TRANSFORMATIVE EFFECTS OF LEARNING&ASSESSMENT-FOCUSED
EDUCATIONAL DEVELOPMENT

by

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ABSTRACT

This heuristic inquiry outlines the chronology of my own theory-building, developing awareness and understanding of my educational development practice; I define my practice as learning&assessment-focused educational development. The inquiry maps the ways in which my early doctoral work shaped both my thinking and my practice as an educational developer eventually leading me to undertake a collaborative empirical study with the post-secondary teachers with whom I work. The purpose of the qualitative study we undertook together was to better understand how learning&assessment-focused educational development might facilitate transformative professional learning.

Sixteen college and university faculty members with whom I had engaged in learning&assessment-focused educational development, and who were familiar with the ICE (Ideas, Connections and Extensions) model of learning and assessment (Wilson, 1996; Fostaty Young & Wilson, 2000), collaborated with me as part of my heuristic inquiry. The study of our lived experience of learning&assessment-focused educational development became the next logical step of the investigation of practice that I had already begun to question and to write about. Together we set out to identify and name the instructional content, processes, approaches and relationships that supported significant professional learning. Findings indicated that the adoption of a framework, preferably one that is congruent with teachers’ emerging conceptions of teaching and learning, helps post-secondary teachers’ organize their thinking about learning and enables improved communication about their expectations for students’ learning. The
collaboration led to the identification of six essential characteristic features of learning & assessment-focused educational development.

Overall, this research contributes to the evidence-based literature on effective educational development practice and to the discussion on the scholarship of educational development research and on the scholarship of teaching in general.
ACKNOWLEDGEMENTS

It would be remiss of me not to acknowledge the support and contributions of others that made this work possible. I am deeply indebted to the post-secondary teachers with whom I work. Their enthusiasm for their professional learning, and candour in sharing it with me, enabled my own transformative professional learning.

Thanks go to my committee members for their patience and support through my doctoral journey and protracted writing experience. To my supervisor, Dr. Susan Wilcox, I owe thanks for expanding my conceptions of research and practice. Thanks go to Dr. Lyn Shulha for her broad-scope thinking and to Dr. Malcolm Welch for his attention to detail.

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To my family I owe thanks for their unwavering patience and their inimitable capacity to make me laugh at my own foibles while, all along, cheering me toward the finish.

I feel a deep debt of gratitude to my friend and mentor Bob Wilson. Without his trust, guidance and the opportunities he provided, this journey would not have been possible.
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PROLOGUE

The purpose of this qualitative, heuristic study was to better understand how educational development undertaken with a focus on learning, and the assessment of learning, might facilitate transformative professional learning. The research was undertaken as a means of improving understanding of my own educational development practice and the professional learning, including my own, that is occasioned through it. In reporting the results, I will contribute to the scant literature on what educational development practice is and what it looks like.

My intention was to explore the full breadth of my educational development practice—how and why my practice came to be what it is, what I intend to accomplish through that practice and what evidence there is of its effectiveness.

There is no definitive or widely accepted epistemological foundation for educational development practice (Harland & Staniford, 2003), nor a single definition of what educational development is. It is therefore imperative that I share my own stipulative definitions of educational development and practice, that is, explain the terms in the context of this dissertation and discussion. In the context of Canadian higher education settings, educational development generally refers to activities undertaken to improve the quality of teaching and learning. Drawing on Andresen’s (1996) writing, I conceptualize educational development as inquiry—a systematic process of questioning about, reflection on, and the improvement of, all activities that support learning. That process of inquiry can be said to be educational, or educative, for two reasons: (a) because
the inquiry focuses on the individual’s learning and (b) because it is instrumental in supporting the scholarship of teaching. My conceptualization also causes me to view educational development as a truly developmental, or growth, process. That is, the process begins with a teacher’s current and emerging conceptions, skills and contexts and is structured to support professional growth relative to that liminal space. My contention is that in order to fulfill its definition, educational development must be both educative and developmental for each individual engaged in the process, participant and developer alike. Educational developers, professional consultants who engage with faculty member colleagues for the purposes of facilitating the inquiry into teaching and learning, benefit reciprocally from development experiences. Through the collegial interactions they design, facilitate and contribute to, developers gain new insights, perspectives and engage in an ongoing loop of meaning-making. In a very real sense, I understand educational development as research into teaching.

