seek exceptions        Seek explanations
                      ↙
            Better understanding
                   |
                   V
             Better action
```
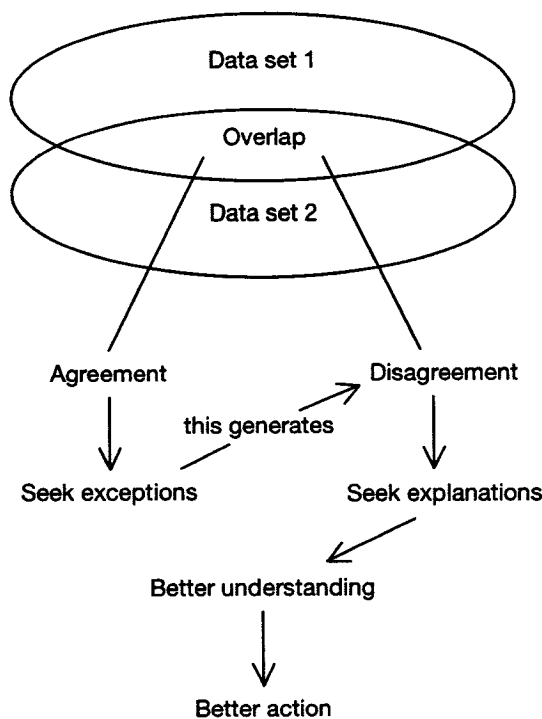
Since grounded theory relies heavily on the words of participants, we can be

faulted for "following the actors" who are interchangeable rather than "following the

object" the practical activities of work and discourse that we are seeking to understand

and transfer to other settings (Engeström, Engeström & Kerosuo, 2003). I therefore

clustered my observations of learning team activities in relation to three iterations of the

CDT workshop to compare decisions taken and the decision-making process in each

cluster (see summary of observations at meetings in Appendix 1).

Data were summarized in a table to visually calibrate perspectives (see summary

of interview data in Appendix 2). To reduce the data further, I highlighted key ideas and

stripped people of their identity to fit responses onto a one page poster for the purpose of

discussion in the colloquium (see poster of initial findings presented at the colloquium in Appendix 3). Discussion in the colloquium and conversations with the external consultant were also organized for the most part in relation to my research questions. I highlighted the main points characterizing the group member check and credibility check for comparison with individual interview data.

At a more selective and conceptual level, I was inspired to organize my data and my thinking by way of a data analysis map. Harry, Sturges and Klingner (2005) suggest visually display data at six levels of analysis: open codes, categories, themes, testing the themes, interrelating the explanations, and theory. At an extremely global level, this enabled me to keep track of the link between my data and ideas in the literature. Without this strategy I would not have been able to see both the forest and the trees. By this point I knew my summary data very well. I returned to the original data regularly to check if I had missed an important nuance of meaning (thanks to the search function in Word). I then turned my attention to the challenging task of identifying the main concepts of learning teams, integrating theory and scholarship from the literature, and writing up a narrative description.

Memo writing and theoretical sampling

There are two strategies relevant to constructivist grounded theory analysis: memo writing and theoretical sampling. "Memo writing is the intermediate step between coding and the first draft of the completed analysis ... through memo writing, we elaborate processes, assumptions, and actions that are subsumed under our codes" (Charmaz, 2000, p. 517). "Theoretical sampling helps us to define the properties of our categories; to identify the contexts in which they are relevant; to specify the conditions

under which they arise, are maintained, and vary; and to discover their consequences" (Charmaz, 2000, p. 519).

In my case, I wrote summaries at the end of each observation and jotted notes throughout data analysis in a series of journals. Although not a systematic record of my analytical development, I do have thoughts written down as they came to mind to follow-up on or to incorporate into my report. I experimented with using NoteTaker, a computer software program for organizing notes electronically. This encouraged the inclusion of direct quotes to help build precision into my analysis. I regularly created visual representations to see patterns and emerging relationships among categories in the data and insights from the literature. The poster produced for the group colloquium is an example of going back and testing ideas with participants. My discussion with an external consultant is another example of seeking outside help to fill conceptual gaps and explore analytic directions.

Tape-recorded conversations with my external consultant also provided a transcript of my own perspective immediately following an initial statement of findings. He not only challenged my assumptions but also those underlying the original learning team concept. It was like an exit interview, rather than a framing interview that is another strategy used in grounded theory analysis to document a researcher's frame of reference before engaging in data collection and analysis.

Whether extrinsically or intrinsically motivated, memo writing and theoretical sampling is an important step in developing a researcher's confidence and competence in analyzing data.

Narrative description

In constructivist grounded theory, a researcher is judged not only on accuracy but also on carefully organized and written descriptions that integrate theoretical concepts, evidence and procedures: "Constructivist grounded theory spawns an image of a writer at a desk who tries to balance theoretical interpretation with an evocative aesthetic" (Charmaz, 2000, p. 526). The goal is not to write a long, boring qualitative research report that nobody reads outside of a small select group. On the contrary, the idea is to draw the reader into a story. This means imparting mood through linguistic style and narrative exposition:

> Active codes and subsequent categories preserve images of experiences ... key definitions and distinctions in words [...] reproduce the tempo and mood of the experience ... analogies and metaphors can explicate tacit meanings and feelings ... simple language and straightforward ideas make theory readable ... questions help tie the main ideas together or redirect the reader ... immediacy draws the reader into the story ... a mix of concrete details with analytic categories connects the familiar with the unfamiliar ... written images portray the tone (pp. 526-528).

At the same time, it is recommended to use a linear logic to organize analyses of basic processes discovered in the data. If there is no single process or overarching theme around which to organize a report, then time and experience may need to be collapsed: "a more straightforward scientific style recedes as a more literary style evolves" (p. 528). The question then is does the researcher remain in the background as storyteller or attend more to his or her role in the construction of meaning? Charmaz opts for the role of narrator. In doing so, she consciously examines her epistemological premises and

acknowledges the limits of her studies and the ways she shapes them. In other words, analysis of data proceeds into the writing process and internal consistency is as much about internal logic as it is about self-reflection.

Issues of trustworthiness

In considering issues falling under the broad heading of trustworthiness, I review in turn the framework of design research, the methods of qualitative inquiry, and the assumptions of grounded theory. I accept or reject criticism of my methodological decisions. In those instances when I accept criticism, I discuss limitations of my study.

Design research vs. the Dewey, Hawthorne and Bartlett Effects

There are three critical issues surrounding design research, not least according to Ann Brown (1992), is the *Dewey Effect.* Traditionally, learning theory research focuses on readiness to learn, discovery learning, and the situating of curriculum in society – all central tenets of Dewey's approach. So, what's new in her work? Design research, she says, provides detailed and concrete examples of highly interdependent outcomes to complex interventions thus aiding both theoretical clarity and dissemination. One critique of Dewey's work is that it repeats cycles of exhilaration (scientific credibility) disappointment and blame:

> I see the problem as analogous to the alpha, beta, and gamma phases of software development. The alpha, or developmental, phase is under the control of the advocate, and by definition it must work for there to be any later phases. It works, though under ideal supportive conditions. Next comes the beta phase, tryouts at carefully chosen sites with less, but still considerable support. Critical is the

gamma stage, widespread adoption with minimal support. If this stage is not attempted, the shelf life of any intervention must be called into question" (p. 172).

The extended nature of design research addresses this issue of replicability. The final stage of dissemination requires unveiling factors that relate to adoption, resistance and ideal conditions, as well as the sociology of dissemination and policy issues. A limitation of my study is not being part of an extended program of research aimed at further testing and dissemination of the learning team approach. There is potential to clarify aspects of situated learning theory, in particular the conditions of informal learning not emphasized by Dewey or Ann Brown.

A second issue related to trustworthiness has to do with the *Hawthorne Effect* – the motivational effect on participants of a researcher's attention during experimentation. As mentioned, control of variables in the early stages of design research is not attempted in favor of understanding the complexities of a situation. Brown's defense to the Hawthorne effect is that this is what she wants: "improved cognitive productivity under the control of the learners, eventually with minimal expense, and with a theoretical rationale for why things work" (p. 167). If this means putting a researcher in every classroom, she says, it is worth the investment. In terms of my own inquiry, I have been conscious of my role as researcher. This may mean recommending putting a researcher (reflective process) on every learning team. If so, I echo Ann Brown's response.

A third critical issue with design research Brown calls the *Bartlett Effect*, following Bartlett's classic studies on memory in the 1930's that exemplified the problem of researchers selecting data and protocols to illustrate a particular theory, and then proving their point by seeing data through the eyes of their existing knowledge and

beliefs about the theory. One solution to making false claims based solely on qualitative data is to make coding criteria public. Another is to involve as many people as possible, including participants, in the process of selecting "just those events of interest" (p. 162-163). A related issue is that of romanticizing research and resting claims of success "on a few engaging anecdotes or particularly exciting transcripts" (p. 173). Videotape records are recommended because they retain essential details of tone and body language while providing a common base for discussion and reflection with participants.

I confess feeling vulnerable to the Bartlett Effect. We cannot select data or write a narrative description without bias creeping in. As Schwab (1970) puts it, the flight backward to innocence as an effort to break habits of mind is admirable, "though it is clear that in the matter of enquiry, as elsewhere, lost virginity cannot be regained" (p. 18). Personally, I would not wish to go back that far in mind or body! I must however demonstrate ways of being representative and conveying what is important (general, reliable, and repeatable).

Qualitative inquiry vs. internal and external validity, reliability, and objectivity

Quantitative investigators attend to questions of internal and external validity, reliability, and objectivity in their research designs. Qualitative inquirers consider these same issues but use different language – credibility, transferability, dependability, and confirmability – and apply different standards of judgment (Lincoln & Guba, 1985). Below I consider the extent these issues threaten trustworthiness of my findings.

To establish *credibility / internal validity* in qualitative inquiry, findings must be situated in the historical and cultural contexts in which a study is conducted. Researchers need prolonged contact with participants, especially when the phenomenon being studied

is unfamiliar to the people involved. We also need to know ourselves: "Perhaps the single most important thing we do - or fail to do - in qualitative research is to situate ourselves and our inquiry ... We need to continually strive to be aware of our world-views, paradigms, and guiding frameworks; our role in inquiry; and how we come to know" (Conrad, Haworth, & Lattuca, 2001, p.xii). I gathered contextual data through multiple sources: observations, interviews, and public records. I got to know participants gradually over the course of one year and formally interviewed them only at the end of their experience. When interviewing members they knew me sufficiently well to speak openly about their thoughts and feelings on their learning team experience, which lessoned the probability of superficial responses. I have included my own perspective when interpreting data and will reflect on what I have learned from this research experience in the concluding chapter.

The *transferability / external validity* of findings depends on having a multiple, iterative set of tactics for triangulation linked over time rather than relying on one or two (Huberman & Miles, 2001). A thick description is also essential and a writing style that is not boring (Charmaz, 2000). My study is focused on identifying perspective variation among multiple respondents. I used different sources of data collection across three design iterations. I validated my initial findings with the learning team as a whole to establish the truthfulness of my rendering. To avoid researcher bias, I also discussed my interpretation of data with an external consultant. I have paid particular attention to writing strategies suggested in the literature on grounded theory.

To ensure the *dependability / reliability* of results, it is necessary to control for thoroughness by documenting a chain of evidence (Reigeluth & Frick, 1999). Qualitative

inquiry is not value free. "The values of the inquirer, the choice of methodology that guides investigation, the choice of substantive theory that informs data analysis and the interpretation of findings, and the values inherent in the context all influence inquiry. It is the inquirer's ability to achieve methodological consistency (value-resonance) that produces meaningful results" (Lincoln & Guba, 1985, p. 37-38). I have used the grounded theory methodology to trace categories and concepts in my analysis with participant responses.

As mentioned, trying to achieve *confirmability / objectivity* is a particular challenge in qualitative inquiry. Knowledge claims are often based on retrospective analysis and narrative accounts, both of which are subjective in nature. Knowledge claims rely on being understood by the reader. My findings will be of particular interest to people working in faculty development. I have examined an intervention at the alpha level of implementation, in other words members of the learning team are advocates of course design and learning-centered teaching and more or less comfortable with pedagogical language. If the intervention is scaled out with less supportive participants, different findings would emerge and they would be written-up with different audiences in mind.

Grounded theory vs. positivist assumptions

As Charmaz (2000) recounts, the original grounded theory methodology proposed by Glaser and Strauss in 1967 responded to the critique of traditional researchers that qualitative studies were impressionistic, producing only conceptual description that lacked rigor and therefore legitimacy. Their use of systematic methods and simultaneous

data collection and analysis aimed at theory development challenged the view (still prevailing) that qualitative inquiry precedes more rigorous quantitative methods.

However, the more systematic and prescriptive their guidelines became the more grounded theory analysis aimed not only at understanding but also prediction. For example, coming from a quantitative research background, Glaser endorsed a positivist epistemology in his use of systematic comparisons: "Categories emerge upon comparison and properties emerge upon more comparison. And that is all there is to it" (Glaser, 1992, p, 43). At the same time he criticizes Strauss, coming from a pragmatist background and the philosophical study of process, for developing methodological techniques with Corbin (1990, 1998) that force data analysis to proceed as if following a formula. Charmaz believes both Glaser and Strauss have lost the sense of emergence and flexibility of their original work and now represent an objectivist grounded theory approach. This is only possible if subjects share similar experiences and researchers ask similar questions and bring similar perspectives and methods to their analyses of these experiences.

> Objectivist grounded theory accepts the positivistic assumption of an external world that can be described, analyzed, explained, and predicted: truth, but with a small *t*. That is, objectivist grounded theory is modifiable as conditions change. It assumes that different observers will discover this world and describe it in similar ways. (Charmaz, 2000, p. 524)

By contrast, constructivist grounded theory embraces the relativist assumption that there is no one window on reality and underscores the interactive and holistic nature of data collection and analysis. "Constructivists aim to include multiple voices, views,

and visions on their rendering of lived experience ... constructing constructivism means seeking meanings – both respondents' meanings and researchers' meanings" (p. 525). The inquirer and the object of inquiry influence one another. Actions cannot be explained in terms of causes and effects. Methods are flexible and strategies heuristic.

Ethical concerns

Signed consent forms to participate in this research study on learning teams were requested by the researcher. Participants were clearly informed of what was expected of them in the study (see consent form in Appendix 4). Consent by faculty for observation at the CDT workshops was subsumed under the consent forms requested in relation to the SSHRC grant held by Drs. Amundsen, Weston, Abrami & McAlpine titled: *A faculty development approach that focuses on learning for the effective integration of technology in higher education.* Participants were assured that although their data will not be truly confidential (the researcher will know who is associated with which data), their data is anonymous. Reference to individuals is by role identity not by name or pseudonym. Members of the learning team and people in the context will recognize who is being cited. For this reason, certain responses are not identified.

As mentioned, interviews with participants were tape recorded, transcribed and summarized. Participants were e-mailed both their full transcript and summary so they could make corrections or further elaborate on their responses. Quotations used in the dissertation were thus verified with each person for accuracy. In some cases, words were corrected or changed. I checked again with participants when citing elaborated responses.

My main concern is that this study says more about me than it does about learning teams per se. I concentrated on summarizing data to look for variation in perspectives. In

doing so, I question my use of a highlighter over establishing a line-by-line coding scheme. I know I have been Procrustean in cutting people off and citing them out of context in order to fit findings neatly into a certain category or on one page. I tried to remedy this in my narrative by returning regularly to the original transcripts to honor the fuller context of citations. However, regardless of how aware or skeptical I am, the internal logic of this narrative account is my own logic. I could train others to follow my logic, but even if they agreed with my interpretation "on what grounds could the narrative be said to correspond to what actually transpired or would the narrative arise from the needs and imagination of the storyteller?" (Shavelson et al, 2003, p. 27)

Summary

To summarize, the context of inquiry is a research-intensive university. A learning team was formed to redesign a core faculty development workshop on course design and teaching. Seven people (three faculty developers, a science professor, a librarian, an educational technologist, and a graduate student) met for one year, generating and then reflecting on the results of three design iterations. Following the methodology of grounded theory (Glaser & Strauss, 1973, Charmaz, 2004), data analysis proceeded through an initial searching phase of interviews with team members; followed by focused coding and the seeking of patterns. Findings were validated through triangulation of different data sources (observations, interviews, document analysis), verification with participants (colloquium), and credibility checks with an external consultant. I will discuss possible limitations of my methodological choices later.

Chapter 4

Findings

The goal of grounded theory is to generate a conceptual theory that accounts
for a pattern of behavior which is relevant and problematic for those involved.
The goal is not voluminous description, nor clever verification.
(Glaser, 1978)

What makes a learning team, a learning team? What is happening? What are

people doing? What changes occur over time? More specifically, what are the pros and

cons of this team approach to university course design (from both an insider and

outsider's perspective)? What triggers (or not) real problem solving (moves people to

think deeply and to change their habitual modes of thinking)? What factors (context and

motivations) mediate implementation of this new faculty development initiative? I

answer these questions using the procedures of grounded theory. I weave together my

own observations at meetings (Appendix 1) with participants own words from interview

data (Appendix 2) and reactions to my initial findings (Appendix 3) voiced at the learning

team colloquium and by the external consultant. I only cite data that has been validated

with participants. Initials in brackets after citations identify different perspectives in the

data. Each section includes a summary table of in-vivo codes (the conceptual talk of

participants). A data display with six levels of analysis is provided in Table 13 on p. 132.

My goal in this chapter is to document my findings clearly and concisely. As

themes, issues, and questions emerge they are discussed. The chapter is organized in four

sections around my research questions and the categories that emerged. I wait until the

final chapter to integrate the literature and ask, "so what does all this mean?"

Section 1: What happened in the learning team?

When asking participants my first research question, "What happened in the learning team?" I first prompted for goals and then individual perceptions on team roles. I am switching this order so as to introduce participants. I then present the various decisions made and the process engaged in by the learning team.

Team roles

As already mentioned, learning teams were originally conceived as having several stakeholders: a faculty developer with pedagogical expertise; a professor(s) who is the focus of the design project; a student(s) from the relevant discipline to provide feedback; a technology consultant to coordinate development of materials; and a librarian or library technician to help define appropriate resources (McAlpine & Saroyan, 2004). The CUTL learning team comprised seven members with anticipated roles outlined in Table 4. This composition goes beyond the five discrete roles in the original learning team proposal. There were two faculty developers: one was the advocate and team leader and one was invited to participate because she was the original designer of the CDT workshop. I saw her role more as the professor who is the focus of the design project. The coordinator position is new and has resource implications. The science professor was in fact an alumni of the workshop who played the dual role of student and disciplinary perspective. The coordinator and graduate student assistant were additional roles to assist in implementation of the learning team strategy that have resource implications.

Table 4: Composition of the Learning Team

Team member	Roles
Team Leader [TL]	Director of CUTL responsible for the initiative
Coordinator [C]	Newly hired to oversee planning and ensure careful implementation and evaluation of the CDT workshop
Graduate Student [S]	Graduate student hired to assist in planning, implementation and evaluation of the CDT workshop
Faculty Developer [FD]	Original conceiver of the CDT workshop participating from Simon Fraser University (SFU) to oversee changes in design
Science Professor [P]	Professor from the Sciences to provide disciplinary perspective
Technology Consultant [TC]	To inform development of web-based resources
Librarian [L]	To inform discussions on information literacy

Inherent in the learning team composition are different levels of participation. There was a core group who implemented decisions comprising: the team leader, coordinator, and graduate student. There was also a larger group who informed these decisions that included these three core members, plus four active members: the faculty developer (from SFU), science professor (disciplinary perspective), technology consultant, and the librarian. CUTL support staff participated in the periphery as well as myself as participant-observer and on occasion co-instructors of the workshop. Figure 5 provides a visual representation, inspired by Wenger et al. (2003), of these different levels of participation.

Figure 5: Different Levels of Participation in the Learning Team

Core members:
Team Leader [TL]
Coordinator [C]
Graduate Student [S]

Active members:
Faculty Developer [FD]
Science Professor [P]
Technology Consultant [TC]
Librarian [L]

Periphery members:
Researcher
CUTL staff
Co-instructors
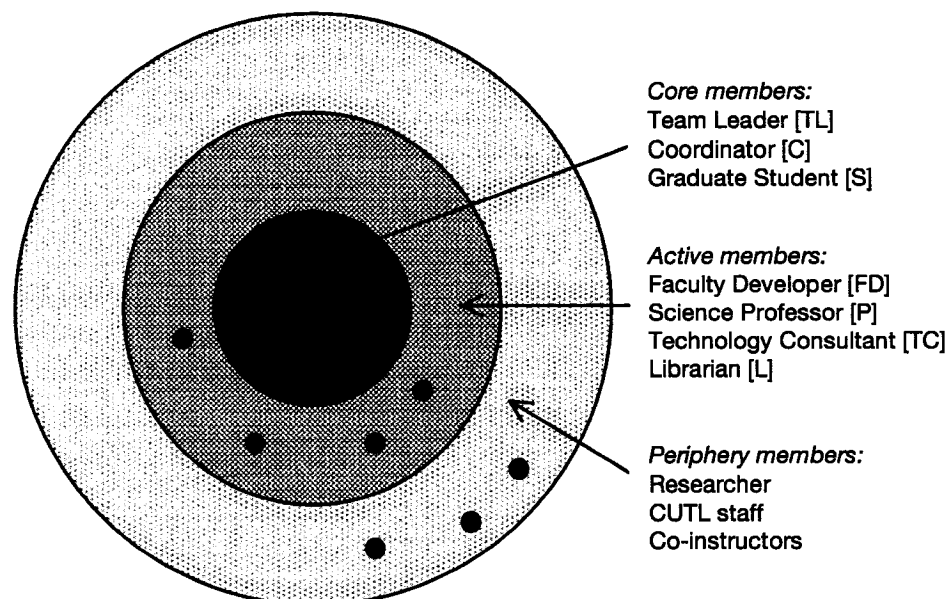
To offer more background on the individual perspectives behind team roles,

members have provided their own biographies (Appendix 5). In brief, the *team leader*

was the inspiration behind the learning team initiative and the person who single-

handedly brought everyone together. She is a faculty developer and education professor.

She was the CUTL director during the research study. She has co-designed and facilitated

almost all the CDT workshops since its inception. The examination of the learning team

fits into one of her areas of research. She missed five meetings due to personal reasons

and sabbatical leave. Her perceived role as leader was to persuade. ("Part of it is

persuasion, convincing people that it is something interesting, once that happens then the

group sustains. I'm assuming there's enough intellectual effort and reward for people to

commit." [TL])

The position of *coordinator* was approved specifically to oversee expansion of the CDT workshop. The incumbent had many years of senior administrative experience at another university and had recently completed her Ph.D. that produced a model of technology integration in higher education. As the hub of learning team activities, she was present at all meetings. When the team leader was absent she took over the leadership role. She saw her involvement in planning and implementation as a function of her administrative role. ("My role is to organize stuff and that means setting agendas, making sure that the meetings get called, making sure people can come, and minutes get circulated." [C])

The third core member was a graduate student. He was an alumni and co-instructor of the CDT workshop. He was also near completing his Ph.D. research on how university professors from various disciplinary areas develop pedagogical knowledge specifically adapted to their area of instruction. Comfortable around technology, he was frequently called upon to help with technical problems in the workshop. He did not participate in the first round of learning team meetings and was absent for the last two meetings. He perceived his role as contributor.

The *faculty developer* participating by teleconference is an education professor at Simon Fraser University (SFU). Before this, she was a faculty member at McGill jointly appointed to CUTL. She designed and initiated the CDT workshop when working at McGill. As lead investigator on the SSHRC grant investigating the CDT workshop, she had vested interest in this area of research. Because of the phone hook up she admits feeling like an outsider, however she participated actively missing only three meetings.

Her motivation for attending was to develop the workshop further and to help implement it at her own university.

The *science professor* has over thirty years teaching experience at McGill. He also has considerable pedagogical knowledge having spent a sabbatical year working in CUTL and having participated in the CDT workshop and co-instructed on many occasions. He is knowledgeable of technology, someone who can write his own HTML code. He missed six meetings but was consistently active when present. He perceived his role as reality check. ("It's part of my style to be the reality check. I didn't spend a year in CUTL for nothing. I have a much better appreciation for that world now than I ever had before, but that also enables me to see sometimes when the differences, the gap, the difference in perspective, becomes too great." [P])

The *technology consultant* is a professional working in the Instructional Technology Unit at McGill. He is a Ph.D. candidate doing research in the area of technology integration. Previously, he worked as a graduate student assistant in CUTL for a year. As alumni of the CDT workshop, he has regularly presented on technology tools in the workshop. He missed six meetings mostly during the middle of the study but was consistently active when present. His motivation for attending was to demonstrate collaboration between his unit and CUTL.

The *librarian* confessed understanding little of the content of discussions but was intrigued by the whole process and glad to have been a part of it. Like the science professor he is a veteran teacher at McGill. They met for the first time in the learning team. He participated in the CDT workshop immediately prior to learning team activities. As other participants who self-select to attend the workshop, he is committed to change

and thus taking technology into consideration in his teaching. His motivation for being part of the learning team was as an advocate for information literacy. Two other library representatives replaced him towards the end of the study.

Important observations on leadership and team composition emerged. A distinction is made between two leadership roles: one for inspiration and one for implementation. ("The learning team needs somebody who is the leader and inspiration … and somebody who gets things done. Think about defining roles." [C]) The nature of team composition is also essential. ("There has to be an intermediary from the disciplines, not just for credibility but to build bridges." [P] "[We] need an interface between academics and IT people, someone who knows technology and pedagogy deeply." [TC] "In much the same way [the technology consultant] is necessary but in many ways peripheral, I think that information literacy is necessary but in many ways peripheral [a representative from the Libraries] should be part of it always as an icon on the screen." [L])

Team composition is further predicated on a common experience. ("We have people who knew each other beforehand. We also have people who not only didn't know each other beforehand but also didn't even know McGill. We have people who have intimate experience of the CDT workshop … and we have people who originally had no experience. So a big part of it has been getting to know each other and creating a sense of cohesion." [TL] "I can tell you that people who have never done a [CDT] workshop; it's like starting at ground zero. As an instructional designer you'd have to work with people who don't know anything about the language, anything about what to think about, you're

starting at 10 or 15 steps behind. ... The common thread on the learning team is pedagogy, with everyone coming from different perspectives." [TC])

On the issue of membership, it was expressed that there is no need for a fixed team but to draw on the right kind of people and different kinds of expertise as a project requires. ("I don't think you can come up with a generic team that's just going to do all of these things. ... The approach I always use is to assemble a group of people who are going to help in the process, where they're from is almost irrelevant. It's the people that you're looking for, the people who have that type of vision, and the interest to help." [TC]) "By virtue of the learning team's [science] professor, we have a disciplinary perspective from the sciences, but if he had come from a different background we may feel the need to defend that perspective too." [S]) An argument was also put forward for roles to be distributed among members. ("Invite consultants on a one-time basis instead of being permanent members." [FD] "In my view as the content of discussion changes then leadership should change, but not everybody wants to share leadership or is a good follower, you also need people to hold the thing together." [C])

Membership issues were further discussed in the learning team colloquium. The point was made that over time people will vary their roles. It was also agreed that one of the problems with mapping roles to individuals is the tendency to generalize. ("We are all advocates for our points of view at some point." [TL] "The disciplinary perspective and the student perspective always draw it back to the concrete and I think that is their function. ... The leader and coordinator are one kind of role, expertise one kind of role, and perspectives another kind of role. ... It's not that this is one person's only role, but if you leave it out of your model it may get left out of somebody else's practice." [L])

Commenting on my initial findings, the external consultant questions the basic assumption of diversity underlying the learning team model. ("You definitely need multiple perspectives in an exercise like this, but where is the balance between creating a cohesive team vs. creating a team that brings true diversity, orientations, and challenges your basic assumptions? … If I was to have a conversation with colleagues as I sometimes do about teaching, I would get Saul and Steve and Richard and Bob together and we would talk about teaching. I wouldn't have a Librarian there and I wouldn't have an instructional technologist there. I'd have colleagues who teach the subject matter that I teach. … I can understand the person from CUTL [or CTLS] being there who knows about strategies, approaches, and goals and assessment, but the people who have expertise in the tools, why do they need to be part of the learning team?)

He further queries what are the essential roles in a learning team. ("You have to step back and ask, at any large institution, who are the gatekeepers of change? … Different individuals bring different perspectives so that in some ways every learning team will be different. The question is, in what ways will it be different and in what ways does it need to be the same, or doesn't that matter?")

Goals

When conceiving the learning team model, the team leader had a clear vision in mind and some very specific goals. Her vision is about process, to bring a learning team together to solve a big instructional issue that because of its complexity needs a variety of expertise. ("We need to set aside time to do learning ourselves and we need to draw on the expertise in the fields we don't know. … I'd envisaged the learning team was around

some big instructional issue – a conceptual difficulty – that needs a variety of expertise. There are clear goals, and what we're trying to do is generate some new knowledge and apply it. ... We're actually trying to change the nature of how we understand the complexity of instruction." [TL].) Her specific goals are more product-oriented: a) to refine the CDT workshop design, b) to model the better use of technology, and c) to address the issue of information literacy.

A further process goal articulated in a learning team meeting has to do with professional development of both team members and faculty. ("We're trying to do two things in the learning team, one is to advance our own thinking around new technologies and information literacy in relation to instructional decisions and the language we use for instructional decisions, so that we and professors and the people in [the technology unit] and the libraries can all be on the same page about these things. At the same time, we want to find ways to ensure that professors through the work that we do understand the resources that are in all these units and how they are integrated. So there's two kinds of things, one is an intellectual endeavor to create a more seamless way of thinking about instruction in terms of student learning, and the other is to have a coherent way of collaborating and making sure that everyone understands all the resources." [TL: Extract from learning team meeting on 27.10.03])

Disagreement surrounding the relevancy of the technology and information literacy goals emerged during my interviews. ("It wasn't necessary to convene that group to do that ... there are a lot of ifs and buts, but a resource, web-based, for a workshop like that ... it's almost a no-brainer" [P]. "I think there's too much of a big deal being made of technology, and I think what we can do in the workshop, and in my view this is probably

the limit, we can introduce it as part of the way you go about teaching as appropriate. ...

The integration of technology is a secondary purpose. ... The main focus has to be on

how professors' thinking evolves and plays out in courses. ... Keep the research agenda

in there. ... The information literacy piece has perhaps got bigger than originally

intended, it's not immediately useful to me." [FD] "We have spent a lot of time talking

about information literacy and what it means and that has been interesting, stimulating

even, but for me it's not central to the development of the teaching workshop." [P])

From the leader's perspective, a big part of the experience was getting to know

the others and establishing a formal three-way relationship among units. However, for

some members this collaborative goal had a hidden agenda of survival on the part of

CUTL. ("The learning team was a way of showing that we can collaborate and be

productive without being amalgamated with support services." [S] "It seemed to me that

the absence of a real focus other than the information and technology issue (which to me

is a side issue) means that what is really going on is an attempt for the different

participants to explore the way in which they and their pieces of the University can

actually work together more effectively." [P])

The professional development goal also needed to be more explicitly addressed.

("The learning team process was a way by which I was integrated into the CUTL as well

as the CDT Workshop, and what's important and what's not, and people's perspectives,

so I was introduced to the people, the processes, the culture." [C] "The learning team

experience informed my practice but this was a very personal responsibility. ... It would

be very easy just to attend those meetings and then do nothing about it, or just attend the

meetings and not even share your thinking. That's where there may be need for more structure." [S])

Reflecting on her learning team experience, the leader says next time she would clarify goals on a regular basis. ("Build in a more formative process. Clarify goals and frequently check in every 3-4 meetings to see if we're getting near closure or there is less return on investment. Make priorities explicit so people are not feeling left behind. Think carefully about using people's time well." [TL]) There was no further discussion on goals in the colloquium, except the observation that the learning goal was not on my summary of initial findings and this was an important piece not be forgotten.

Again with an outsider's perspective, the external consultant observes that the balance among goals was not addressed nor disagreement among members on priorities. ("The balance between the concrete goal of refining workshop materials and the abstract goal of stepping back and looking broadly at issues was not always addressed. Clearly, there is disagreement over the importance of information literacy that probably has to do with the way people value this as an important component of faculty development. ... At some point in time these smaller differences in goals and values, if you try to work them all through they can completely overwhelm and therefore compromise ever getting the job done.") He further questions whether there were other goals team members brought with them that contributed to or detracted from the process.

Decisions

Concepts related to decisions have not been generated towards a conceptual model of learning teams since the focus of decisions would vary depending on the

context. Decisions informed by the learning team and implemented by core members are included here as evidence of the action and reflection process engaged in by the learning team. For comparison purposes, decisions are organized in three clusters of meetings that parallel three iterations of the CDT workshop as well as three types of decisions: technology, pedagogical, and information literacy.

I observed sixteen meetings in total. They were organized formally with an agenda and minutes. My observations of the main discussion points and decisions taken during each period are provided (Appendix 1). In the following description, I focus on what changes occurred as a result of learning team activities (accomplishments) and their perceived effect (consequences).

Technology decisions

The first cluster of activities is characterized by its focus on the goal of better modeling technology. Activities began on March 14, 2003, with one of five meetings, and ended following the 12-16 May 2003 workshop. The overall rating of participant evaluations for this first iteration of the CDT workshop was 4.5 (on a scale from 1 to 5 with 5 being strongly agree). These evaluations are included in Appendix 6 as data in a general sense to contextualize discussions in the learning team as a consequence of participant feedback. The main criticism relates to the presentations of co-instructors and a perennial complaint about the amount of reading. Attendance at meetings during this iteration is shown in Table 5.

Table 5: Attendance at Meetings – Cluster 1

Cluster 1 (14.03-16.05.2003)	1	2	3	4	5
Team Leader [TL]	√	√	√		
Coordinator [C]	√	√	√	√	√
Student Perspective [S]					
Faculty Developer [FD]	√	√	√	√	√
Disciplinary perspective [P]			√	√	√
Technology Consultant [TC]	√	√	√	√	√
Librarian [L]		√	√	√	
Researcher	√	√	√	√	√
CUTL staff	√√	√√	√	√	√

A unique decision taken during this period was to upgrade course diagrams with the help of a graphic designer. The CDT concept map, for example, is now animated with Flash technology. Organized around the central concept of student learning, the core decision points of course design – content, outcomes, strategies, assessment – are dynamically connected with an arrow that circulates continuously to reflect the main concept of alignment. The word "context" is placed outside the circle to remind us that course decisions are constrained or enabled in different ways depending on the situation. This animation is used as a visual aid in the workshop and appears on the front page of the CUTL WebCT site. The WebCT interface with the CDT model is shown in Figure 6.

There was much discussion on the organization of content in the WebCT environment. The site was eventually developed with the help of a web designer from the instructional technology unit. A menu can be scrolled down the left side of the page that mirrors the content of the CUTL map. Each course design element expands to include key concepts (presentations and resources), examples, and application tools (guidelines and worksheets). There is a glossary of terms and useful links to support services at the University. The site is gradually expanding to include support for SFU and Concordia

participants. Examples of concept maps, learning outcomes, and strategies modeled or

generated in the workshop are gradually making their way onto the site.

Figure 6: WebCT Interface showing CUTL design process

Disappointment was expressed in the use of WebCT both in terms of integration

with the workshop and as a stand-alone instructional device. ("It's just a tack on. ... The

face-to-face and online environments need better integration to model exactly the type of

things instructors are doing in the classroom, to create community and continuity before

and after. ... Unless you're integrating it into your design nobody's going to use it. ... It's

basically a place you go to look up stuff that may have been in the workshop which

unfortunately is not an innovative technology model ... really that's the kind of model we want to fight." [TC] "It's a repository of information ... more like a toolkit for [participants] rather than an instructional device. ... It's more supporting than leading their learning." [S])

It seems the learning team experience mirrors a normal progression in technology integration. The full potential of WebCT, for example the presentation and discussion tools, is not being used because of an initial preoccupation with content. ("Usually people first want to put their content up and then they start exploring the other types of tools that are there. ... I think the biggest problem is that there really isn't enough time in the workshop to really integrate anything else. I mean the workshop is already too full and too packed as it is in five days." [TC])

The leader points out an unexpected side-effect, that instructors in the CDT workshop are now using resources in WebCT in their teaching. ("I was able to use it for instance to link to resources in the literature and tables and things that we wanted to talk about in the small group, the table for instance about cognitive development also the video clips in the small group discussion about interactive strategies. ... So clearly it has become a resource but not only a resource for alumni but a resource for us. It means that when we're in the midst of the workshop it's at our fingertips so it really is becoming seamless. ... It begins to create in terms of follow-up that long term potential for people to be able to engage." [TL])

There is further evidence of conflicting views on technology. From one perspective, the biggest improvement to the CDT workshop design is the better modeling of technology in the classroom. From another perspective, this was not needed. ("The

biggest improvement is more and more modeling of technology and demonstrating it as part of the process, but nobody is focusing on it, nobody is worried about it, nobody is afraid of it, that's the important thing." [TC] "The issue of technology and support for the use of technology in teaching is certainly an important one, but I think the way that one deals with that is ... not by including more technology-based stuff in the workshop." [P])

In a debriefing meeting following the first iteration, it was decided that the technology demonstrations in the workshop by guest speakers had been too long and elaborate. The coordinator feels it is important not to overwhelm professors but to model good practices they can replicate. The leader later described this problem of innovative uses of technology as a double-edged sword. ("We have to decide if we want to make it cutting edge or something that someone would say, oh, there's an interesting idea" [TL]. "There is a culture at CUTL that wants to make the point that it's not technology that is leading but pedagogy. This is not just experimentation but a training ground for professors, so it has to be done in a very pedagogically sound way." [S])

The librarian describes a complexity in thinking when working with technology that is an example of what could have been discussed in the learning team but was not. ("The realization, and this always happens when you get to the technology, you realize that what you have been doing is far more complex than you have ever allowed. The necessity of putting it into writing, we all know that writing is good because it makes us verbalize what we are doing, it makes us break things down in non-obvious sequential steps in order to accomplish something and put it on a board. It's the same thing with adapting technology to our teaching, we realize that what we're doing is vastly more complicated because we have to spell out steps a, b, c, d, in order to get someone from a

concept to a way of thinking, through in this case an electronic tool which is far from

simple." [L])

Pedagogical decisions

The second cluster of activities is characterized by its focus on the goal of

enhancing the workshop design through pedagogical decisions. Learning team activities

began on May 23, 2003, with one of six meetings, and ended following the 25-29 August

2003 workshop. The overall rating of participant evaluations for this second iteration of

the CDT workshop was 4.6 (Appendix 6). Again negative criticism is about the intensity

of the workshop schedule and the readings. Attendance at meetings during this iteration is

shown in Table 6.

Table 6: Attendance at Meetings – Cluster 2

Cluster 2 (23.05-29.08.2003)	6	7	8	9	10	11
Team Leader [TL]	√		√	√	√	√
Coordinator [C]	√	√	√	√	√	√
Student Perspective [S]	√	√	√	√	√	√
Faculty Developer [FD]			√	√	√	√
Disciplinary perspective [P]		√	√	√	√	√
Technology Consultant [TC]	√		√			
Librarian [L]		√	√	√	√	√
Researcher	√	√		√	√	√
CUTL staff	√√	√	√	√√	√√	√
Co-instructors						√√√

As a result of feedback from the previous iteration that technology presentations

had been too long and up front, it was decided to provide case examples instead. The

team leader had implemented this strategy successfully elsewhere. The decision resulted

in a major program change. Co-instructors (alumni of the CDT workshop) now provide

examples of courses they have redesigned based on the CUTL framework and CUTL

instructors explain the conceptual tools inherent in the course design model. An interesting side effect has been that co-instructors not only model intentional course design but also effective uses of technology. One co-instructor demonstrated a computer tablet for the first time. Another showed the use of visual imagery with PowerPoint. Providing contextual examples on the use of technology was seen as positive. ("[N]ow that was an attempt to actually show people, here are some things that you can do, and it's much more valuable when it's in the context of why are we doing this, what purpose does it serve, what ways does it improve what might have been done. ... It's not about how to create a quiz in WebCT." [P])

When debriefing, it was decided that although co-instructors had provided good practical examples more interaction was needed in the morning sessions. Co-instructors were asked to be more informal in their presentations and more support was provided in preparing for the sessions. Co-instructor presentations are gradually being video taped and uploaded into the WebCT site, together with examples of interactive teaching.

The content of the reading package was also a regular discussion point in the learning team. There are now fewer readings, a distinction is made between core and supplementary readings, and reading guides are provided to better scaffold learning. The reading package still does not include discipline-specific resources.

Information literacy decisions

The third cluster of activities is characterized by its focus on the goal of exploring the issue of information literacy. Meetings began on September 16, 2003, with one of five team meetings, and ended on March 11, 2004, following debriefing of the December 2003 workshop. The overall rating of participant evaluations for this third iteration of the

CDT workshop was 4.73 (Appendix 6). This shows a steady increase in satisfaction;

however, the wording of evaluation questions was changed that makes it difficult to

compare ratings across the three iterations. There are also more elaborate responses to the

open question on suggestions for improvement. Attendance at meetings is shown in Table

7. Additional co-instructors attended regularly during this period and two representatives

from the library replaced the librarian.

Table 7: Attendance at Meetings – Cluster 3

Cluster 3 (16.09-11.03.2004)	12	13	14	15	16
Team Leader [TL]		√	√		√
Coordinator [C]	√	√	√	√	√
Student Perspective [S]	√	√	√		
Faculty Developer [FD]	√	√		√	√
Disciplinary Perspective [P]		√		√	
Technology Consultant [TC]		√		√	√
Librarian [L]	√	√√*	√√*	√√*	√√*
Researcher	√	√	√	√	√
CUTL staff	√√	√√√	√√	√√	√√
Co-instructors	√√	√	√		√

*Librarian replaced by two representatives from the libraries

Although decisions were made on information literacy during this period, the

learning team had been discussing the topic since the Librarian first joined the team. He

introduced the issue by way of a story on how the landscape has changed from when our

grandfathers walked five miles to school through rural countryside to the neighborhood

of information trash students encounter today. He likened the role of information literacy

to the role of nutrition education; just as certain foods contain healthy nutrients and others

junk so certain sources of information are more accurate than others. Over the past 3-5

years the Internet has produced a high proportion of trash and this is why information

literacy has become important. He provided a copy of the Information Literacy

Competency Standards for Higher Education, published in 2001 by the Association of College and Research Libraries in the United States. The publication defines information literacy (IL) as "fluency with information technology [and] sound investigative methods," and "critical discernment and reasoning skills" (p. x).

A library representative who joined the learning team during the third cluster of activities has since produced a booklet on *Information Literacy @ McGill*. It provides generic strategies for professors on how to promote IL in the design of their courses, in particular in relation to meaningful research assignments. This new resource was informed by discussions in the learning team. It is now included in the CDT workshop package together with readings that illustrate best practices in IL. It was decided to include IL readings in the assessment section. The Libraries were invited to offer a lunchtime tutorial on IL during the CDT workshop. It was also decided to put concrete suggestions for IL in the WebCT environment. IL moved in this period from an abstract issue to be grappled with to a collection of practical resources.

Debate around the definition of IL is still not completely resolved. In conversations back and forth, the need for more concrete examples emerged and the whole issue of disciplinary differences. ("It's very difficult to talk about IL in the abstract, and talking in the concrete with concrete examples that are irrelevant to 90% of your audience, is the difficulty in talking about this. ... I don't know how you get Physics literacy, but you certainly don't get it the same way as a history student gets it from dealing with sources." [L])

At one point during this period, the team leader observed her personal development in terms of understanding the concept of information literacy. ("I was

actually able to raise [IL] as an issue in the small groups when things came up and direct people to the article by the librarian that unpacks an assignment, what was the buried knowledge of the professor and what was the prerequisite that was assumed of the students in that really very simple assignment, and at a certain level we actually engaged in those ideas, very briefly but it was the first inkling that I'd seen I was developing enough of a framework ... to speak to a professor about these issues." [TL])

During this period there was also a leadership change. ("I'm not sure if this [change in focus to information literacy] was agreed across the entire membership. It certainly hasn't been discussed. ... I can trace in my notes to evidence of decisions about readings, decisions about schedules, decisions about everything to do with the workshop; that did not happen with the December workshop. I made changes without them being discussed at the learning team level. This is the evolving reality I guess." [C])

During the colloquium, it was observed that there are different kinds of decisions coming out of the learning team initiative: process, product, and personal. ("Decisions about the process in the group, decisions about the workshop itself; and then there is another set of decisions about people's personal decisions and re-evaluating different factors. Certainly the discussions on IL made me think through much more productively some of those issues, even though it was quite hard to get at it at the beginning." [P]) Attention was also drawn to the impact on team members of discussions related to technology. ("It is more than what is obviously evident in the workshop. It is something that our thinking has rallied around." [FD])

In conversation with the external consultant, he raises the need for administrative buy-in when making decisions so that faculty development does not happen void of other

administrative bodies. ("You know from our experience at Concordia as well as elsewhere ... you need top down and bottom up support. So how do you engage that administrative involvement and awareness without administrative involvement and awareness? Should they have had an administrative element who could talk about the goals and directions of the University in terms of faculty development?")

Process

The learning team process was primarily decision-making but defined variously as: "an advisory board" [S], "a consulting group" [TC], "a discussion group" [FD], and a framework replicating the CUTL map. ("Like a helix, viewed from one end it was going in a circle, but if you looked at it from the side it was advancing towards a much more coherent final product" [L].) The nature of this process is iterative, collaborative, and reflective. ("What the learning team does is build in reflection ... multiple layers of not just thinking but doing" [C]. "I would propose a learning team where you don't race into doing something but really take time to create a language and a framework that you can then use in an integrative and comprehensive fashion. ... The idea of the learning team is taking time out and not trying to do without having invested in thinking." [TL])

The learning team is further described as a process of learning and exchange. ("The learning team makes us see things differently. ... Had we looked at the various issues we looked at from strictly a CUTL point of view or strictly a library point of view or separate domains, we would obviously not have had as rich a picture of what is needed or what we need to do." [S] "The integration of technology is slower and more staged and therefore more thoughtful and more defensible. ... Insistence that things are different in

science reminded us that in an interdisciplinary context we need to represent all disciplines, this slowed down our ability to integrate IL. ... That's a decision we made in the learning team, not to do it until we had it straight." [C])

A tension between the need to speed things up and to slow things down was also observed. ("There's an interaction of multiple worlds here ... multiple disciplines, multiple levels of experience. ... None of those words captures it because there's a little bang at the center. ... It's more than synergy because synergy is good. It's not all good. Some of it is difficult and even potentially destructive. ... This collision needs to be nurtured. I need a better metaphor but the conflict is necessary to understand the multiple perspectives." [C] "The fact that a process is slow can be a bad thing but can also be a good thing. ... A mixture of motivations can be positive also, it requires certain management skills of the person in charge." [P])

This being said, the process was also criticized for being disjointed and slow. ("I found the decision-making process involved in the learning team was rather slow or burdensome in the sense that we have people coming and going, changing participants all the time. And we're never sure what the focus of a meeting will be, and when we know there's something else that comes up. I've been unsure about what we've accomplished and how well we're doing in terms of moving in the direction of our objectives. It [the process] needs to be more frequent, more regular in terms of when and where we're meeting, just to keep a learning and exchange culture otherwise it looks more ad hoc and your thinking is more ad hoc." [S] "Maybe the exploratory phase could have been accelerated, if indeed there was a place to go, a place people knew they had to be in three

months" [P]. "The reality is if the learning team is a decision-making body, I don't have time to wait" [C].)

Seeing no boundary between his experience on the learning team and participation in the CDT workshop, the librarian describes the process as high-level dialogue. ("The level of dialogue and interaction was very high, quite abstract but they were dealing with abstract concepts in an interesting way. ... There's a lifting up to a higher plane of discourse here in terms of what is going on – this is part of the epiphany, part of the conversion process. This person is going to admit that there's a complex world out there and admitting that it's complex they will now deal with it because this is an intelligent scholar who is devoted to teaching and learning." [L]) By way of contrast, the faculty developer (from SFU) thought it was less than satisfying. ("I thought it was going to be more strategizing further toward the goal of understanding what we were doing after the workshop ... an intellectual discussion brought down to the practical." [FD])

An important observation emerged in the colloquium on the qualifiers used by members to describe the learning team process. For example, adjectives around technology like "more thoughtful" and "more defensible" were challenged. ("It says a lot about how people perceived the learning team rather than the actual efficiency of the learning team. ... That's what you need to clarify here, this is what people felt, it's not necessarily something that is agreed with as well." [P] "Part of the whole problem is that you have the confounding of people's perceptions of what happened and what really happened, and the question is what really happened" [TC].) It was agreed that I am reporting perceptions, but unlike my summary of initial findings that was the center of

discussion at the colloquium, in this account I am identifying individual perspectives while engaging in a conceptual analysis of the data.

Encouraging me again to step back, the external consultant asks how the learning team process is different (unique) from how any other academic committee functions. ("I understand the grand concept but I don't actually understand how it differs from the way other committees operate. Certainly some have much more pedestrian chores. The space committee for example doesn't often (sometimes it does but not often) focus on larger philosophical issues. But many committees deal with principles in order to then make decisions that are concrete and operational.")

Summary

Table 8 summarizes the in-vivo codes for learning team roles, goals, decisions, and process. What happened in the learning team? Resources allocated for learning team activities enabled CUTL to offer the CDT workshop three times during the course of one year rather than the usual once a year and branch out from it for the first time. A learning team was formed comprising multiple perspectives (leader, coordinator, student, professor, faculty developer, technology consultant, and librarian). This composition goes beyond the five discrete roles in the original learning team proposal. There are different levels of participation (core implementing group, larger planning group, and periphery members). A distinction is made among the leadership functions of persuasion and implementation. Team members call for specific "bridging" roles (between academics and the CUTL people, the IT people, and the Library). A common prior experience and language of pedagogy based on participation in the CDT workshop represents a further

contextual variable. There is some consensus on membership issues (flexible vs. generic

and the distribution of roles). An emerging concern has to do with creating true diversity

vs. a cohesive team, and a related question on what are the essential roles.

Table 8: In-vivo codes for team roles, goals, decisions & process

Category: Team roles
Multiple perspectives (leader, coordinator, student, professor, faculty developer, technology consultant, librarian)
Different levels of participation (core, active, periphery)
Leadership roles (inspiration and implementation)
Team composition (bridge roles, common experience)
Membership issues (generic vs. psychological considerations; distributed roles)
Diversity (Balance? Gatekeepers of change? Essential roles?)

Category: Goals
Big instructional issue (that needs variety of expertise)
Product goals set by leader (refinement of CDT workshop, better modeling of technology, exploration of information literacy issue)
Process goals (formal collaboration, professional development)
Disagreement around priorities
More clarity and revisiting of goals
Concrete vs. abstract goals (need to balance?)
Other goals brought by team members (contributed or detracted?)

Category: Technology decisions
Improved visual aids (with expert help)
New WebCT environment (disappointment vs. normal progress vs. long-term potential)
Modeling of technology (biggest improvement vs. unnecessary vs. double-edged sword)
Culture of integration (pedagogy leading)
Complexity of adaptation (not discussed)

Category: Pedagogical decisions
Contextualized case examples (integrating technology and pedagogy)
More informal and interactive presentations
Scaffolding learning (reading guides, core vs. supplementary readings)
Issue of disciplinary specific resources (not resolved)

Category: Information literacy decisions
IL moved from abstract issue to set of concrete resources
Definition of IL unresolved (generic strategies vs. concrete examples)
Beginning framework for discussing IL in CDT workshop
Focus and decisions on IL not agreed across entire membership (evolving reality?)

Category: Process
Decision-making body (Iterative and collaborative)
Builds in reflection (multiple layers of thinking and doing)
Learning and exchange (richer picture of what is needed)
Better decisions (more thoughtful and defensible)
Slow and disjointed (lack of direction)
Tension (speeds things up and slows things down, mix of motivations, needs nurturing)
Dialogue (intellectual discussion brought down to the practical)
What makes the learning team unique? (Same as any other academic committee?)

In terms of goals, the original learning team proposal aimed to address big instructional issues. In the CUTL learning team, the leader had in mind both product-oriented goals (refinement of CDT workshop, better modeling of technology, and exploration of information literacy issue) and process goals (collaboration among units and professional development of team members). There is evidence of disagreement around priorities. It is suggested to provide more clarity and to revisit goals regularly. The observation is made that small differences in goals and values may be an inevitable consequence of seeking diversity. Questions remain on the need to balance concrete vs. abstract goals and whether members brought other goals to the learning team process.

In terms of decisions, a WebCT environment now houses a living record of the CDT workshop for access by participants, facilitators, alumni, and researchers. Improved visual aids were developed with expert help. The goal of better modeling technology in the workshop was also achieved. Although there is evidence of an evolution in the use of technology, issues surrounding innovation and the culture and complexity of integration were not discussed.

There is evidence of enhancing the workshop design through contextualized case examples and more informal and interactive teaching strategies. Scaffolding learning through reading guides and differentiating between core and supplementary readings has theoretically resolved the problem of the reading package. The issue of discipline-specific resources was not resolved.

The learning team also generated concrete examples of how IL can be integrated in the course design process. The goal of getting IL on people's radar screen has been accomplished, even though there is still no resolution on the definition, and more

importantly, whether this is a worthy goal for learning teams. A regular theme emerging has to do with what educational change means from different perspectives, and therefore the kind of decisions to be anticipated in a learning team over a given period of time.

Learning teams can be characterized as providing an iterative and collaborative process that builds in reflection aimed at informing practical decisions with intellectual discussions. The decision-making process itself is defined differently from different perspectives. The learning and exchange of ideas appears disjointed and slow to pragmatic people and those implementing decisions. There is a necessary tension to be addressed in engaging multiple perspectives, particularly in terms of structuring and nurturing the experience. A recurring theme has to do with what makes the learning team process unique.

Section II: What are the pros and cons of this team approach?

In answering my second research question: "What are the pros and cons of this team approach", I prompted for what worked in terms of collaboration on the learning team and what did not work, and what people learned. It was pointed out during the colloquium that there is a value judgment inherent in my question that may in conversation have directed responses towards the negative. I was also warned of the difficulty in weighing pros and cons, especially on a continuum around common themes. ("There's an implication that there's an un-collaborative model that is better" [L]. "[T]he colloquium poster] is maybe a naïve representation of the experience, on the other hand,

it has teased out this variation and subtlety" [TL]. "What you're saying really is that the factors involved in team approaches all have pros and cons" [L].)

In light of this commentary, I asked of the data: What has changed in terms of people's awareness and capacity as a result of their learning team experience? I have tried to dig deeper in terms of how members feel about the learning team approach. Again, I have compared what has been said from inside the learning team to my own observations from the periphery and the external consultant's perspective.

Team advantages

A team approach in course design is critical for some members as it provides a useful forum for discussing issues and clarifying possibilities. ("A team approach to me for the kind of thing we're doing is absolutely critical. ... I was part of the August workshop and I found it very useful for all of us to share reflections immediately after the workshop face-to-face but also in the learning team." [FD] "The idea of diversity, complementarity of experiences and approaches, is really what works the best on the learning team right now. ... Coming from so many different areas we're able to see issues under very different lights at the same time, and by integrating all of those we're able to have a more accurate, I would venture, and probably more representative view of how people feel about issues." [S])

There was also appreciation voiced of having multiple perspectives. ["To design something that meets the needs of all types of faculty you have to access all the different types of reactions to make sure you're not turning people off ... there are people on the learning team who are pro technology ... and some who are less enthusiastic ...

perspectives get shared and remind the enthusiasts there are negative, unintended outcomes, not everybody is the same. ... [T]he advantage of the learning team all of a sudden appears to me to be the reflection that removes the doer from the doing and removes the thinker from the thinking and so there's a translation ... an exchange of practice, pragmatic reality with theoretical solutions for the benefit of a particular goal. ... "It's what I call in my dissertation a middle out strategy, it's neither top down or bottom up, it's both; it's an organizational design strategy." [C])

The observation was made of this possibility of an organizational development effect. ("We already had an ongoing relationship between the instructional technology unit and CUTL ... so this was just a natural extension, the interesting piece has been bringing in the libraries into what was an already established relationship. It was a totally new conversation on both sides ... someone in the libraries is now cued ... we can help them design better instruction for students but they're going to lead us to professors who are trying to do things. ... It's like finding like-minded people who have a different discourse so now it's not a question of motivation but finding a way to move towards a common goal, it might end up that we have somebody from the libraries come regularly to CUTL meetings like the [instructional technology] representative, to keep us up-to-date." [TL])

Team constraints

On a more cautionary note, there is evidence of team constraints. The positive effects of multiple perspectives on the CUTL learning team discussions may have been compromised by the size of the team. Attendance at meetings averaged eight people,

reaching as many as thirteen at one meeting. This shows considerable commitment to the process, however, team size was perceived as a problem. Participating by teleconference, the faculty developer (from SFU) was overwhelmed at times by the number of people around the table. ("Eight becomes a free for all." [S] "Three to four people is plenty, if you want to make it a decision-making group smaller is better." [FD] "There were too many different opinions to actually work on a project. ... It is not a feasible resource allocation." [TC] "It was a large investment of time for a sizable number of people. ... A whole bunch of factors meant that everybody didn't contribute equally. ... CUTL was over represented." [L])

There was also a certain frustration expressed with the learning team approach. Although better decisions were possibly made the process is described as slow and disjointed. ("There's a mixture of motivations right now and only one of which is specifically developing the workshop further. I'm not part of the planning of why the meetings are as they are and why the people are being invited as they are." [FD] There was also a hint of a problem of status. ("I've worked in the same kind of teams in the design and development of distance education courses. It is very egalitarian and inclusive, people work as colleagues. I'm not sure we've perfected it in faculty development." [C])

Learning outcomes

In terms of learning outcomes, there is more awareness of what the instructional technology people can offer, as well as the disciplinary perspective. ("[The technology consultant] and I would be much more effective at working with professor x than either

of us alone. The sum of our parts would be much greater than the parts alone. … Just as the sum of me with somebody from CUTL working with a professor with some question of course design or curriculum development is almost certainly more powerful than them alone or me alone." [P] "Me doing it [IL] in the abstract does nothing, the historian doing it in the abstract accomplishes little, when we get together and put these [web] pages together we can accomplish a lot. It's the synergy of the [professor] and the Librarian that is going to make this little aspect of IL work." [L])

The team leader and coordinator both feel they learned more about how to integrate technology and IL. ("We've developed a more personal but joint understanding of how technology can be integrated, so we're able to make the linkages more easily and see the opportunities for modeling." [TL] "We taught each other a lot about technology, successful and unsuccessful uses. … Just the fact that [the WebCT environment] is there helps people realize that we need to go beyond and integrate technology more seriously. … We all learned a lot about information literacy even though we haven't been able to put it into a picture yet. … As a group we learned the implications of planning decisions on the CDT workshop, a systemic view. … The learning team reminds us – and the language is somehow important – it reminds us we should be modeling an approach." [C])

There is also evidence of future transfer of the learning team approach. ("Supposing I was approached, the Science Project was approached, by a professor who said we have a project that we would like you to help facilitate which has to do with, say, the redesign of our first-year laboratories because they don't seem to be a good learning experience for our students. … What I might do then is assemble a team to work with representatives of the department … so in that context there might be somebody from

CUTL ... and almost certainly these days with that kind of project there would be a tie in with technology and so somebody from [the instructional technology unit] would be entirely appropriate. So you pull together a group like that to respond to what you see as the needs of the project. ... Who would coordinate that, who would pull that together? ... It would depend on the kind of dynamic that existed; it could well be the person from the department." [P])

People on the learning team are viewed as potentially important consultants to projects professors engage in after the CDT workshop when working on their formal action plans. ("One of the professors I'm working with now, we have a learning team around his project. We have someone who is a technical expert, we have the professor himself, and I'm there and one of the research assistants. We're all working together in developing it so maybe that's an offshoot of the main learning team." [FD])

An exchange in the learning team colloquium (reproduced and analyzed in Table 9) led to a joint understanding on what people learned. ("I'm looking at these points and they seem to be illustrations of very different kinds of learning activities. One relates to personal skills that a group of people has. Others relate to the necessity to tie things to the particular, and the third one is the necessity of looking at the system. They are different kinds of learning. All of them have different axis." [L] "It's making me think that in your conclusions you may want to think not just about communities-of-practice but models or theories of learning and our understanding of the social construction of knowledge. There are positives and negatives that one experiences in that process, so that would be a way of stepping back." [TL]) As evident, the skill of requesting justification sets the scene for an exchange of views, and the skill of critique brings different views together.

Table 9:

Analysis Of Interaction From Learning Team Colloquium (Transcript 9)

(Types of transactive statements from Berkowitz & Gibbs, 1983; adapted by Teasley, 1997)

Turn	Participant	Statement	Type	Transactive mode
252	Researcher:	Is there any more on what people learned?	Feedback request	Do you understand or agree with my position?
253	Coordinator:	What does the last one mean, an individual understanding as well as a group understanding?	Justification request	Why do you say that?
254	Researcher:	Well the elaboration on that is that people were on the same page. As a consequence of the learning team other decisions were made because of something that was jointly understood within the team.	Extension	Here is a further thought or elaboration.
255	Librarian:	More personal, more nuanced, more depth.	Paraphrase	I can understand and paraphrase your position or reasoning.
256	Researcher:	I think the idea is that there was both a personal learning	Integration	We can combine our positions into a common view.
257	Coordinator:	individual integration of concepts	Completion	I can complete or continue your unfinished reasoning.
258	Researcher:	and other people being cued similarly.	Clarification	No, what I am trying to say is the following.
259	Science Professor:	And the word model means what here?	Justification request	Why do you say that?
260	Technology Consultant:	It's a verb. The same as under decisions; more technology modeled, and one of the goals.	Extension	Here is a further thought or elaboration.
261	Researcher:	Modeling technology use in the sense of good practice	Clarification	No, what I am trying to say is the following.
262	Technology Consultant:	demonstration of appropriate use.	Extension	Here is further thought or elaboration.
263	Science Professor:	No, I didn't see that. Oh you mean in the context of the workshop, in the sense of modeling good pedagogy?	Paraphrase	I can understand and paraphrase your position or reasoning.

Table 9 Continued:

Analysis Of Interaction From Learning Team Colloquium (Transcript 9)

Turn	Participant	Statement	Type	Transactive mode
264	Researcher:	It is the extension, what came out of the team helped to inform more opportunities for modeling.	*Extension*	Here is further thought or elaboration.
265	Science Professor:	I missed the point entirely. I was thinking of modeling in terms of representing in some abstract way.	*Juxtaposition*	Your position is X, and my position is Y.
266	Researcher:	There's a real problem with that word.	*Refinement*	I can elaborate or qualify my position to defend against your critique.
267	Librarian:	I'm looking at these four points and they seem to be illustrations of very different kinds of learning activities. The first one relates to personal skills that a group of people has, the second one is the necessity to tie things to the particular, and the third one is the necessity of looking at the system. They are different kinds of learning. All four of them are very different axis.	*Critique*	Your reasoning misses an important distinction, or involves a questionable assumption.
268	Researcher:	You're right.	*Extension*	Here is a further thought or elaboration.

Summary

Table 10 summarizes the in-vivo codes for team advantages, disadvantages, and learning outcomes. What are the pros and cons of team this approach? Learning teams provide an opportunity for sharing reflections and the exchange of practice. This synergy is perceived as positive in that it slows down the technology integration process, making decisions more thoughtful and defensible. Involving people who would not normally be part of the course design process also adds an interesting organizational development aspect. However, people responsible for implementation feel frustrated at the time it takes to make decisions. Feasibility of the learning team approach is further questioned in relation to team size and the investment of time. A mixture of motivations is evident as well as a problem of status. These constraints may have huge consequences on implementation of the learning team strategy.

Table 10: In-vivo codes for advantages, constraints, and outcomes

Category: Team advantages
Sharing of reflections (more representative of how people feel about issues)
Exchange of practice (pragmatic reality and theoretical solutions)
Synergy (organizational development aspect)
Integration of technology and information literacy slower, thoughtful, more defensible
Somebody in the Libraries is now cued

Category: Team constraints
Discussion compromised by team size
Labor intensive (large investment of time for sizeable number of people)
Mixture of motivations (problem of status)

Category: Learning outcomes
More aware of technology expertise and information literacy issues
More personal but joint understanding of how to model technology
More aware of implications of instructional decisions (systemic view of planning process)
Different kinds of learning outcomes (personal, group, system)
What kind of learning outcomes should be expected from a university course design project?

In terms of learning outcomes, there is evidence that people have increased their awareness about technology and information literacy issues. There is a more personal and joint understanding of the modeling process and a systemic view of the planning process. Different kinds of learning are evident – personal, group, system. The question emerged of what kind of learning outcomes should be expected from a university course design project.

Section III: What triggers (or not) real problem solving?

When asking my third research question, I prompted for what pushes people to try and solve the big issues, to really go beyond what they are comfortable doing and do something more innovative. I was looking for insights on what moves people to think deeply and to change their habitual modes of thinking. I was not always clear or consistent with this question, so people tended to answer in a general sense more than in relation to their learning team experience. I therefore take a different approach in this section. Rather than associating what people have said with concepts, I cite them one at a time to give a sense of individual variations in perspective. I dig deeper in terms of how people feel about their "learning" team experience and the larger transfer possibilities of this approach. Perspectives are sequenced from observations on the triggers and constraints to problem solving in the individual, the team, and the system.

Problem solving triggers

From the position of an information literacy advocate, it takes a certain individual commitment to engage in this kind of activity. ("You have to be altruistic enough to give

up a little bit – saving some water to prime the pump the next time around – a little bit of time for the next generation. As you look around society nowadays you see precious little interest in future generations and as information expands there is even less time to devote to the next generation, which is why this [IL] has to get in at the beginning of every subject so that it can be part of the ongoing work of the discipline more efficiently. Altruism is something that drives people to this program. I think they would not be in this program if they did not want to give themselves to their students more efficiently and better, so the people at the workshop are pre-selected to be susceptible to this kind of thing." [L])

From the perspective of a university administrator, triggering real problem solving is about valuing the learning team model but also having the right set of skills. ("One way of using this model in another context is a requirement to be absolutely explicit about the value of the model or approach and at the same time have clear objectives … more than understandable, accepted. I'm not sure in our learning team whether everybody who was involved bought the values or the objectives, some of each, but the whole package I don't think so… [It] needs a whole lot of skills some of which are interpersonal and others are skills related to articulating objectives and processes." [C])

From an instructional design perspective, real problem solving on a course design project requires redesign thinking. ("It is the difference between restructuring and reengineering … restructuring means you move people around in the hierarchy … reengineering means you go to ground zero and you rebuild. That's not what we've done … what we did was an enhancement, how to integrate better. Redesign means you would

sit down and look at the objectives and look at the whole sequence of everything that's going on, the format, how it's being integrated, everything from start to finish, we didn't do any of that ... that's probably the thing that they're struggling with, why should we redesign ... everything is going well, why throw a wrench in the design process." [TC])

From a faculty development perspective, the way to deepen conversations is to ground discussions on learning-centered pedagogy in the disciplines. ("I think it [the learning team] can be a decision-making model in terms of collecting information and discussing viewpoints and discussing perspectives and then making decisions about what will actually be put in place. I think that developing the WebCT resource and so on is really interesting. The level of discussion I really like to talk about is how people come to understand things, this is people in the workshop ... I find the disciplinary perspective interesting, what does it mean for an academic's discipline. It's really necessary to always pull it back to that. Generic faculty development has little utility." [FD])

From a student perspective, deepening conversations through the research process is an interesting way of doing continuous faculty development. ("Collaborative research among faculty members and researchers in the area of university teaching and learning, where they become collaborators in the research process. Then, if at times you need someone from the libraries or you need a student point of view you can go get it, but the core really is the faculty themselves with the [educational] researcher guiding the process because they are out of their area of research." [S])

From the leader's perspective, the larger potential of the learning team lies in crossing institutional boundaries. ("I've talked to faculty developers about it [the learning team] and they find the idea really intriguing. I think it's because it gets to organizational

development at the same time and I think that's critical. We know from the research that what we're about is trying to change the whole environment for students, because it's not about a particular course or a particular program that creates their experience of learning, it's the whole environment, including all the resources in the University. [It's] about pulling together not just different expertise but expertise across units. ... What it's doing in effect is creating a formal mechanism for what happens in smoking circles – it brings together people from units who normally would never talk to each other." [TL])

The science professor feels that above all success of the learning team approach is going to take leadership at the department level. ("Somebody in the group, almost certainly someone within the unit or department, is going to have to say, OK, I see we are going to have to do this which is very different. And they have to be able to foresee and overcome the difficulties of convincing the rest of the players in the department, the implementation process, probably the finding of funds to do it, and all of those kinds of things. There has to be an individual in the mix who's ready to do that. Not only ready to take the challenge but who will be allowed to, in the sense of the department Chair saying, OK Jo, go for it. So it's almost political." [P])

Problem solving constraints

The coordinator observes some evidence of resistance to change in relation to the CDT workshop design beyond respecting its theoretical integrity. ("[Another member of CUTL not on the learning team] wanted to change the schedule so that we don't run five days in a week. The proposal is that we do two days in one week and two days the following week and they would be separated, so that we do Monday and Thursday and

use WebCT for online discussion … She wanted to do this in December but there was reluctance, resistance even, [the other member's] perspective is quite different. She wants to do it this way because she feels it will be better but also because she wants to be stimulated by the process." [C])

The technology consultant questions why the big issue of scalability was not addressed in the learning team. ("The workshop is successful because it's a self-selected group, they're not tackling the professors who don't want to be there … Scalability is the real problem and that hasn't been tackled at all … Ideally what you want is the entire university, you want every professor in the university to do this workshop, and even better you want every new professor who is ever hired to do this right away, now that's a contentious issue … The format has shifted a bit in the workshop but it's still the same workshop it was 15 years ago. You know it's five days straight, which is wonderful, it's a fantastic transformation that can happen with instructors, but it's a huge amount of time and a huge amount of effort for those five days. I think some of the big issues that it would be interesting to address haven't been addressed … I think the learning team is sort of a working group that hasn't quite figured out its mandate." [TC])

The graduate student feels that discussions in the workshop and in the learning team would be more real if they were grounded in interdisciplinary inquiry. ("I don't think we are doing interdisciplinary stuff … I'd say we would be disciplinary if we talked about the dimensions of the disciplines that people need to look at, and if we talked about how some disciplines are more pure, others are applied, and others are soft, and how that may affect the decision-making process … If you start from there you can see inevitably that the epistemological structure of the field affects the learning outcome, will affect the

strategies you use and will affect the assessment, yet we don't teach it that way ... I think

that's where we need to start looking, what is specific to certain categories of disciplines

that makes people choose certain strategies over others. And going the disciplinary route

I think it will be much easier for professors to learn about teaching and learning. It will be

much easier to promote the scholarship of teaching because otherwise there's only a few

people who love teaching who will do it and the others don't see it as valuable." [S])

The faculty developer (from SFU) wanted to keep her research agenda in there.

("Right now we're dealing with this issue of the intersection of the research and the

learning team and the actual development of the workshop, it's on the agenda but keeps

getting pushed off for more urgent things." [FD])

Referring back to the organizational changes that took place at McGill, the

science professor observes an inevitable paradox in terms of being innovative. ("People

[were] so uncertain as to their own futures and to the future of the unit itself, it's like the

instinct is to hang onto what you have, so the incentives to think outside the box in that

situation are paradoxical. You're almost contradicting yourself at times. ... It's that kind

of stuff that has inhibited I think a fresh look." [P])

Summary

Table 11 summarizes in-vivo codes for problem solving triggers and constraints.

What triggers (or not) real problem solving in a learning team? From an individual

perspective, deep thinking involves altruism (individual commitment by participants),

valuing the learning team model, and having the right set of skills. At the team level, one

way to deepen conversations is to ground discussions in learning-centered pedagogy in

the disciplines, and better still within the context of a collaborative research project. A larger potential of the learning team lies in the nature of the team's focus and crossing institutional boundaries. An essential trigger may also be leadership at the department level. In terms of constraints on thinking outside the box, there is some evidence of resistance to significant technology change, lack of design thinking and interdisciplinary inquiry, as well as issues of leadership and administrative pressures in the context.

Table 11: In-vivo codes for problem solving triggers & constraints

Category: Problem solving triggers
Altruism (individual commitment)
Valuing the learning team model and skills (articulating objectives and processes)
Re-design thinking (going to ground zero and rebuilding)
Ground discussions n the disciplines
Nature of team's focus (crossing institutional boundaries)
Leadership at the department level (persuasion)
Category: Problem solving constraints
Resistance to change (significant technology integration)
CUTL mandate (scalability of the CDT workshop is the real problem)
Lack of interdisciplinary inquiry (scholarship of teaching and learning)
Leadership issue (important issues pushed off the agenda for more urgent things)
Lack of administrative support (uncertainties surrounding future of CUTL)

Section IV: What factors mediate implementation of this new initiative?

In answering my fourth and final research question, I focus on implementation imperatives. Returning to my previous style, I associate what people have said with concepts, issues and questions already raised and compare these with my own observations and the external consultant's perspective. I look at the learning team concept as a whole and pull responses together towards a set of guidelines for the future.

As explained in my introduction, there are important contextual influences at McGill to be considered when implementing learning teams. The three units participating in the learning team project report to the same senior administrator who believes in a collaborative approach in support of student learning. There was a shared vision of learning teams negotiated in conversation with him and other senior administrators. Additional resources enabled the hiring of a full-time coordinator position whose administrative role included overseeing the learning team project. The project's focus – the CDT workshop – was the product of a rich history in faculty development research and development. The primary topic of discussions came out of a major design challenge that CUTL had been struggling with for some time that is to better model the effective use of technology. Pressures from an external review of CUTL further influenced what happened.

There were various comments made by participants on the research context. These have to do with an administrative impetus for collaboration, group membership, the coordinator position, and a research agenda.

Core members – that is the leader, coordinator, and graduate student who were responsible for implementing decisions – talked in different ways about the collaboration piece. The leader's original vision was for the learning team to be a formal mechanism for establishing a three-way relationship among the units of faculty development, instructional technology, and the libraries: "a triumvirate at the university level of professor and student resources for learning." Based on her policy-based research and previous experience, the coordinator is worried that the learning team idea "could look like a tool of the administration" and "this is a dangerous place to go in an academic

environment." From the student's perspective, the learning team had a hidden agenda for survival of the TLC. It was also perceived as a political exercise from the disciplinary perspective: "an attempt for participants to explore how their pieces of the university can work together more effectively."

The three experts on the learning team did not express any particular feelings towards this theme. It was not clear from my interview if the faculty developer participating from outside the university appreciated the internal intrigue. A concern voiced during the colloquium was that the administrative impetus for change might have pushed people to collaborate more than they would have otherwise. The leader pointed out that her original proposal was written two years prior to the learning team meetings, so this adds an important historical context.

There are implementation imperatives to do with administrative support, in particular negotiation and recognition. ("We have to think carefully about using people's time well ... it needs negotiating, it has resource implications." [TL] "Recognition that working on your course takes time, not just three hours spent in the classroom each week. That's actually what it ought to mean when the University says we value this activity called teaching." [P])

The nature of the learning team's focus and leadership were again raised as important factors in implementation. It is suggested to provide more guidance to participants. ("I would suggest that people are asked to prepare contributions on a certain topic. If a topic is going to be addressed, and people are also asked to envisage ways of implementing topics that are discussed ... and doing a brainstorming at the beginning to put things out in the open. Do our regular discussion in relation to that, and then end by

consolidating, asking: How do you think this is going to be affecting you in your practice? Having people frame it in terms of what they are going to do with this, sort of guiding reflection and implementation of what may come out of this." [S])

It is further recommended to build in a conceptual framework of course design. ("For me, the framework that I have understood as a result of being involved with the CUTL people is a very powerful one, so in the absence of anything else it is probably important to establish some process that is consistent with that framework. So in a context where what is happening is one is trying to redesign or redevelop a course or a curriculum or program then that framework is an important backdrop, unless there is something else that can take its place. I wouldn't want to rule that out because after all [the CUTL] framework is not the raison d'être." [P])

As a further recommendation, it is suggested to rethink the CUTL workshop design associated with the learning team initiative. ("The majority of the clientele coming to the workshop now are new professors ... people either have no experience whatsoever in teaching or no knowledge or just a little bit ... in their case it's more of a learning experience with a little bit of conceptual change [that is needed] really getting the ball rolling in terms of acquiring basic stuff and then moving on from there. So the workshop itself, the idea of a week long workshop that is very intense and transformational, I wonder if it's what they need now ... What they need instead is a constructive endeavor where they take something for one day and then work on it for the rest of the month, follow-up with another session, and have it on a more continuous basis where they can link their work with their learning a lot more." [S])

The question is also raised as to whether the learning team can realistically be an extension activity of the CDT workshop. ("Not everybody is going to want to engage in a learning team in a formal way. ... The idea is not to let the momentum die. Keep moving with it and keep cultivating people as a group. ... I think the learning team can certainly deal with this but ... if they're going to do that they would have to be focused on that." [FD])

The external consultant questions whether the learning team is for everyone. ("The orientation of this learning team approach of course is not selection, it's development, and it's improvement. I guess by asking about administrative involvement and your comment about altruism, is that in some ways rather than these things always being complementary they may in fact be conflicting. A Faculty, for example, who prides itself on selecting faculty because they are good teachers, may therefore place less value on development. And the question really is, is that the case?")

Finally, he challenges us to think about who the learning team service is targeting. ("The three roles that a faculty member has is to teach, i.e., to transmit knowledge, to research to generate knowledge, and to waste time doing administration ... so this [the learning team model] appeals to that sense of responsibility towards teaching in a philosophical way, and partly in an instrumental way because I think the promise is that if you engage in this process your teaching will improve. But should we encourage all faculty to improve even if they are already good? Who needs the learning team service? How do we identify these people? Should it be voluntary? Should it be by conscription? Who should we target?")

Summary

Table 12 summarizes in-vivo codes for implementation imperatives. What are the

factors mediating implementation of this new faculty development initiative? The

learning team strategy will need negotiation and recognition from the administration.

There needs to be a big instructional issue requiring a variety of expertise, somebody who

is the leader and inspiration and somebody who gets things done, and intermediaries from

the disciplines (not just for credibility but to build bridges), the instructional technology

unit, and the library. There also needs to be a conceptual framework and, possibly, a

rethinking of the workshop design associated with the learning team initiative. People

need to be cultivated as a group. The question is raised whether the learning team is for

everyone.

Table 12: In-vivo codes for implementation imperatives

Category: Implementation imperatives
Administrative support (negotiation and recognition)
Big instructional issue (that requires variety in expertise)
Leadership (for inspiration and to gets things done; guided participation)
Intermediaries to build bridges (from the disciplines, technology interface and library icon)
Conceptual framework (CUTL model and formative evaluation process)
Cultivate people as a group (momentum)
Is the learning team for everyone?

In the final analysis, the CUTL learning team did preserve the integrity of the

CDT workshop design while moving forward and integrating powerful new tools and

ideas. What happened prior to meetings, in the meetings, and as a result of meetings

demonstrates their success. What more could have been done? What elements do I judge

as critical to success and therefore would recommend in other settings? In the next

chapter, I answer these questions and consider not only what is transferable in my

findings to another context but also what is reusable in other ways beyond the original learning team concept.

Epilogue

Since completing data collection, there have been organizational changes at McGill that have further influenced my interpretation of findings. The CUTL has been restructured and renamed Teaching and Learning Services. The dimension of faculty development that is research driven has been withdrawn in favor of a service mandate. Academics jointly appointed to CUTL have returned full-time to their Department. It is unsure what their involvement in the CDT workshop will be in the future. The CDT workshop may no longer be the research laboratory it was in the past. A new director has been hired in a staff position. She is a previous member of the CUTL academic team. The Coordinator has changed positions to be the Associate Director of Instructional Multimedia Services. Three new faculty development associates have been hired in staff positions. Senior administrators are still investing in the integration of faculty services. The faculty development unit has been moved to a new location in close proximity to the libraries. The learning team strategy is taking on a life of its own.

Chapter 5

Discussion

The way forward is paradoxically to look not ahead, but to look around.
Brown & Duguid (2000)

This research on learning teams documents a period of externalization in a community of practice when members subjected their beliefs and activities to critique and reflection. They broke out of their own box, enabling them to learn new things and experience a new form of collaborative practice. In terms of visible impact, the CDT workshop design is enhanced. A WebCT environment now houses a dynamic record of the workshop. Workshop facilitators have a set of improved visual aids. There is evidence of improvement: better modeling of technology, contextualized case examples, and a beginning framework for discussing information literacy in the workshop. An unexpected outcome is that the libraries produced a handbook on how to integrate information literacy skills in the course design process. Individual team members have expressed a deepened awareness and shared commitment to interdisciplinary collaboration. The theoretical integrity of the workshop remains in tact. The question is, could this have happened without investment in a learning team?

In this last chapter, I answer the question: "What makes the learning team strategy necessary?" I propose a conceptual model of learning teams that identifies points of integration between my findings and the literature. I speculate how the strategy might be transformed in other contexts, critique the research methodology used, propose a redesign

of the study, and conclude with reflections on my experience as a novice researcher and contributions to knowledge.

A conceptual model of learning teams

As mentioned in the methodology section, grounded theory analysis follows a number of stages to distill findings down to their essence. First, in-vivo codes were selected – those few sentences that each participant said that I feel are so important that without these quotes the meaning of learning teams would be changed. These quotes were then transformed into a set of categories and emerging themes, issues and questions. The next level of analysis involved integrating ideas and explanations from the literature. A conceptual model of learning teams emerged with a core concept captured in the phrase "a systematic way of talking to each other" and seven related concepts: context sensitivity, mutual goals, diversity, design framework, dialogue, collective self-reflection, and momentum. Table 13 provides a visual display of these six levels of analysis. My goal in this discussion is to forge a link between my conceptualization of the learning team strategy, my research findings, and future applications.

A systematic way of talking to each other

In grounded theory the core concept is a concern felt by participants but not necessarily voiced. I tried many phrases on for size but none fit as well as "a systematic way of talking to each other." I have borrowed this term from a model of interdisciplinary learning and performance (Segalowitz, 2005) that identifies this concept as one of eight conditions in fostering professional awareness of a system as a whole in the context of interdisciplinary research. I have transformed it for course design and teaching.

Table 13: Data Display for Six Levels of Analysis

	Context Sensitivity	Mutual Goals	Diversity	Design Framework	Dialogue	Collective Self-reflection	Momentum
6. Core concept	"A systematic way of talking to each other"						
5. Sub-concepts	Context Sensitivity	Mutual Goals	Diversity	Design Framework	Dialogue	Collective Self-reflection	Momentum
4. Ideas and explanations from the literature	Learning orientation Recognition & rewards Shared resources Collective responsibility Departmental sponsorship Importance of context Holistic approach to faculty development	Individual & institutional needs Authentic projects aligned with academic priorities Shared problem definition / dream Sense of identity Complex challenges Innovation Goals in three CoP domains	Intentional about team composition Commitment to diversity Personal qualities Co-equal relationships Distributed roles Different levels of participation Coordinator & bridge roles	Formative evaluation Conceptual tools Disciplinary sensitivity Technology support and plan Product outcome Developmental process (research-share-perform) Course design framework	Spirit of inquiry Method of deliberation Iterative dialogue Social dimension of learning (mutual respect and trust) Critical role of leadership Domino effect of insights	Public reflection/ performance Interdisciplinary collaboration as subject of learning Feedback (double-loop learning) Reflection on team process	Scholarship of teaching Customization Flexible guidelines Sharing lessons learned Accountability (evidence of impact on student learning outcomes) Digital database of case examples
3. Emerging themes, issues, questions	Administrative support Leadership FacDev mandate Labor intensive Is the learning team for everyone?	Nature of team's focus – big instructional issue Goals set by the leader vs. shared Balance concrete vs. abstract goals Other goals?	Membership: - Diversity - Flexible vs. fixed - Distributed roles - Team size - Personal traits Participation levels Mix of motivations Essential roles?	Design framework: - Decision-making - Iterative - Collaborative - Formative - CUTL model Enhancement vs. rebuilding What makes the process unique?	Exchange of practice & ideas Dialogue Tension Integration slower Leadership skills Problem of status?	Builds in reflection Different kinds of learning outcomes Guidance vs. personal responsibility What outcomes should we expect?	Learning and exchange Synergy Cultivate people as a group - momentum Is this the best we can do?
2. Categories	Contextual influences	Goals	Team roles	Process	Decisions: - Technology - Pedagogy - Information literacy	Team advantages & constraints Learning outcomes Problem-solving triggers & constraints	Implementation imperatives
1. In-vivo Codes	Based on interviews with learning team members, observations, artifacts, & internal & external credibility checks (Summarized in Tables 8, 10, 11 & 12)						

The learning team vision was for the triumvirate of faculty services (teaching development, instructional technology, and the libraries) to work together more effectively in support of student learning. As already documented, from the advocate's perspective: "It's about pulling together not just different expertise but expertise across units ... it brings together people from units who normally would never talk to each other." [TL] Team members from outside of faculty development have voiced a similar concern for collaboration: "There has to be an intermediary from the disciplines, not just for credibility but to build bridges." [P] "You need an interface ... people who really understand the technology deeply but at the same time really understand the pedagogy." [TC] "In much the same way [the technology consultant] is necessary but in many ways peripheral, I think that information literacy is necessary but in many ways peripheral. [A representative from the Libraries] should be part of it always as an icon on the screen." [L] Why this collective call for interaction?

As we know, learning teams are designed to help professors handle the increased complexity of university teaching. Traditionally, this job has fallen under the mandate of people working in faculty development, defined as "specialized staff working on the boundaries between present practice and best practice; between the current orthodoxy and emergent theory" (Candy, 1996, p. 17). These boundaries are expanding to recognize that faculty development activities are embedded not only in the culture of an institution but also in the context of day-to-day work environments. An institution's culture is influenced among other things by powerful trends in society. The work context is similarly influenced by powerful disciplinary differences. The role of faculty development is thus not to impose a single vision of the future, "since there may well be

differences across the university as to images of the future held by different disciplinary areas, it is necessary to create a forum where cross-disciplinary discussion and dialogue are possible" (p. 12). A learning team is one such forum.

When team members expressed a desire to collaborate, I do not believe they made a distinction between the CDT workshop and the learning team. The purpose of my research however is to make a distinction. As voiced by the team leader when giving feedback on a draft of this dissertation, the objective of the learning team was to avoid the workshop "fossilizing" by changing and updating it while maintaining the integrity of the original design. I associate this objective with the notion of lifelong professional learning, an expansion of faculty development proposed by Candy (1996). If we want professors to become consciously aware of their actions then we have to become consciously aware of the tacit rules and implicit assumptions that guide our own actions. To do so requires stepping outside of our habitual ways of decision-making and getting to know and trust people well enough to examine and adjust our practices.

We cannot hope to promote change in others if we are not seen as engaging in learning ourselves, and this extends to the university as a whole. Situated, workplace, informal learning – whatever we call it – needs structuring for the unique context of academia. Understanding what a systematic way of talking to each other means in relation to the learning team strategy is a contribution towards this goal. I will now elaborate on this core concept one sub-concept at a time.

Context sensitivity

The learning team vision took time developing in conversation with senior administrators. Resources were made available to compensate for time spent in team

activities. The team leader hand picked members and negotiated time release for those not working in her unit. Recognition is also important. The science professor, who has many years of experience working at McGill, believes faculty are more concerned about recognition than compensation: "Recognition that working on your course takes time, not just three hours spent in the classroom each week. That's actually what it ought to mean when the University says we value this activity called teaching." [P] He also believes there would need to be an individual at the department level willing (and able) to champion this new approach. He further admits that depending on who is involved in the project at the department level they may need to work with the CUTL director and not a faculty associate. There is an established hierarchy that needs to be respected. Thus understanding the learning team context is paramount, that is context in Schwab's (1969) sense of this university, at this moment in time, in this department, with these particular people.

In a holistic approach to faculty and staff development at the University of Sydney in Australia, Brew and Boud (1996) emphasize the importance of negotiation and integrating personal, professional, and institutional perspectives in workplace learning. "[N]egotiation at all levels has to take place. This is the only way to ensure that activities are grounded in, and take account of, the needs and interests of individuals, faculties, departments, work groups and the institution as a whole." (p. 19) They further recommend negotiating learning agreements between professors and department chairs that emphasize specific learning outcomes and teaching portfolio development that documents evidence of achievement.

Professors at the University of Calgary, who engaged in a substantial curriculum redesign project directed by a centrally supported and mandated strategic plan, similarly advocate the collection of ongoing documentation because information is power. The goal of this project was to develop a learning-centered, student-needs-sensitive curriculum. Learning how to collaborate was part of the vision. They found it was not easy to convince others to collaborate because for many professors this represented a shift to a consumer-oriented approach to curriculum planning or simply change for change sake. Based on their experience, they propose a set of rules for radicals. The first rule is for the initiating change agent(s) to start with serious self-reflection. The questions to ask ourselves are: "Do I believe in it? ... Do I have the personal credibility and respect to be persuasive with my colleagues? ... Can I sustain my motivation in the face of seemingly unrelenting critique and cynicism that can at times become personal?" (Cleveland-Innes, Emes & Ellard, 2001, p. 29). I have to answer no to the last two questions; but I am working on it!

Another rule is to work with the power structure. This involves "creating an environment in which critical linkages can be built within the institution between central support and decentralized action" (p. 25). They further recommend recruiting and involving administrators and rewarding champions of the change effort who engage actively in the process. In this case, faculty were offered fellowships "a one-time grant used for teaching release, research or travel support, or additional salary" (p. 29). Acknowledging the time and effort expended benchmarks the importance of working on course design.

When considering transfer to another setting the learning team strategy needs what I call context sensitivity. As part of the vision creation process, senior administrators need to be lobbied for recognition of time spent in collaborative course design. Department chairs need to be involved in targeting the right people to engage in major course design projects. Faculty and staff also need to be convinced of the value of collaboration. Documenting and recognizing achievements of learning team activities is highly recommended for this purpose. Having a campus vision of the future will also make it easier to engage people in a collaborative process.

Mutual goals

The primary goal of the CDT learning team was to preserve the theoretical integrity of the CDT workshop while exploring the different choices and possibilities instructional technology can afford. A secondary goal was to consider how information literacy might be addressed in the course design process. Other more implicit goals involved formal collaboration among units and the professional development of members. The rationale behind these goals was clear to the team leader: "What we're about is trying to change the whole environment for students, because it's not about a particular course or a particular program that creates their experience of learning, it's the whole environment, including all the resources in the University." [TL] I believe this larger vision of meeting the challenge of interdisciplinary collaboration was lost in the production process.

As evident, disagreement on priorities emerged during my interviews. To engage in a yearlong process with one team member believing that the technology and information literacy goals were "side issues", is further evidence of disciplinary

differences. He is right though; exploring a new collaborative way of working together was the main learning goal. This learning goal did not only get missed from my poster presented at the learning team colloquium but also from the team's agenda!

There was also criticism on the lack of problem solving around larger issues. The graduate student, whose Ph.D. research focuses on disciplinary differences in the scholarship of teaching, feels that discussion in the workshop would be more real if there was more of a disciplinary focus. From a pragmatic perspective, the technology consultant is concerned with scalability and targeting more professors. The coordinator also observed that not all team members bought into the values and objectives of the learning team package. A diverse team will by definition have disagreements around priorities. The question is whether to address these disagreements openly or not. The purpose of seeking diversity is not only to engage differences in perspectives but also to integrate these differences.

A first principle of successful communities of practice (CoPs) is to design for evolution. This means building on existing networks and not imposing structure. "Alive" communities reflect on and redesign themselves naturally. As originally conceived, the learning team strategy is not designed for evolution. Limited time was made available to achieve specific goals set by the leader. Team members were invited to participate based on their expertise in relation to these goals and a common interest in pedagogy. The questions is, how can we be efficient in our use of people's time and at the same time involve them in designing the strategy?

In a study on what makes effective groups, Warren Bennis, a distinguished professor and author on leadership, identifies a set of common principles. First among

these is that "at the heart of every great group is a shared dream" (1997, p. 2). Great groups believe they can change the world. They are on a quest. It is this belief that brings cohesion and energy to their work. Cleveland-Innes et al., (2001) also refer to specific qualities of change agents. To generate enthusiasm (and momentum) for a major change effort, champions need a reputation for being enthusiastic about causes and receptive to new ideas. In other words, with the right people on board disagreements around priorities may not be an issue.

When talking of people being driven to the program by altruism – an attitude or behavior marked by unselfish concern for the benefit of others – the librarian was referring to the CDT workshop. He could just as easily have been referring to the learning team. I have associated this idealistic sense of commitment to improving teaching and learning to a concept in the literature called a "learning premise." Conceived by Vaill, a learning premise means to be "continually confronted with newness – new problems, ideas, techniques, concepts; new gestalts; new possibilities and new limits; new awareness and understandings of oneself" (1997, p. 4, cited in Amey and Brown, 2005, p. 33). When overly skeptical about what constitutes newness, we become resistant to change. A learning premise means being open to reinterpreting things, to letting go of former understandings and techniques.

Cultivating support for new goals will also depend on the nature of team goals. In the case of the learning team, modeling better use of technology was not every team member's dream. It will not always be easy to sell the dream of a decentralized initiative supported and coordinated by a centralized vision to faculty members, nor to the administration if it is grand but expensive. Cleveland-Innes et al., (2001) highlight other

strong forces against collaborative design in an academic context: independent thought, academic freedom, and alliance to the disciplines. A redesign team needs to ask: "how [we] do things differently (not how [we] can do more)?" (p. 28)

One way of structuring learning team goals is to assess them for addressing the three domains of communities-of-practice: community building, tool building, and knowledge building. These domains are represented visually in Figure 7 below. It is further recommended to revisit goals regularly for clarification and re-negotiation.

In terms of future applications, at my own university a current academic priority is student retention. A working group has been formed to address this priority comprising representatives from the administration, student services, and faculty development. With the support of the dean and department chairs, particular courses and faculty are being targeted for intervention. The goals of such an intervention will need to be negotiated beyond a simple quantitative retention goal. We have an opportunity to dream together and learn together during this collaborative venture. The group is already excited about having faculty participate in a retention-focused course design workshop. A structured process for following-up on the workshop is also being proposed that includes a learning team component. I can imagine teams comprising several faculty members and several design projects all beginning and ending on the same iterative schedule. This would have the added benefit of making the learning team strategy more efficient.

Figure 7: The Three Domains of Communities-of-Practice
(Based on Wenger, McDermott & Snyder, 2001)
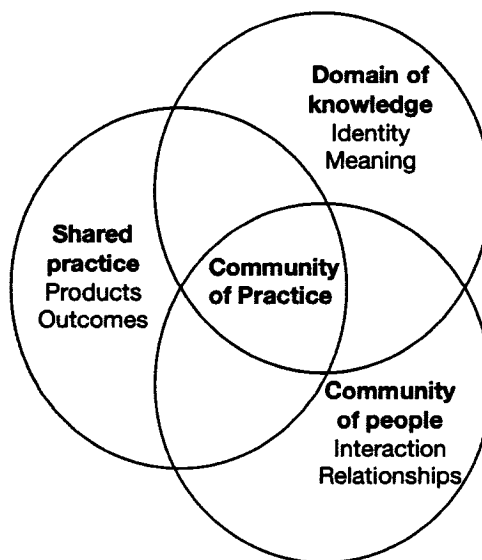
Regardless of the particular context, the learning team strategy will need to rally around mutual goals that embrace basic values inherent in the mission of a university and at the same time address practical teaching and learning challenges, each informing the other. It is what Cindy Ives (2002) calls a "middle out" strategy. No one mandate, or unit, or person can drive change effectively. It will take a collaborative effort involving people meeting at a conceptual space between individual and institutional needs.

Diversity

Learning teams were originally conceived as having multiple perspectives: a faculty developer with pedagogical expertise; a professor(s) who is the focus of the design project; a student(s) from the relevant discipline to provide feedback; a technology consultant to coordinate development of materials; and a librarian or library technician to help define appropriate resources (McAlpine & Saroyan, 2004). A role not defined is that

of the coordinator. Participants agree that the coordinator role is key and that leadership should be distributed across the team.

During the learning team colloquium, the librarian who is a senior faculty member at McGill but new to faculty development, observed: "The leader and coordinator are one kind of role, expertise one kind of role, and perspectives another kind of role. ... The disciplinary perspective and the student perspective always draw it back to the concrete and I think that is their function. ... It's not that this is one person's only role, but if you leave it out of your model it may get left out of somebody else's practice" [L]. Diversity in the form of roles, perspectives, and functions is important in understanding the learning team phenomenon.

As mentioned, another key principle for successful CoPs is to invite different levels of participation (Wenger et al., 2001). To realize growth in competence, it is important to encourage movement between these levels, for example, create opportunities for active members to take on limited leadership roles as the focus shifts to their areas of interest and expertise. The appointed leader is not the only person facilitating learning, however. An additional mechanism for ensuring learning and new insights is for someone on the team to consciously undertake the role of bringing different perspectives together. Somebody needs to check for contradictions otherwise decisions remain at the level of common sense (Petrie, 1976). Minnis and Steiner (2005) call this the "bridge role." A memoist or ethnographer can also be charged with the role of getting the team to revisit areas where disagreements persist (Creamer, 2005). Alternatively, a subgroup can be charged with the task of bringing together different viewpoints (Amey & Brown, 2005).

Learning team members have expressed a similar concern for bridging roles: a leader for inspiration *and* somebody to get things done; an intermediary from the disciplines to build bridges; an interface between academics and IT people; and someone from the libraries as an icon on the screen. Nobody on the team specifically advocated for a student perspective but their input may be invaluable:

> The inclusion of students taught us, by their presence and generosity of spirit, that the whole project was worth doing. Their social support can be invaluable at those, hopefully rare, moments when you doubt whether *any* of your colleagues support what you are trying to do. (Cleveland-Innes et al., 2001, p. 30)

Schwab's guiding principles of cherishing diversity while honoring delegated power in course decision-making also fit perfectly with the learning team model. The concept of diversity in team composition for solving (or dismissing) anticipated practical problems to do with teaching and learning is what sets the learning team model apart from traditional curriculum meetings and conversations with immediate colleagues on course design and teaching.

To realize their potential, learning teams will need a commitment to diversity and distributed roles, in particular the coordinator and bridge roles, as well as student involvement. This concept of diversity and collaborative input aligned with academic priorities – inherent in the learning team strategy – could also be applied to departmental curricular design, online and hybrid courses, textbooks and multimedia learning. Intentionality about team composition would become more critical as the goal changes. Democratic values of equality and respect would also need to prevail. In the case of

curricular design projects, an integrated approach drilling down to the course level would be necessary.

Design framework

The learning team met for one year, generating and reflecting on the results of three design iterations. The technology consultant, who is himself a Ph.D. student in education, admits feeling disappointed in how technology was addressed in the learning team: "Unless you're integrating [technology] into your design nobody is going to use it. … It's the difference between restructuring and reengineering. … Reengineering means you go to ground zero and you rebuild. … Redesign means you sit down and look at the objectives and look at the whole sequence of everything that's going on, the format, how it's being integrated, everything from start to finish. We didn't do any of that." [TC] There was no technology plan. Inquiry around whether the team had made the best use of technology was also cut short in the rush to address the next item on the agenda.

The learning team process was variously defined as an advisory board, a consulting group, a discussion group, and an iterative design process replicating the CUTL framework. I do not agree with this last observation. There was no revisiting of the content or the outcomes or assessment after strategies had been changed. Preserving the theoretical integrity of the workshop design had the unfortunate side effect of freezing the dynamic principle of alignment.

I believe activities in the learning team need to unfold within a design framework. This will require revisiting prior decisions and gearing tool-building projects towards the modeling of mutual goals. In this day and age, there also needs to be technology support regardless of whether technology is one of the goals. In a practice-oriented study of

technology integration in higher education, Houseman (1997) found that showcasing the work of innovators is important in recognition of their hard work, but it does not necessarily inspire other faculty to use technology. On the contrary, they often feel overwhelmed. Most of all faculty need one-on-one help from a technology consultant.

Learning teams are perfect laboratories for scholarship around teaching and learning with technology. This may involve combining the strategy with a research methodology such as design research. For example, in the Columbia Centre for New Media for Teaching and Technology (n.d.) partnerships are built with faculty around course design projects with a view to bridging the divide between theory-oriented educational research and service-oriented technical support (Figure 3, p. 54). Summarized in the phrase "build to learn", practice and theory are combined through purposeful project development and inquiry into how best to teach and learn with technology. The final stage in design research is communication of new pedagogical understanding.

A design framework for production and inquiry needs to be part of the learning team strategy and the principle of alignment systematically applied. Including a methodology such as design research will also remind the team to focus on their learning premise. Cross-disciplinary teams are an ideal forum for encouraging creativity, innovation, and risk-taking – the critical values of a university in an innovative society (Wince-Smith, 2006; Homer-Dixon, 2001).
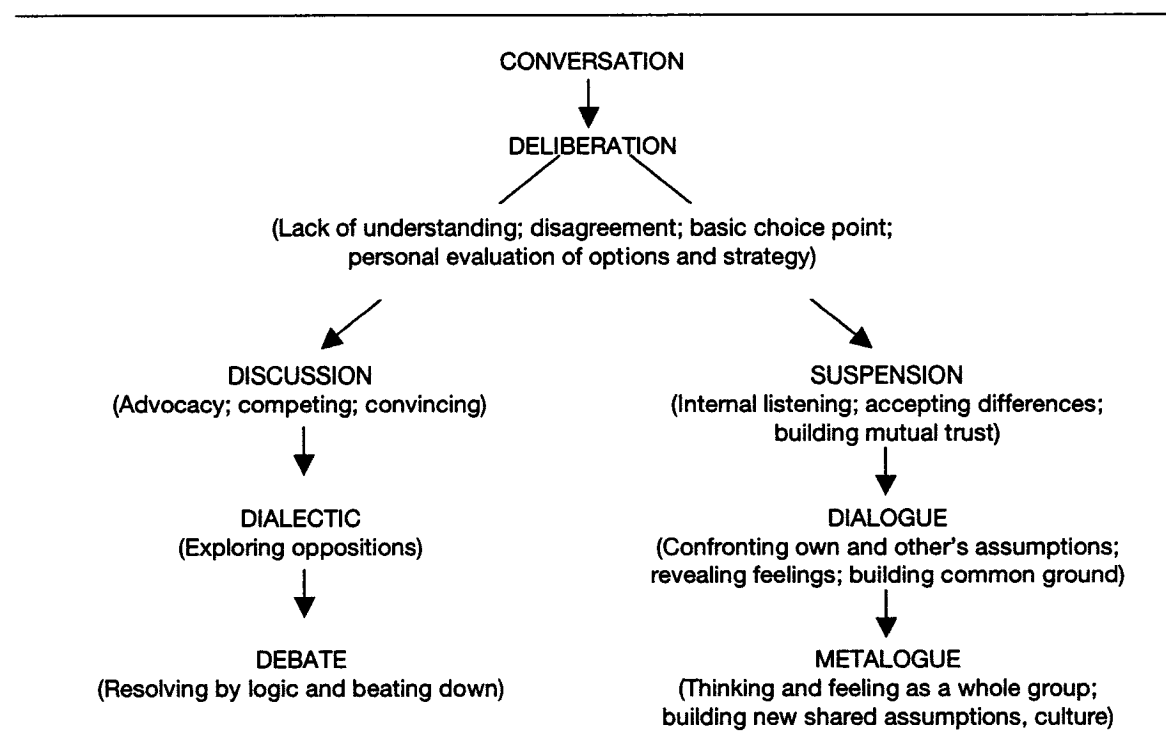
Dialogue

I still remember the moment in our interview when the coordinator had a flash of insight on the learning team process. Although new to McGill, she had many years of

experience in university administration and the development of distance education courses. She observed: "There's an interaction of multiple worlds here ... multiple disciplines, multiple levels of experience. ... None of these words captures it because there's a little bang at the center. ... It's more than synergy because synergy is good. It's not all good. Some of it is difficult. ... This collision needs to be nurtured. I need a better metaphor but conflict is necessary to understand the multiple perspectives." [C] This observation is very similar to Neumann's (2005) notion of "patterns of conflict and collaboration" that is characteristic of interdisciplinary learning.

Delving deeper into the skills of deliberation in learning conversations, Schein (1993) makes a distinction between dialogue and discussion. As depicted in Figure 8, the essential difference in these two ways of talking together lies in confronting one's own and others' assumptions and feelings as a way to building common understanding and promoting individual and collective learning. The point Schein makes is that for people to meet the challenge of collaboration in an organization they must understand differences in sub-cultures and this requires dialogue.

Choosing the path of dialogue involves suspending our reactions: "to let the issue – our perceptions, our feelings, our judgments, and our impulses – rest for a while in a state of suspension to see what will come up from ourselves and from others" (p. 46). We neither voice our reactions or let the matter go but rather listen to what others have to say and, more importantly, listen to ourselves. In this way, "we do not convince each other, but build a common experience base that allows us to learn collectively" (p. 47). We need to recognize how our hidden assumptions and categories of thought color our communication to see the bias and subtleties of how others think and express meaning.

Figure 8: Ways of Talking Together
(Schein, 1993, p. 46, based on Isaac's model, 1993)

CONVERSATION

↓

DELIBERATION

(Lack of understanding; disagreement; basic choice point;
personal evaluation of options and strategy)

DISCUSSION
(Advocacy; competing; convincing)

↓

DIALECTIC
(Exploring oppositions)

↓

DEBATE
(Resolving by logic and beating down)

SUSPENSION
(Internal listening; accepting differences;
building mutual trust)

↓

DIALOGUE
(Confronting own and other's assumptions;
revealing feelings; building common ground)

↓

METALOGUE
(Thinking and feeling as a whole group;
building new shared assumptions, culture)

Of course, we cannot spend all our time in dialogue mode otherwise nothing

would get done. There are times when moving the discussion along quickly is the best

strategy because otherwise a deadline will be missed. Taking time out to think before

doing is an imperative that needs to be balanced with action. One measure of whether the

balance is there on the side of dialogue is to monitor whether there are clashes of opinion

or not. If not, then people are probably not engaging in perspective sharing.

Learning team leaders and participants need to pay special attention to the

conditions necessary for meaningful dialogue. These conditions include welcoming

conflict, building mutual trust, confronting assumptions, sharing feelings, and creating a

common language and framework for dialogue. Most importantly it will take dialogue over time to move people to think deeply and to change their habitual modes of practice.

Collective self-reflection

A further aspect to Schein's model of deliberation is the need for metalogue, both individual learning and thinking and feeling as a whole group. Learning team members observed different kinds of learning outcomes as well as the need for more structured guidance. In particular, the graduate student feels people need help in the process of informal learning: "The learning team experience informed my practice but this was a very personal responsibility. ... It would be very easy just to attend those meetings and then do nothing about it, or just attend the meetings and not even share your thinking. That's where there may be need for more structure." [S]

In communicating different types of learning outcomes, it is useful to remember Eraut's distinction between different types of informal learning (Table 3, p. 51). Senge et al. (2004) visually capture this distinction between reactive and deeper levels of learning in Figure 10 below. If we are not to reenact old habits of thinking and doing continually, dialogue needs to take place over time in multiple layers of thinking (awareness of the whole) and doing (action that serves the whole). To move from thinking to action requires commitment to deep learning followed by some demonstration of that learning.

Figure 9: Reactive vs. Deeper Levels of Learning
(Senge, Scharmer, Jaworski & Flowers, 2004)
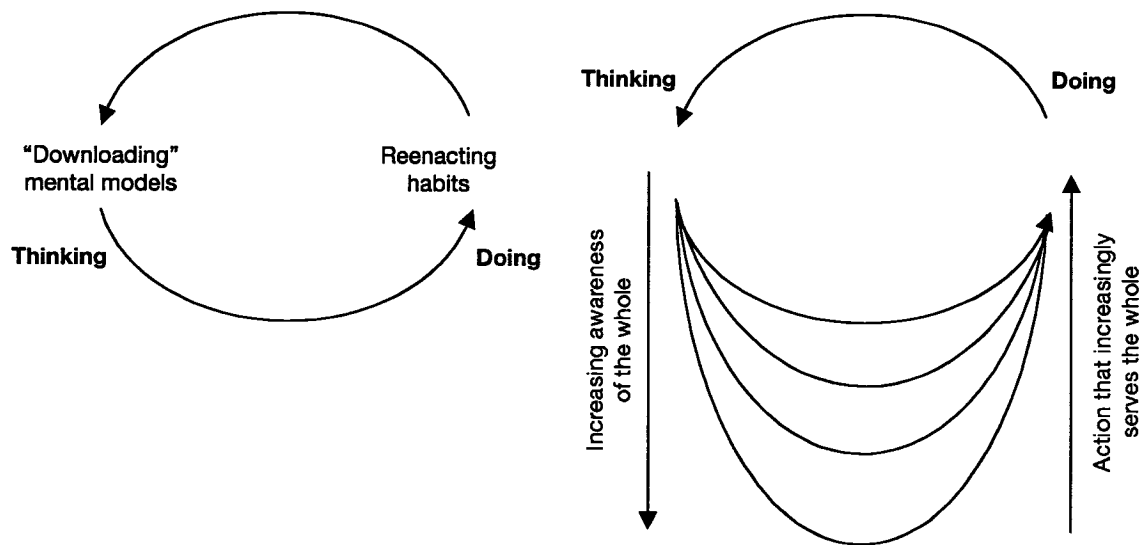
Learning within and across teams is not an easy process. "Sharing learning across teams involves more than project post-mortem briefings or documenting lessons learned ... To convey the depth of people's insights in a way that is valuable to others, learning needs to be an exchange in which people build enough relationship to understand and make sense of each other's ideas." (McDermott, 1999, p. 8) I purposely flipped the visual of Schein's model in Figure 8 to align with Senge et al's model in Figure 9 to suggest deeper levels of learning are a necessary part of dialogue (and vice versa) in professional and organizational development.

The concept of learning teams is contingent on combining both collective and self-reflection in multiple layers of thinking (awareness of the whole) and doing (action that serves the whole). This will require an understanding of informal learning.

Momentum

Insights from studies that focus on building faculty learning communities mention the need to respect demanding time commitments more than anything else while engaging participants in a sense of community and shared vision. "We found it is important for maintaining momentum and long-term success that the funded projects are authentic campus projects rather than new work created on top of other workloads." (Hansen & others, 2004, p. 76) There is also need for a passionate facilitator and a formative process that demonstrates impact on faculty learning and practice. The faculty developer (from SFU) observed this same quality of momentum: "Not everybody is going to want to engage in a learning team in a formal way. ... The idea is not to let the momentum die. Keep moving with it and keep cultivating people as a group" [FD]. She also advocates for the research agenda to be kept in there.

A study of exemplary campuses in the U.S. (judged in part on student-centered, innovative, and egalitarian values) suggests that informal learning (colleague-to-colleague information exchange) is the most powerful experience and motivator for professional development (Kezar, 2005). To encourage participation, empirical data needs disseminating on the benefits of collaborative work versus individual effort. But first data needs to be collected. One way to build knowledge and momentum at the same time would be to complement the learning team strategy with a teaching commons: "a conceptual space in which communities of educators committed to pedagogical inquiry and innovation come together to exchange ideas about teaching and learning" (Huber & Hutchings, 2006, p. 26). The teaching commons is an outcome of the scholarship of teaching and learning movement that views "teaching as challenging intellectual work"

and aims to make "the private work of the classroom visible, talked about, studied, built upon, and valued" (p. 25). Reasons for investing in a teaching commons are that serious study of pedagogy has become more widespread, and new technologies provide the possibilities for exchange of materials and ideas in online repositories. An example of a teaching commons is the Carnegie Foundation's Knowledge Media Laboratory (see: http://www.carnegiefoundation.org/KML/KEEP/index.htm).

The learning team's primary goal was, in fact, to explore the use of WebCT as an online environment for sharing the products and processes of the CDT workshop. This repository is open to McGill faculty and to faculty participating in the same workshop at Simon Fraser and Concordia. The workshop is now being implemented in a range of formats at other universities across Canada. With appropriate resources, there is no reason why this online environment cannot similarly grow in momentum. Adding an inquiry dimension to the workshop itself or through a follow-up learning team project would not only broaden the scope of this environment but also contribute largely to the scholarship of teaching and learning in Canada.

In regard to the teaching commons, Huber and Hutchings (2005) pose the question, "if they build it, will you come?" The rationale is strong: "A functioning commons will widen the circulation of pedagogical knowledge, deepen it through debate and critique, and thus better inform the kinds of instructional innovation so important to higher education today" (p. 31). However, it takes "energy, time and money to bring people together for exchange around important questions about teaching and learning" (p. 31). Another challenge is to keep the environment open, vital and attractive. This means being open to all disciplines and to all contributions, however modest. Such openness

leads to other challenges to do with quality, intellectual property, and conventions for citing, etc.; all of which will require serious dialogue and negotiation. Lastly, investment in a teaching commons is worthwhile only so long as we believe in the value of research that is deeply contextual.

In Figure 10, I have applied the Four Quadrant Model for Professional Development (illustrated in Figure 1 on p. 18) to situate the learning team strategy. As is currently the case, development would begin with critical examination of one's teaching based on a personal perspective in the process of preparing a teaching dossier. The subsequent phase would involve continuing examination of one's own teaching while benefiting from collaborative input during a consultation process. A consultation would be triggered by a university's need for minimum competence in teaching. The next phase would involve attending the CDT workshop where participants develop professional skills and have time to work individually on their course designs and receive helpful feedback in a stimulating, supportive environment. The final stage would involve faculty in a learning team project aligned with institutional needs or alternatively a scholarly-based course design or teaching project. Academic development activities would thus be designed to meet both individual and institutional needs and respond to the need for both private and public reflection on action.

Sustaining momentum in the learning team will require cultivating people as a group and authentic course design projects. It will also require some form of accountability and demonstration of impact. We need to model a new culture of sharing lessons learned to encourage others to make the shift from "my" work to "our" work.

Figure 10: The Four Quadrant Model Applied to the Learning Team Strategy
(Adapted from Langley, O'Connor & Welkener, 2004)

	Individual Reflection	Observable Performance
Individual needs	Critical examination of professional issues based on a personal perspective. Example: Preparing a Teaching Dossier	Observable professional or technical skills necessary for achieving scholarly outcomes. Example: Attending the Course Design & Teaching Workshop
Institutional needs	Critical examination of professional issues based on collaborative input. Example: Engaging in a Consultation Process	Scholarly outcomes observable to the professional community. Example: Participating in a Learning Team project and/or the Teaching Commons

Critique of the research process

As mentioned, the main methodological issue for qualitative inquiry is lack of rigor in the sense exacting procedures or rules to follow. Glaser (2004) actually accuses us of "cherry picking" techniques "with the effect of downgrading and eroding the [grounded theory] goal of conceptual theory" (p. 2). We control for this through sound data collection and analysis techniques as well as attention to transferability. The main technique to ensure transferabiltiy of findings is triangulation: collecting multiple sources of data (interviews, observations, products) from multiple participants (across several iterations) and cross-validating one against another. An even surer way is to collect additional rounds (iterations) of data. Better still vary elements of the situation in each round: "When situationalities are incorporated into the theory, the theory becomes useful for a broader range of situations" (Reigeluth, 1999, p. 649).

When Reigeluth refers to his concept of "situationalities", he is looking for

consistency of evidence across situations or to draw conclusions on differences (in

participants, content, and context). In other words, he is looking to develop or improve a

design theory for the purpose of prediction and to establish guidelines (sufficiently vague

to allow for variation) to use to attain different goals. This kind of design-oriented (goal-

oriented) inquiry is very different from developing a descriptive theory that attempts to

provide a deeper understanding of the effects of a given phenomenon. "The major

concern for people developing and testing descriptive theories is validity, whereas for

design theories, it is preferablity (i.e., does this method attain your goals for your

situation better than any other known method?)." (p. 8) It is only through conducting

cross-case analyses that we can answer questions of preferability that address outcomes

of effectiveness, efficiency, and appeal.

What would I propose as a redesign for this study?

Some situated and socio-cultural learning theories insist on a historical

perspective. For example, Engeström's (1999) activity theory advocates a developmental

process that rests on his notion of historicity. This literally means making history through

forward-looking discussion and consequential decision-making. In the field of medicine,

where Engeström and his colleagues have devoted much of their research, people look for

advances in diagnostic practices through collaborative care practices. In these kinds of

situations, researchers have several options:

> We can explore social practices, mediating artifacts, and the objects of our
>
> practices in terms of how they develop and change. We can explore moments of
>
> internalization of social practices when individuals learn and appropriate the

habits of thinking and doing that characterize a community of practice (cultural historical theorists liken internalization to socialization). But we can also study periods of externalization, when there are disruptions and contradictions in accepted practices in a community or when community members subject their beliefs and activities to critique and reflection. If internalization allows us to work together within the box, externalization allows us to break out of the box, enabling groups and individuals to learn new things, imagine new forms of practice, and avoid endlessly repeating what has been done before. (Lattuca, 2005, p. 18)

If I were to redesign this study on learning teams, I would be interested in exploring cycles of internalization and externalization. In other words, how members interact in their own community of practice compared to how they interact when inviting members from outside. In particular, the idea of observing "breakthroughs in practices" would appeal to me and how different perspectives "meet, collide, and merge" (hinting of a stage theory to collaborative practice). In exploring these cycles, I would tape record meetings but not transcribe them in full. To avoid becoming overwhelmed by data, Dicks (2005) recommends selected transcription typing of moments of critical discourse. I would be interested in doing detailed analysis of the disagreements and excitement involved in team discourse and interdisciplinary collaboration.

I would be interested in experimenting more with collaborative research between researchers and participants rather than trying so hard to be unobtrusive. I would prefer to discuss findings in a research team than simply to imagine someone looking over my

shoulder (Yin, 1984). And to negotiate categories with others in the moment of discovery rather than rely on an audit after the scent has gone from the trail.

Given the learning premise of learning teams, data collection should include more self and group reflections from participants at different points in the process. A detailed analysis of critical points of discourse and the importance of the leadership role in this aspect and others could also have been on the research agenda. I would still focus the unit of analysis on the team in preference to an individual or a systems view. Citing the ideas of Bogdan and Biklen (1992), and Schratz (1993), Creamer (2005) recommends documenting the collaborative process at multiple levels, engaging in collective self-reflection, and even hiring someone to research the researcher. "A team historian or participant observer can help to bracket biases, address conflict, and critically reflect on thinking. Collective self-reflection can follow the action, be conducted at critical junctures in the process, or be embedded throughout the entire process." (p. 89) The idea would be to document accomplishments in publications, not just a snapshot but the process and products of collaborative scholarly work.

Reflections on my research experience

In reflecting on my solitary research experience, I liken grounded theory analysis to putting a jigsaw puzzle together without any picture to follow. Pieces can be categorized into border pieces, pieces of a specific color or shape, and those that need other pieces to know where they fit. The problem is, unlike regular puzzles, pieces of data are malleable so can easily be re-shaped and fit with other pieces of similar pattern. It is easy to cut corners and distort meaning. There is this sense that only one picture can be discovered from the puzzle, albeit with time and creativity. So you handle each piece

many times until you can see it, feel it, and pick it up in a flash of inspiration. I have never faced a similar set if challenges.

My first challenge was to understand the importance of coding. My coding practices were at best amateurish, at worst detrimental to my results. I first coded by categories from within my research questions, only to realize later that these were not conceptual categories. I then threw the data in the air and coded to see how they fit within existing conceptual frameworks, only to realize that this was not really the point of grounded theory. Finally, I generated a conceptual model and made linkages from it to the literature and my interview data. I have poorly incorporated my observations and other extant data into this process. I was often overwhelmed. As mentioned, the one thing I would do differently is not to transcribe every word said by participants.

Disciplining myself in memo taking was a challenge unto itself. Memo taking is summarizing in writing what you read in the literature and ideas for linkages to your research topic. I have on the last count ten different notebooks that changed depending on where I was or my mood more than for any other reason. I also opened new documents in Word and experimented with the software NoteTaker, to capture the latest representation of what needed to be integrated. I got terribly lost in over conceptualizing my findings. Immediacy is essential in translating ideas and summaries from the literature to the dissertation.

Committing myself to the Ph.D. process was the most difficult challenge of all. Let me try to explain through a story. Having worked as a budding researcher with Benjamin Bloom (famous for his taxonomy of learning), Lee Shulman (now a guru in the

field of faculty development) has over the years developed his own views on learning. At first, he saw it similar to Bloom's levels of learning as a six stage developmental process: 1) engagement and motivation; 2) knowledge and understanding; 3) performance and action; 4) reflection and critique; 5) judgment and design; and 6) commitment and identify. After doing several research projects in religious universities, he changed this order so that commitment and identity are prerequisite to the other levels. He then placed the stages in a circle, thinking that people could enter the process when and where they choose. Finally, he decided that taxonomies of learning should be like a sand box, something to play in.

There are two things I have learned from Shulman's thinking. One is that, in the game of teaching and learning, we play with words a lot. The other is that, maybe, commitment and identity should come first in the hierarchy of learning, especially at the doctoral level. The job of judgment and design in Ph.D. research is so great, that to struggle at the same time with commitment and identity in a scattered field like Educational Technology is overwhelming. But commitment and identity have to be intrinsically motivated, I hear my supervisor say. Yes, but I also believe the day we step into the periphery of a community of practice, students need to face commitment and identity challenges, not years later.

Contributions to knowledge

What are the contributions to knowledge and conclusions from this research on learning teams? My final synthesis is organized around specific questions raised at my oral defense. What has been found that is unique or important? What are the implications for theory, research, and practice? What is the key message?

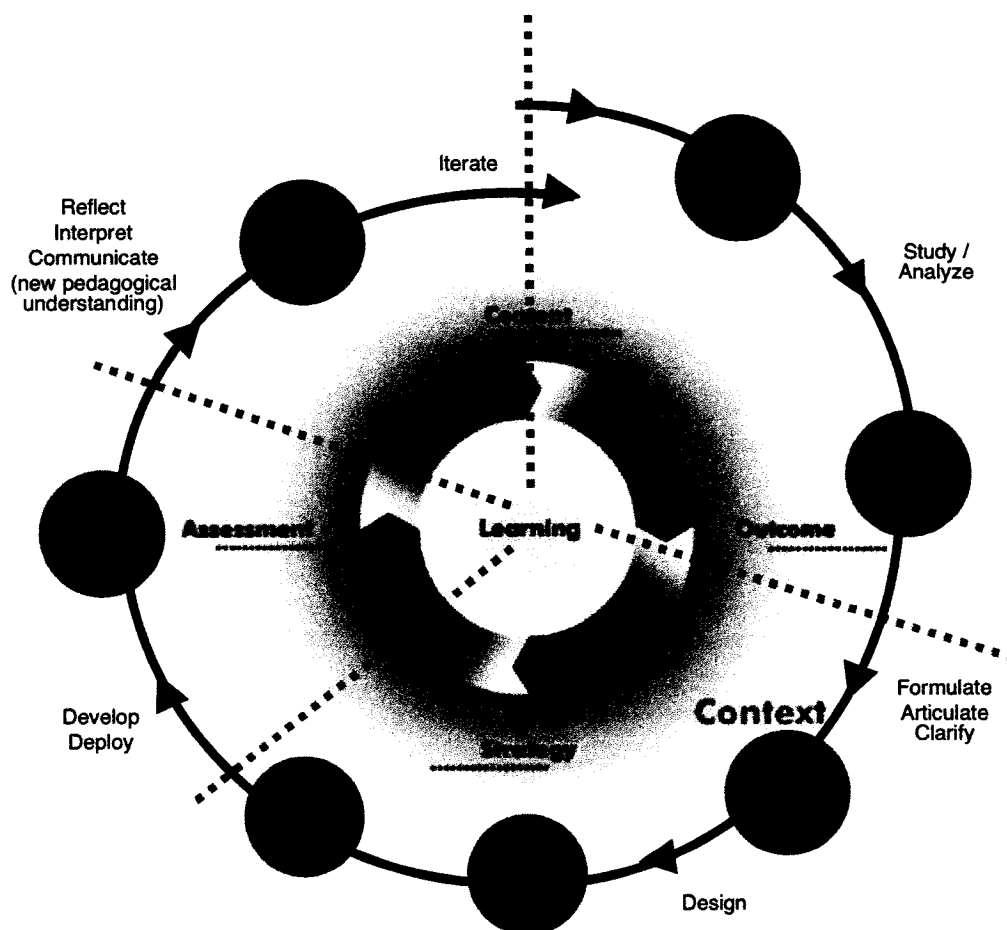*What has been found that is important or unique?*

Ann Brown (1992) observes there is nothing new since Dewey in the field of education. Decades ago, Dewey (1939) advocated moving children from a classroom environment to authentic work situations. He called for more interaction between students and teachers towards building a sense of community and inquiry. The learning team strategy applies these compelling ideas in the context of faculty development. If we cannot meaningfully apply these ideas, how can we expect professors to do so?

The main insights from this research are captured in the conceptual model of learning teams provided in Figure 11. My reason for calling learning teams a communities-of-practice approach is to build on the three dimensions of learning proposed by Dewey and situated learning theory: community, practice and inquiry (Wenger, McDermott & Snyder, 2001). The community-building dimension is characterized by the seven interrelated concepts: context sensitivity, mutual goals, diversity, design framework, dialogue, collective self-reflection, and momentum.

The McGill course design map (Figure 6, p. 94) is inserted in the background – not because the concepts are evident in my data – but to remind us that the learning team process has a practical (tool-building) dimension with student learning at the center. The iterative process surrounding the learning team concepts is borrowed from Columbia University's design research methodology (Figure 3, p. 54). It represents the inquiry (knowledge-building) dimension.

Engaging professors in serious dialogue around student learning while using course design as a vehicle for change in teaching practice makes learning teams a unique form of communities-of-practice designed intentionally for an academic context.

Figure 11: Conceptual Model of Learning Teams:
A systematic way of talking to each other

Iterate

Reflect
Interpret
Communicate
(new pedagogical
understanding)

Study /
Analyze

Assessment

Learning

Outcome

Context

Develop
Deploy

Formulate
Articulate
Clarify

Design

How are learning teams distinct from academic committees and teaching teams? Academic committees are instigated by senior managers to drive change from the top down, while teaching teams arise from innovative faculty driving change from the bottom up. The learning team strategy, by contrast, is a central support unit initiative. An academic committee focused on university-wide policy on pedagogy would be multidisciplinary; but rarely would they drill down to the level of course decisions and engage in 2-3 cycles of action and feedback. Departmental committees and teaching

teams generally limit membership to content experts; although there may be a student representative from the same disciplinary perspective. Commitment to diversity at the departmental level is a unique aspect of learning teams.

Reflecting on my own role as participant observer, I believe collective self-reflection (the inquiry dimension) needs to be explicit in any future implementation of learning teams. I see the researcher's role being taken by professionals working in teaching centres. We have sufficient autonomy to mediate between senior managers and individual faculty. Research on student learning teams (Michaelson, Fink & Black, 1996) suggests that a team is only as effective as its most competent member. Our role in facilitating the inquiry dimension of the learning team process is therefore important and worthy of future research.

What are the implications for theory, research, and practice?

Is the basic intent of this research to design better approaches to collaboration? Better processes for curriculum development? Better frameworks for faculty development? Or are there some other ways to use the knowledge acquired through this research? How will I carry forward the idea of learning teams?

The goal of grounded theory is to generate a conceptual model of reality. The idea is to capture practice-based wisdom at the same time as helping people in a given situation make sense of their experience. The aim is to provide a detailed and concrete example of a complex intervention to aid theoretical clarity and dissemination. Findings are validated through member checks and triangulation but not tested to see if the conceptual model developed really works in the context for which it is intended or in

other contexts. The next phase of research will involve testing the model and require a different methodology.

At a practical level, how can we persuade universities and professors to buy in to the learning team vision? How would the learning team model need to vary across key features of an institution? A central tenet of learning teams is alignment of instructional decisions with academic priorities. At McGill, where I conducted my study, the academic priority is excellence in teaching and learning. Investigating how to make better use of faculty services makes perfect sense in this context. At Concordia, our priority is student retention. This change in academic priority would affect the learning team strategy, for example, a representative from student services might be involved. In a large university like Concordia where the campus is dispersed and the community loosely coupled, systematic ways of getting people talking to each other (the social dimension of learning) are vital. In a smaller university, like Acadia for example, there may not be the same perceived need for interaction. The concepts of context sensitivity (negotiation at different levels) and mutual goals (institutional and individual) are at the front end of the learning team model to respect and respond to such variation.

The final concept on the learning team model is momentum. I chose this term to emphasize a commitment to sustainability: documenting experiences and communicating implementation and assimilation efforts to audiences internal and external to the university. This doctoral thesis is the first chapter of what I hope is a long and thrilling story of transformation in faculty development; a story that moves people from individual responsibility to collective responsibility in university course design, not as groups of experts but as multidisciplinary teams.

In future research, I would focus on the dynamic process of team development, critical moments of dialogue, the pedagogical language being used, and the inquiry dimension. The object of the present study was embryonic of the original parameters set out for learning teams. It would therefore be important to identify a good example of a learning team.

What is the key message?

We have intuitive knowledge that more heads are better than one in instructional decision-making, now we have empirical evidence. The learning team approach emphasizes collective responsibility for what students do inside and outside the classroom. Teams are composed so that professors can work together more effectively with the triumvirate of faculty services (teaching development, instructional technology, and the libraries). The traditional model of faculty development is workshops and one-on-one consultations. Situated learning theory suggests we move out of the classroom and into authentic, collaborative, problem-based work situations. This is what learning teams do. They represent a proactive model for faculty development with course design as a vehicle for change.

Concluding remarks

Sponsoring academic interaction where it would otherwise not occur was part of the original learning team concept. It is a revolutionary idea. Many would see engaging in interaction with people holding different values and perspectives on teaching and learning as an intrusion on a professor's academic freedom and time. The rationale for a

team approach is increased complexity in a diverse mass higher education system. There are stronger rationales.

The modern university is caught between its original ethos of enlightenment and its current focus on impact, performance, outcomes and standards (Barnett, 2000). We have inherited from the past multiple frameworks of understanding, action and identity, called the phenomenon of supercomplexity. In other words, there are multiple and competing perspectives on how to deal with increased complexity (as evident in my own research findings).

> The key problem of supercomplexity is not one of knowledge; it is one of being. Accordingly, we have to displace knowledge from the core of our pedagogies. The student's being has to take center stage. Feeling uncertainty, responding to uncertainty, gaining confidence to [assert] oneself amid the numerous counter claims to which one is exposed, engaging with the enemy, and developing resilience and courage: these are matters of *being*. (pp. 170-171)

Barnett advocates for universities to deliberately bring about collisions in perspectives and engage in collective self-scrutiny. This is what learning teams do. How to make effective use of technology inside and outside the classroom is not a trivial question. The issue of information literacy is equally complex. It gets to the heart of what skills a university graduate needs to survive in the modern world.

A further rationale for learning teams is to demonstrate commitment to teaching. This strategy will require additional funding, and the allocation of budgets is the best measure of university and department values. Participating in a learning team initiative also constitutes evidence of an individual faculty member's commitment to teaching.

Such evidence will become more important in a teaching dossier as universities move away from judging teaching competence solely on student ratings.

If I had carte blanche to improve the academy would I recommend learning teams? Yes, I would. It is a collaborative strategy for higher education that promises to help us re-examine university course design and teaching, at the same time as work together in new and exciting ways. Learning teams represent a systematic process for linking people to new communities of practice; crossing boundaries we may not even know exist with a view to improving student learning.

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Appendix 1: Observations At Meetings

Cluster 1 March 14 – May 16, 2003	Cluster 2 May 23 – August 29, 2003	Cluster 3 September 16 – December 18, 2003
• Joint McGill and SFU WebCT site • Model technology using fullest potential of WebCT • Demonstrate in-class and out-of-class strategies • Top 5 diagrams to be recreated by graphic artist • Introduction to information literacy (IL) • Changes in readings, core vs. additional • Learning team concept maps • Tier I vs. Tier II resources • Issue of discipline-specific resources • Organization of WebCT by FAQ's • Digitization of pre-assessment tool • Laptops for small groups with Internet access • New activities for Day 5 • Follow-up questionnaire	• Presentations on technology too long, too up front, need case examples • Assessment not grounded in examples • Focus next time: strategies and assessment • More readings across disciplines • Need firmer grounding between in-class and out-of-class activities • Show elements of course outlines • Least successful element was articulation between large and small group activities • Comparison with SFU: more time for introduction to technology • How to integrate IL • Purpose is to model WebCT and create long term resource • Concern re Faculty of Arts participation • Program change: co-instructors present their courses and CUTL cognitive tools • Need to draw more on co-instructors' expertise in course design; see growth and variation, model range of influences on decision-making, good e.g. of technology use, model how all elements fit together • Improve modeling by training co-instructors • Update all slides to a higher level of graphic design • Raise awareness in professors of implications of technology use • Discussion of IL readings, no plan to address IL, more cued in small groups	• Need more modeling of different teaching strategies • Concerned about dropout • Case studies could be shorter, need post case summaries • Concerned people are not doing readings • Scaffolding readings with guides • Discipline-based and generalizable IL skills vs. course-related seminars specific to resources vs. IL integrated in course management system • Not every professor needs to access IL skills in the same way • IL linked to learning outcomes; prior knowledge and skills assumed • Readings selected of IL that illustrate best practices • IL becomes operational in the assignments; match basic IL competencies and support mechanisms to types of assignments • Same as technology, how to integrate IL by using it without talking about it specifically • Need template for integrating IL resources in WebCT and concrete examples • IL to be included in assessment section, add to course outline • Resources to be developed on IL • Follow-up workshop on IL • WebCT stats show concept mapping page most popular • Pre-assessment questionnaire online

Appendix 2:
Summary of Interview Data

LT member / Research Q	Technology Consultant [TC] (18.12.03)	Science Professor [P] (9.01.04)	Librarian [L] (16.01.04)	Graduate Student [S] (21.01.04)
1. What is happening in the Learning Team? • Goals • Process • Decisions • Influences • Roles	• **Formal collaboration** among ITC, Libraries and CUTL • CDT workshop **consulting group** – discussion but no decisions; share opinions • **Impetus to change; to try** different things • **No innovation happening yet;** probably normal because we're trying to work out what the roles are • **Brainstorming but no discussion of contentious issues,** haven't dealt with important things in the context (e.g., more new profs); scalability is the real problem that hasn't been tackled at all; workshop successful because self-selected group, they're not tackling the profs who don't want to be there • **Coordinator's role key** (i.e., full-time position); confounding variable • **Technology workshop** came out of this; TC hasn't branched out from workshop before	• **Political exercise** – networking, an attempt for participants to explore how their pieces of the university can work together more effectively • **Exploratory phase** could have been accelerated focused on particular curriculum project • **No focus, no sense of direction** spent lot of time talking about **information literacy,** interesting, stimulating but **not central;** issue of technology important but not dealt with by adding more technology-based stuff to w/shop, Engineering Prof is example of how it can be done: **technology in context** (why are we doing this, etc.) • **Some discussion on nature of WebCT** but wasn't necessary to convene that group to do that • **Gave Coordinator a forum** for talking to people and exploring options and meeting people • **Researcher's role as outsider valuable** my synthesis of the dynamic of an attempt to build bridges and create a common language with a somewhat disparate group of people will be very interesting	• Came into planning process in the middle, understood little of content but saw the form as **rational and intelligent** • Found the way the **discussion** evolved **replicated the CUTL map,** like a helix on the one hand going round in a circle on the other advancing towards a more coherent final product • **Level of dialogue and** interaction was **very high,** quite **abstract** but they were dealing with abstract concepts in an interesting way • The technology expert's presence was proactive and a force for good • Learned from the workshop that **what I'm doing is not what's important as much as what I want the outcome to be** • Getting people together in the seminar is a good one because it concentrates, but the **kind of things you learn** there are not the kind of things necessarily **that repetition is good for**	• Official goal was to serve as **decision-making body for** faculty development issues, i.e., CDT workshop and follow-up • Also meant as **discussion forum** on certain issues of general interest: information literacy and use of technology • Also **formally evaluating** own progress with workshop • Hidden agenda was **survival of** CUTL, the learning team was a way of showing that we can collaborate and be productive without being amalgamated with support services • Decision-making process was **slow, disjointed with participants changing, never sure of the focus, never left** feeling we had made a decision • It served more the purpose of an **advisory board** • My role was as **contributor to** the group • **Informed my practice,** but this was a very personal responsibility, not guided • I now have interesting **under-standing of information literacy and technology issues**

Appendix 2 Continued:
Summary of Interview Data

Faculty Developer [FD] (20.01.04)	Coordinator [C] (16.01.04)	Coordinator [C] (8.03.04)	Team Leader [TL] (27.01.04)
• Very much a **discussion group** and generally the level of discussion is more information based and information giving • Very useful for us to **share reflections immediately after workshop** and in learning team • **Thought it was going to be more strategizing** further toward the goal of understanding what we were after in the workshop, an intellectual discussion brought down to the practical • A **mixture of motivations** right now and only one is specifically developing the workshop further • I've taken the time to be part of the team to **help me organize the workshop at my university** • I am an **outlier** given the phone hook up • Seems to have turned into more of a discussion group and that's a matter of **leadership needs to be more focused on the workshop** • **Information literacy** piece has perhaps got bigger than originally intended, **not immediately useful** to me	• **Conversation, sharing of ideas, experience and perspective** on whatever the topic(s) of the meeting happens to be • Some meetings are more **task focused** and some **exploration of** ideas, possibilities in the future • **Involves revisiting the subject more than once** to get people to make a recommendation based on their perspective • The learning team process **was a way by which I was integrated into CUTL and CDT workshop** • By June it was **my role to organize, orchestrate, in name only**, the director's role from start to finish was the champion • **Started out as a decision-making model** (readings, schedules, everything to do with the workshop), didn't happen with December workshop, I made changes without discussion, it was suggested that the team wasn't interested in the details, the evolving reality I guess • **The task for now is information literacy**, not sure if this is agreed across the entire membership, it certainly hasn't been discussed	• The 5 levels help me understand **the multiple layers of not just thinking but doing** – difference between conceptual, planning and implementation tasks • The levels describe how different people from the big team come together to accomplish different tasks, but the director, secretary and I are involved in planning and implement not as members of the team but as **function of our administrative roles** • **Formatively evaluating every stage of the CDT workshop**, it only works if the doing gets fed back into the learning • No debriefing after December workshop because there weren't any suggestions for improvement • **You make decisions by default** by agreeing not to do something right now • We talked a lot about the follow-up process, changing needs assessment, feedback and follow-up forms • There's an **administrative imperative** at McGill to use the learning to bring together units that report to the same supervisor	• In the large group we bring together **diversity and expertise, people willing to work together to construct knowledge**, quote from Bess in original proposal about the need in today's world when deciding on instruction you need **multiple perspectives**, also Schwab's work in the 70's in which he talks of pulling in different kinds of expertise • **A set of decisions have been made and enacted** • **CDT workshop is object of study**, 4 things going on: how to make it the beginning of the personal teaching journey with a series of follow-up activities, whereas before it had an end (this development idea was the reason for hiring a coordinator), how to better model and make explicit issues around the role of technology in instruction, and the whole area of information literacy (which I now call academic literacy), the other was scheduling but we couldn't work on all things at the same time and changing the sequence wasn't something that most people there could help us with it was more important to focus on the conceptual pieces, (maybe it's just irrelevant, we can do it a whole bunch of different ways, because there are so many variables) • A big part of it has been getting to know each other and **creating a sense of cohesiveness**, we had people who had no experience of the workshop or at the university and people have been changing as we go along • **I de facto became the group leader** in the sense I had a vision and had negotiated to bring these people together • A whole bunch of **resources were brought to bear so we could have successive iterations** and examine the results

Appendix 2 Continued:
Summary of Interview Data

LT member / Research Q	Technology Consultant [TC] (18.12.03)	Science Professor [P] (9.01.04)	Librarian [L] (16.01.04)	Graduate Student [S] (21.01.04)
2. What are the pros and cons of a team approach? • What works? • What doesn't work? • What have people learned?	• **No need for a generic team,** you're looking for people who have that type of vision and the interest, where they're from is irrelevant • Anytime you get a bunch of **people** in a room to **talk** about something you have an **impact** • **Too many different opinions** to actually work on a project	• **Didn't see the role of the group as a whole** • Part of my style to be the **reality check** – having spent a year in CUTL appreciate their world but see when the differences, the gap, the difference in perspective becomes too great • **Sum of our parts would be much greater than the parts alone:** ITC representative and I would be more effective at working with a prof than either of us alone; somebody from CUTL and me working with a prof is more powerful than alone • Much **better appreciation of the ITC people and what they bring** to the mix • **Better aware of information literacy issues** • **Not so much a fixed team,** draw expertise and people as project requires • See **CUTL role** as larger or smaller depending on department's understanding of process and who is involved, **consultative or facilitative, not always coordinating,** sometimes leadership found in department	• People coming to sessions are not typical, the are self-directed or other-directed, **committed to change** and taking technology into consideration in a big way • In terms of information literacy, realized in conversations back and forth that his concept of IL, the artsy's concept, is very different from the Physicist's. It's **very difficult to talk about IL in the abstract;** it's always necessary to use concrete examples irrelevant to 90% of your audience is the difficulty in talking about IL • The librarian doing it in the abstract does nothing, the historian doing it in the abstract accomplishes little, when we get together we can accomplish a lot, it's the **synergy of the** historian and the librarian that makes this little aspect of IL work • Perhaps lumping people together and just disregarding the disciplinary aspect or making it secondary is what has to happen for **random group synergy to** happen, which is probably more important than anything else	• Useful forum to discuss issues and clarify possibilities with people from various disciplinary areas, **very good at making us see things differently,** a richer picture of what is needed or what we need to do • Pros: **diversity,** complementarity of experiences and approaches is really what works best • **More accurate, more representative** of how people feel about issues • Cons: I would have preferred a **stronger leadership** • **Very labor intensive,** you need to have that team but with more professors, but the culture is not there yet • CUTL is generic, detached from the disciplines, **get more professors from the same discipline together** then the discipline becomes core issue • More interesting way of doing continuous faculty development is **collaborative research** among practitioners and researchers, very important learning dimension

Appendix 2 Continued:
Summary of Interview Data

Faculty Developer [FD] (20.01.04)	Coordinator [C] (16.01.04)	Coordinator [C] (8.03.04)	Team Leader [TL] (27.01.04)
• **Team approach to development is absolutely critical** • I find the disciplinary perspective interesting, **what does it mean for an academic's discipline,** that's really necessary to always **pull it back to that,** generic faculty development has little utility • We're doing **classroom research projects** focused on technology-enhanced strategies, an ideal outcome of the workshop • **People in the learning team are potentially important** consultants to support projects people engage in after the workshop • **One professor I'm working with we have a learning team around his project,** a technical expert, the professor, me and one research assistant, we're working together to develop it, maybe that's an offshoot of the learning team, I don't know • **Implementing a formal action plan** in the Spring to follow-up with people, the learning team could take that on	• Pros: **expertise sharing and coming to what I think of as better decisions** • There are people on the learning team who are pro technology, gung ho and not concerned about risks, will try anything, and some who are less enthusiastic and more concerned about impact, the **perspectives get shared and** remind the enthusiasts there are negative, unintended cones-quences, not everybody is the same • No matter what the learning team is organized around there will **always be people who are not comfortable with this approach** • To design something that meets the needs of all types of faculty you have to access all the **different types of reactions to** make sure you're not turning people off	• I've worked in **same kind of teams in design and development of distance education courses;** very egalitarian/inclusive, people work as colleagues together; not sure we've perfected it in faculty development • Good way to get to know people and areas of relevance • **Issue of permanent membership,** maybe the timeline is too short for us to understand comfortably that people come in and leave	• We have made decisions on the learning team that helped us be **more clear about how to integrate and model effective uses of technology** • We already had a relationship with the ITC rep, he understands how we think, **the interesting piece has been bringing in the Libraries,** a totally new conversation on both sides, an affirmation that IL is an important issue, it's like finding like-minded people who have a different discourse so now it's not a question of motivation but finding a way to move towards this common goal, it might end up that we have somebody from the Libraries come regularly to CUTL meetings like ITC representative to keep us up-to-date • **Someone in the Libraries is cued,** we can help them design better instruction for students but they're going to lead us to professors who are trying to do things, like ITC rep, that is an **important organizational aspect** • **A large investment of time** for a sizeable number of people • A whole bunch of factors meant that **everybody didn't contribute equally,** CUTL was over represented • In terms of leadership, part of it is **persuasion,** convincing people that it is something interesting, once that happens then the group sustains, I'm assuming there's enough intellectual effort and reward for people to **commit** • **Research summaries helped to step outside of the CDT workshop** (good idea to feed back my results, people will start to generate new ideas with the synergy and it would fit with idea of learning team and trying to jointly construct new knowledge, needs to be a shared understanding so why not participatory and self-reflective)

Appendix 2 Continued:
Summary of Interview Data

Research Q / LT member	Technology Consultant [TC] (18.12.03)	Science Professor [P] (9.01.04)	Librarian [L] (16.01.04)	Graduate Student [S] (21.01.04)
3. What triggers (or not) real problem solving? • Forces for innovation and discussion of burning issues • Forces against	• Lots of discussion about how best to integrate technology and the Libraries but **no time to integrate anything else** because workshop is full • **WebCT environment is just a tack on,** a place to go to look up stuff, not an innovative technology model • **Normal progression,** people want to put content up before exploring other tools • Definitely **improved but an enhancement not a redesign;** like difference between restructuring and re-engineering, reengineering means you go to ground zero and rebuild • Biggest improvement is more **and more modeling of technology** as part of the process without focusing on it or worrying about it • **Still the same workshop,** format has shifted a bit, strategies are a little different; it's been successful so why throw a wrench in the design	• Web-based resource for work-shop like that is a no-brainer • **CUTL framework is very** powerful, I probably try to follow that process: define in their own way where you are going, try to express not in terms of themselves but in terms of their students • **External pressures force action** • Global sort of **conversion** • Above all it takes **leadership** somebody within the unit or department has to foresee and overcome difficulties, convince the rest of the players • **Funds** • An individual in the mix who's ready to do it and the Chair says OK, so it's **almost political** • **Serendipitous,** you can't plan • Not talking of external pressures to change because of uncertainties surrounding CUTL – **incentives to think outside the box in that situation are paradoxical** • **The learning team concept was a genuine response,** but the response to their response was barely encouraging	• When adapting technology to our teaching you realize that what you have been doing is far more **complex** than you ever allowed, the necessity of putting it into writing makes us **break things down into non-obvious sequential steps in order to accomplish something** • People are not averse to technology per se they're **averse to meaningless experiences** and experiences from which they learn nothing • Like IL, the **use of technology differs from person to person and discipline to discipline in a remarkable way** • **Altruism** is something that drives people to this program, so there's a lifting up to a higher plane of discourse in terms of what is going on, this is part of the epiphany, part of the conversion process, admitting that there's a complex world out there and dealing with it as an intelligent devoted scholar who is devoted to teaching and learning	• **Demonstrating various uses of technology** but not promoting enough or enforcing • **WebCT repository of information,** more like participants' toolkit than instructional device, **more supporting than leading the** learning or fostering learning • There is a **culture at CUTL that** wants to make the point that it's **not technology that is leading but pedagogy,** this is not just experimentation but a training ground for professors so it has to be done in a very pedagogically sound way • **Not doing interdisciplinary stuff** if we were people would be talking about how their discipline is affecting their thinking, but we're not talking about this, how some disciplines are more pure and others are applied, others soft and how that affects the decision-making process • We're **not doing enough disciplinary grounding** that's why professors leave here and think it's not very serious

Appendix 2 Continued:
Summary of Interview Data

Faculty Developer [FD] (20.01.04)	Coordinator [C] (16.01.04)	Coordinator [C] (8.03.04)	Team Leader [TL] (27.01.04)
• **Integration of technology is secondary purpose**, getting to the limits of what we can do without giving up on original purpose of workshop, the main focus has to be on how professors' thinking evolves and plays out in courses • **Too much of a big deal is made of technology**, introduce it as part of the way you go about teaching as appropriate, learn as you go. **We need to model more teaching strategies**, technology-enhanced or not in the workshop, how the way you act in the classroom as a teacher matches what you're trying to get the students to learn, together with the assessment of learning • The level of discussion I like to talk about is how people in the workshop come to understand things; another important issue to revisit is how we think people come to meaningfully use technology, what we can do to foster that in the workshop – **keeps getting pushed off the agenda for more urgent things**	• The learning team seems to send us in circles about information literacy – it's still a buzz word, not all members are doing IL in their work like they are technology, the disciplinary differences that we've seen discussed maybe strong enough to obscure commonalities, a lot more reading, **because it's stumping us, maybe just grapple with it, focus on it and make that the task** • **The introduction of technology is slower and more staged and therefore more thoughtful and more defensible** • The learning team reminds us – **and the language is somehow important – we should be** modeling an approach • The new design is a significant technology integration with online discussion being modeled, **we wanted to do this in December but there was resistance**	• **As a group we learned the implications of planning decisions on the CDT workshop,** a systemic view • Used the opportunity to **build systems for repeating successes and planning tools** • **We taught each other a lot about technology, successful** and unsuccessful uses • Learned a lot about information literacy • Just the fact that WebCT is there helps people realize that we need to go beyond and integrate technology more seriously • **Insistence that things are different in science reminded us that in interdisciplinary context we need to represent all disciplines,** this slowed down our ability to integrate IL – that's a decision we made in the learning team, not to do it until we had it straight • Very conceptual, theoretical, macro level discussions that didn't have obvious decisions falling out of them have been fed into a decision-making process, somebody without my experience would have interpreted differently	• **An opportunity for me to do learning** and that was part of the idea, trying to change the nature of how we understand the complexity of instruction, we need to set aside time to do learning ourselves, we need to draw on expertise in the fields we don't know, because we've been intentionally a learning team I'm watching for things • We've been able to create a greater coherence in our personal practices around technology, **I was able to link to resources in the midst of the workshop** (literature, table on cognitive development, video clip on strategies) • It's the **first time we created a CDT workshop resource** that would be for us and for alumni, it creates a long-term potential for people to engage, a major accomplishment • Have to decide if we want it **cutting edge or interesting** • We've developed a more personal but joint understanding of how technology can be integrated so we're able to make linkages more easily, **see opportunities for modeling** (e.g., when choosing co-instructors and their courses) • Co-instructors didn't come out of the learning team (UVic experience) but in last two iterations that's been an opportunity to better model because although we teach we don't teach in the diverse number of ways faculty teach • IL seemed to be stagnant because library rep was very busy with other things and was not able to direct attention to it and I really wanted to move forward so we changed representative • I now see it fits in various places (learning outcomes, strategies, assessment) **I was able to raise it as an issue in the small groups** and direct people to the article by the librarian that unpacks an assignment, it's that lack of awareness how far instructional decisions influence students in ways that impact other units, it was an ah hah for me

Appendix 2 Continued:
Summary of Interview Data

Research Q \ LT member	Technology Consultant [TC] (18.12.03)	Science Professor [P] (9.01.04)	Librarian [L] (16.01.04)	Graduate Student [S] (21.01.04)
4. What factors mediate implementation as a new faculty development initiative?	• **Need an interface between** academics and ITC people, someone who knows technology and pedagogy deeply • Don't know if learning team approach is successful but **the group is pretty successful** • **Not feasible resource** allocation for one prof – very intimidating; maybe if it's a Faculty looking to redesign a program or integrate across courses • **Better integration between the online and face-to-face environment** to model exactly the type of things instructors are doing in the classroom, to create community and continuity before and after; with the slates it's the first time they're integrating things that are really neat, capturing of drawings, equations	• Has to be **intermediary from the disciplines**; not just for credibility but to build bridges • Making **time** available, recognizing that it is a legitimate, valuable activity, recognizing that this is something that cannot be done in addition to everything else • **Recognition** that working on your course takes time not just the 3 hours spent in the classroom each week – that's actually what it ought to mean when the university says we value this activity called teaching	• Understands success with Arts Faculty is abysmal, probably because they have an intense personal identification with their subject, how the **Arts Faculty could be more integrated** in relation to CUTL, ITC and the Libraries is part of the success factor on a large, global level • Information literacy (fluency) should always be on the table • **Information literacy must be continuously reinforced** and the way you do this is to always integrate what the students learned into the next assignment. You have to be altruistic enough to give a little bit of time to IL for the next generation. It has to be there at the beginning of every subject.	• If workshop clientele is changing, **no need for transformative model**, get ball rolling with basic stuff • Run workshop on **more continuous basis** where learning is linked with work (one day per month over a semester with WebCT) • **Attract professors with disciplinary lure**, much easier for them to learn about teaching and learning, much easier to promote scholarship of teaching • **More regular** in terms of when and where meeting, otherwise it is episodic and looks ad hoc and thinking is more ad hoc • **Reiterate objectives** each time • **Needs more structure:** guide thinking as people come in (prepare contributions), do a brainstorming to get things in the open, consolidate (guide reflection and implementation), establish set of guidelines on how teams need to operate, right balance of structure may enable people to be creative • **Over 8 becomes free for all** • **Clarify meaning behind name**

Appendix 2 Continued:
Summary of Interview Data

Faculty Developer [FD] (20.01.04)	Coordinator [C] (16.01.04)	Coordinator [C] (8.03.04)	Team Leader [TL] (27.01.04)
• Can be a **decision-making model** in terms of collecting information and discussing perspectives and then making decisions about what will actually be put in place • **3-4 people is plenty**, if you want to make it a decision-making group smaller is better • **Invite consultants on a one-time basis** instead of being permanent members • **Focus is the issue:** more useful for people to come in with one or two readings that the main group could discuss the utility focused on the workshop • **Question of leadership:** keep the research agenda in there • The workshop is the beginning of people's thinking, they are wanting additional information, one way is the follow-up workshops another is the action plans, the **idea is not to let the momentum die,** to keep cultivating these people as a group, we're applying for more funding to support professors in classroom research projects	• The learning team needs somebody who is the **leader and the inspiration** or a sense of responsibility to the individual who has created it, and **somebody who gets things done** • This kind of approach **takes time,** and you need the time in this kind of environment to bring everybody to a level of understanding • In a **collegial environment I'm a** bit uncomfortable just making decisions as the coordinator • The reality is that if the learning team is a decision-making body I **don't have time to wait** for it as the coordinator • The learning team is a **way of justifying, explaining and articulating top down policy** – it could look like tool of the administration and when faculty find out they are part of that game they get very upset	• Requirement to be absolutely **explicit about value of the model** and have **clear objectives** that are understandable and accepted • **Needs a whole lot of skills** some of which are interpersonal and others are skills related to articulating the objectives and the processes • Think about **defining roles,** in my view as the content of discussion changes then leadership should change, but not everybody wants to share leadership or is a good follower, you also need people to hold the thing together • **What the learning team does is build in reflection,** if you don't build in a process for turning learning into doing then the learning team is just another committee • The advantage of the learning team is that the reflection removes the doer from the doing and the thinker from the thinking, there is an **exchange (collision, interaction) of theory and practice that needs nurturing** • The administrative impetus of the learning team may be a very powerful piece but this is a dangerous place to go in an academic environment	• Not just doing something but **setting aside the time to** bring together different kinds of expertise **to construct a framework** that is more integrative about some issue • We're trying to change the whole environment for students because it's not about a particular course or program that creates their experience of learning it's all the resources in the university, a **formal mechanism** for bringing together people from units who normally would never talk to each other (Laurillard's learning conversations) • **Attempt at organizational development,** brings people from different units together to talk about issues • **Build in a more formative process,** clarify goals and frequently check in (every 3-4 meetings see if we're getting near closure or less return for investment), make priorities explicit so people are not feeling left behind, think carefully about using people's time well • **It needs negotiating, it has resource implications** • In Management we ended up with different sub groups **but there was a common person** • **I'd envisaged the learning team was around some big instructional issue** – a conceptual difficulty – that needs a variety of expertise, there are clear goals, and what you're trying to do is generate some new knowledge and apply it • I would propose a learning team where you don't race into doing something but really take time to create a language and a framework that you can then use in an integrative and comprehensive fashion, **taking time out and not trying to do without having invested in thinking** • Initial form of establishing a three-way relationship among units, **a triumvirate at the university level of professor and student resources for learning**

Appendix 3: Poster of Initial Findings Presented to Colloquium

Appendix 4: Consent Form to Participate in Research

This is to state that I agree to participate in a research study being conducted by Janette M. Barrington, Ph.D. candidate, Educational Technology, Department of Education, Concordia University, 312 Chemin du Club Marin, Verdun, Quebec, H3E 1V5, (514) 766-7563. jbarri@alcor.concordia.ca

Purpose

I have been informed that the purpose of the research is to study the impact of strategically designed faculty development on teaching and learning in higher education. Specifically the study will describe the modeling of a new Learning Team approach to technology integration. The study will identify the patterns of thinking and discourse involved in aligning instructional decisions with principles of learning and applying these principles in practice, both in general and as applied to technology use. Results will be written up to provide feedback to the Learning Team for improving their workshop design, as well as offer practical guidelines on implementing Learning Teams in the context of faculty development. The study will develop criteria for evaluating faculty development programs thus informing future research on collaborative follow-up interventions and extending existing models of university teaching effectiveness.

Procedures

The researcher will document the progress of the Learning Team as participant-observer at planning meetings and at debriefing sessions following each iteration of the workshop design. Meetings may be tape recorded, where there is agreement to do so. Members of the team will be interviewed individually and together. Interviews will be tape recorded where there is agreement to do so. The purpose of these interviews will be to explore the experience of each member, as well as the group as a whole. A written copy of questions will be provided for each person before structured interviews. Designed products will be analyzed against criteria agreed upon by the Learning Team. Only general data will be reported. Any quotation to be used in the dissertation will be verified with the person who made it for accuracy. The interview tapes or transcripts will not be shared, but they will be returned to participants so they can make corrections or further elaborations to their remarks.

Conditions of Participation

- I understand that I am free to withdraw my consent and discontinue my participation at any time without negative consequences.
- I understand that my participation in this study is strictly confidential. My identity will not be disclosed to anyone.
- I understand that data from this study may be published.

I HAVE CAREFULLY STUDIED THE ABOVE AND UNDERSTAND THIS AGREEMENT. I FREELY CONSENT AND VOLUNTARILY AGREE TO PARTICIPATE IN THIS STUDY.

NAME (please print)   WITNESS SIGNATURE
SIGNATURE   DATE

Appendix 5:
Biographies Of Learning Team Members

The following biographical descriptions of CUTL learning team members were for the most part provided by the members themselves.

The *team leader* is a faculty developer and Education professor. She was the CUTL director during the research study. She has co-designed and facilitated almost all the CDT workshops since its inception. The examination of the learning team fits into one of her areas of research that is to understand her own faculty development practice. Her commitment to learning teams emerges from various sources concurrently: a) her personal experience of and commitment to the social construction of knowledge; b) a departmental consultation where a group of people including a librarian and a technology consultant engaged in a curriculum re-design project; c) the construction of the CUTL's development plan which included efforts to develop more organizational, discipline-based models of engagement; d) an awareness of literature that recognizes the differing kinds of expertise that contribute to course design, e.g., Schwab in the 70's and Bess in the 90's; e) the CUTL's efforts to distinguish differing kinds of expertise while working with the Instructional Computer Center (ICC) and increasingly the libraries; and f) the willingness of top administrators to invest in and support the CDT workshop and her proposal to use this as a vehicle for piloting learning teams in a more formal way.

The *coordinator* is a Professional Associate at the CUTL recently hired to work specifically on the CDT workshop. Responsible for coordinating the workshops and for integrating alternative formats and resources, she tries to model appropriate and effective integration of information technologies and information resources in support of learner-oriented teaching. This includes coordinating the new implementations and designing follow-up support

in aspects of course design. Other projects involve evaluating the impact of learning technologies in selected classes and action research projects. She has taught in the educational technology graduate program at Concordia University since completing her Ph.D. there on models, successful practices and policy implications of technology integration in universities in Canada. Her research on technology integration in higher education was inspired by previous responsibility for marketing and development of distance and continuing education at Laurentian University in Sudbury.

The *graduate student* is a young man doing his Ph.D. research on how university professors from various disciplinary areas develop pedagogical knowledge that is specifically adapted to their area of instruction. He has been involved in the CUTL for sometime, including teaching graduate courses modeled on the CDT workshop. He was a member of the learning team for two reasons. First, it was part of his duties as the Faculty Development Assistant. Second, he had been talking with the Director of the Center about working in teams, in particular with the Faculty of Arts. So, his interest was both professional and personal.

The *faculty developer* is an Education professor at Simon Fraser University (SFU). Before this she was a faculty member at McGill jointly appointed to the CUTL. Her current research interests are in teaching development in higher education and the meaningful integration of learning technologies. This includes how university professors develop pedagogical knowledge in relationship to their subject matter, and how they come to understand teaching, how they make instructional decisions (including the integration of various technology applications), and the effects of these on student attitude and learning.

The *science professor* has more than thirty years service at McGill. He has always been interested in the challenges of teaching and curriculum development, but he found his greatest

challenge in the CDT workshop of 1994. Since that time he has become more involved with the activities of the CUTL, culminating in a sabbatical year (2001) spent at the Center. He is currently director of a major science project at the University. He is an alumnus of the CDT workshop and has been co-instructor several times.

The *technology consultant* is a professional working in the Instructional Computing Center (ICT) at McGill. He is a Ph.D. student doing his research in the area of technology integration who was also a graduate student assistant in the CUTL for a year. He is familiar with the CUTL culture and is someone who knows technology and pedagogy deeply.

The *librarian* has more than thirty years service at McGill. When he first joined the CDT planning process he understood little of the content but saw the form as rational and intelligent. He participated in the workshop and experienced an epiphany, in the sense of being lifted up to a higher plane of discourse with like-minded altruistic and scholarly people devoted to teaching and learning.

As *researcher* my role was to document the learning team's progress. I participated occasionally by providing summaries of meetings and process observations. I also led the colloquium (credibility check) at the end of data collection. I am a faculty developer at Concordia University. I have participated in the CDT workshop at McGill and trained as a co-instructor. I am responsible for implementing the CDT workshop at Concordia. My Ph.D. research is partly funded by the SSHRC grant held by the faculty developer from SFU, members of CUTL and my advisor. Although not directly related to this larger program of research, my findings should throw light on some of the issues surrounding faculty development.

Appendix 6: Course Design & Teaching Workshop Evaluations

May 2003 Course Design & Teaching Workshop
Summary of Attendance & Feedback Form

<u>ATTENDANCE</u>

Faculty of Agricultural & Environmental Sciences	1
Faculty of Arts	2
Faculty of Education	5
Faculty of Engineering	3
Faculty of Law	1
Faculty of Music	1
Faculty of Science	2
Other	2
TOTAL NUMBER OF PARTICIPANTS	**17**
TOTAL NUMBER OF FACULTIES	**7**

Strongly disagree	1	2	3	4	5	Strongly agree

	<u>AVERAGE</u>
1. Workshop was useful in terms of my own professional development.	**4.75**
2. Micro-teaching was effective in making me think about my teaching.	**4.6**
3. Large group instruction prepared me for small group activities.	**4.25**
4. Small group activities were productive.	**4.5**
5. I now have a better understanding of the teaching and learning process.	**4.1**
6. My expectations of this workshop were met.	**4.8**
7. The workshop has generated new enthusiasm and interest in me about teaching.	**4.3**
8. I would recommend this workshop to my colleagues.	**4.8**
Overall rating:	**4.5**

9. Any comments or suggestions for improvements?

- Improve presentations by ensuring visual work
- Speakers could do with some couching on delivery techniques
- More time for questions
- Not enough time for group interaction
- Group leaders were fantastic & supportive. Their knowledge of the process and background to the workshop and discipline were amazing.
- A lot of work ahead of me
- Course was intense, extremely engaging & productive.
- Excellent workshop, clearly structured, effectively targeted. Enjoyed small group activities
- Have the obligatory readings in advance to read them (a week before).
- Professional presentation, knowledgeable speakers
- Make the workshop available to sessional lecturers
- Love Microteaching, hate the taping
- No time to consolidate stuff-think things through, read some extra stuff

Schedule workshop for W/H/F, have the weekend to digest and then M/T

August 2003 Course Design & Teaching Workshop
Summary of Attendance & Feedback Form

<u>**ATTENDANCE**</u>

Faculty of Arts	1
Faculty of Engineering	2
Faculty of Medicine	5
Faculty of Science	3
Other	3
TOTAL NUMBER OF PARTICIPANTS	**14**
TOTAL NUMBER OF FACULTIES	**4**

Strongly disagree	1	2	3	4	5	Strongly agree

	<u>**AVERAGE**</u>
1. Workshop was useful in terms of my own professional development.	**4.71**
2. Micro-teaching was effective in making me think about my teaching.	**4.92**
3. Large group instruction prepared me for small group activities.	**4.14**
4. Small group activities were productive.	**4.64**
5. I now have a better understanding of the teaching and learning process.	**4.5**
6. My expectations of this workshop were met.	**4.86**
7. The workshop has generated new enthusiasm and interest in me about teaching.	**4.57**
8. I would recommend this workshop to my colleagues.	**4.78**
Overall rating:	**4.6**

9. Any comments or suggestions for improvements?

- A fabulous experience. I didn't even realize how much I needed this information. It changed my way of thinking about teaching and learning.
- Excellent and able course leaders.
- It seems trivial but how about access to healthy snacks so we can keep our brains fuelled? ex: cheese, protein sources, complex carbohydrates (wheat crackers). Excellent workshop, encourage follow-up sessions.
- Very intense. Be a little clearer regarding time allowed: perhaps a clock on the wall so we can judge.
- Organize an "advanced", follow-up session (short, yearly)
- Provide lunch so it is possible to attend all lunch seminars as well as stimulate interaction between small groups.
- Not expecting to have to do so much work and reading. Didn't receive materials in advance, was sent to an address where I don't regularly pick up my mail.
- Too much time on Monday & Tuesday (could condense) and not enough later on the week. Not even time to do home work. Facilitators were great.
- Would have loved a document/reading that was gone over within the workshop about the uses of microteaching.
- Facilities need to be improved. Weren't enough electrical outlets nor network access.
- Should be part of Orientation package to new staff, not that they need to take it but at least be informed about it.
- Readings were very wordy and takes a long time too read. May be more concise readings. Taxonomies, assessment plans etc would be valuable.
- Lost interest in one of the readings (understanding, thinking, knowing). It was too long.
- A shorter workshop would be better (3-day). Readings are useful and good to give them before workshop.

December 2003 Course Design and Teaching Workshop
Summary of Attendance & Feedback Form

<u>**ATTENDANCE**</u>

Faculty of Agricultural & Env. Sciences	**1**
Faculty of Arts	**2**
Faculty of Engineering	**3**
Faculty of Medicine	**3**
Faculty of Science	**1**
Faculty of Religious Studies	**1**
Libraries	**1**
ICC	**1**
Other	**1**
TOTAL NUMBER OF PARTICIPANTS	**14**
TOTAL NUMBER OF FACUTLIES	**6**

Strongly disagree	**1**	**2**	**3**	**4**	**5**	**Strongly agree**

	AVERAGE
1. Workshop was useful in terms of my own professional development.	**4.93**
2. Microteaching was effective in making me think about my teaching.	**4.50**
3. Presentations and case studies provided a useful framework for thinking about re-designing my course.	**4.50**
4. Small group activities supported me in applying new concepts about course design.	**4.64**
5. I now have a better understanding of the teaching and learning process	**4.64**
6. My expectations of this workshop were met.	**4.86**
7. The workshop has generated new enthusiasm and interest in me about teaching.	**4.86**
8. I would recommend this workshop to my colleagues.	**4.93**
Overall Rating:	**4.73**

This workshop is normally offered over five consecutive workdays, but this time there was a break between day 1 (Friday) and day 2 (Monday). We are considering other alternative schedules for future workshops.

9. With this in mind, could you describe the types of activities that you undertook over the weekend in order to prepare for Monday's activities?

- I liked the break-give time to read the readings, etc.
- None or few
- Very little, because I had personal plans. Had I not had those, I would have done all the readings for the course in advance.
- Readings, work on microteaching.
- Did the readings and homework for Monday
- Allowed more time for participants to prepare for the microteaching
- Read the articles
- Reviewed the contents of binder (each section); reviewed plans/events for each day of the workshop; completed required "homework" for Monday's class.
- Work on concept maps, do the readings, watched the video from microteaching and prepared for the next microteaching; go through the binder to see what's going to happen in the remaining days of workshop.
- Baking cookies-listening to Christmas music; thinking a lot about the courses I teach.
- Preparation for microteaching.
- I watched myself on video; read recommended articles.
- Spend time on each of the homework thesis; e.g: readings.
- Reading, initial construction of the course outline. Beginning on Thursday might be better timing for weekend.

10. Given your experience, could you comment on the value of a break between day 2 and day 3 of the workshop? How would you feel about such an option?

- That would be good too
- I think it's a great idea to break the workshop in the middle (even w/ a half-day break)
- Good idea! Even though I had set aside the time, I still had research demands that required attention throughout the week.
- Makes a lot of sense and is better than break after Day 1
- I think a break later on would be more useful. We would have time to catch up on readings or read ahead, try working on the outcomes etc. After Day 1 we are not engaged with the material.
- Might be a worthy try.
- I think there was sufficient time to catch up with the material. Nevertheless a break between Day 2-3 instead of day 1-2 would have been better.
- I would prefer not to have a break between day 2-3. It would take away the flow and intensity of the workshop. The break between day 1 -2 was good because we got a chance to review the binder and prepare for the week.
- It would work better to go back through the things I learned and worked in 2 days. Only concerns are it will be hard to try absorbing everything in 2 days.

- Great idea! Part of what we are asked to do is to be creative and re-arrange ideas-that always takes time-what appear to be 'blank time', but isn't really. Even a 6 day schedule would be good- Friday to Friday. The weekend to mull over the concept map, Wednesday as a work day, less structured, to work on the homework tasks but have each other and some of you available. Alternatively have one fewer microteaching exercise but an unstructured afternoon instead.
- Extremely valuable! By the end, I had little energy left for watching videos, preparing for lectures, etc. A break would have been great!
- I think it is better a Monday to Friday workshop.
- I think it could be very useful to allow the learners more time to absorb/perfect upon and practice what they have been learning.
- Very good.

Additional comments:
- I think this particular group worked extremely well- the animators/facilitators (Cindy, Denis and Rhonda) were all great in terms of their professional knowledge, their teaching abilities (as in making us understand) and their pleasant/fun personalities; The other reason for success was the other students who were just a remarkable group-so it was a part contribution but one you can't plan. The course package was well organized and useful and I hope to have the time to send all of it. Thank you!
- Small groups could be more effective if more candid criticism nor encouraged. Perhaps an evaluation form could be used in the microteaching.
- I felt somewhat crippled in the microteaching because very little of the actual content of my course seemed appropriate to try to teach to other workshop participants. Perhaps grouping scientists and engineers together for part of the small group work would be helpful. Less hindered by the content, a greater focus on teaching and learning strategies may be achievable this way.
- Some time (~15 min) reserved for specific questions at the beginning of the afternoon session would be good.
- Recommendations for increasing the effectiveness of small groups; we left 'breaking out' of the structure to discuss things. I think this is a sign that we need scheduled discussion time as we obviously felt the need to share/tasks get feedback.
- In order to get better feedback during the microteaching, participants could be given a 'rubrics' with clear categories that they could use to evaluate the teacher such as: rubric that contains: teaching style, voice (is it clear, loud,...); Once the participant fill the form, then they could use it to provide constructive criticism of the teacher, force the participants to comment on one good quality of the teacher and one point that they could improve on.
- Suggestion to increase the effectiveness of the small group teaching; Assign a student course to another student to see how he would come up with new assessment strategies. The homework would be presented the next day and compared with the suggestions of the real owner of a given course.
- It was such a special opportunity in the workshop. There were so much to learn in such a short time. And great experiences working in large group. I also learned a great deal and enjoyed through small group.
- The workshop was extremely useful and practical. Great job!