**The Approach to My Research**

The eight chapters of this dissertation represent a heuristic—my lived experience and sense-making of my educational development practice. Heuristics, a type of phenomenological inquiry (Patton, 2002), enabled me to focus on my own and others’ experiences with the ways I practice educational development. The approach “emphasizes connectedness and relationships” (Douglass & Moustakas, 1985, p. 43) and enables inquiry into the meaning and personal significance of the lived experience for everyone involved in or with the phenomenon. In this case, the phenomenon is learning- and assessment-
focused educational development, which I refer to throughout this document as learning&assessment-focused educational development, a convention which I explain in Chapter 1. What resulted through the heuristic inquiry was “an act of creative discovery, a synthesis that includes intuition and tacit understanding” (Douglass & Moustakas, 1985, p. 43).

**Why Heuristic Inquiry?**

Heuristic research begins with one’s own awareness of a phenomenon and an attempt to explain that awareness through a series of questions “until an essential insight is achieved” (Moustakas, 1990, p. 11). Once I realized I was living a learning&assessment-focused practice, I felt the need to explain, if even to myself, what that meant ontologically and instrumentally. Heuristic inquiry “requires a subjective process of reflecting, exploring, sifting, and elucidating the nature of the phenomenon under investigation” (Douglass & Moustakas, 1985, p. 40). The objective is to discover and explain a phenomenon as it was experienced.

Typically in heuristic research, the research questions and the methods through which they are asked and answered emerge from a process of ongoing meaning-making. The challenge is to discover the data within one’s own lived experience and to explain the lived story in such a way that it enables essential realization and, potentially, transformation (Moustakas, 1990).

The objective of heuristic research is to explain an event, process or phenomenon as it was experienced; “at the base of a heuristic discovery is the power of revelation in tacit knowledge” (Moustakas, 1990, p. 20). Engaging in
heuristic inquiry was an opportunity for me to make my largely tacit practice explicit.

Douglass and Moustakas (1985) proposed that there are three phases to heuristic research: Immersion, a process of exploration that uses a personal frame of reference; Acquisition, a phase of data collection on tacit understandings and inferences about the phenomenon under study; and Realization, that stage when tacit knowledge is verified through naming and when a certain intentionality develops. It is through completing the Realization phase that dissemination of the new knowledge and awarenesses becomes possible. In later work, Moustakas (1990) elaborated the heuristic process to include seven phases:

- *Initial Engagement* when the context of the inquiry and the questions that inform it emerge, take form and gain significance
- *Immersion*, a time where the researcher “lives the question” (p. 23)
- *Incubation*, that period when tacit understandings and intuition come into focus and are clarified
- *Illumination*, where reflection brings about a new awareness of an old understanding
- *Explication*, that time during an inquiry when a researcher must understand and articulate his, or her, own awareness before understanding others’ awareness.


• *Creative Synthesis*, the process of pulling all components of the inquiry together, usually in narrative form, to share insights into the phenomenon under study.

• *Validation*, the point at which the researcher makes a judgment about the accuracy of the description of the phenomenon gained through the reports of meanings and experiences.

While I accede that, in general, there is always a stage of *Initial Engagement* when undertaking an inquiry of any kind, I found the seven-phase framework to be restrictive rather than facilitative. The inclusion of four additional phases inserts a degree of granularity of process that I perceived as a potential impediment to the inquiry rather than a catalyst to it. I instead chose the flexibility of the earlier three-phased model of heuristic research proposed by Douglass and Moustakas (1985) to guide this inquiry.

The three phases (Immersion, Acquisition and Realization) outlined above are, in my experience, best used as principles to guide inquiry activities rather than as discrete phases that follow sequentially one from the other. The process in which I engaged was more iterative than linear and required recursive engagement in each of the phases as my inquiry deepened. In each subsequent chapter of this manuscript I will draw attention to the iterative nature of my own heuristic learning that required revisiting the phases of inquiry.

When I began to plan the empirical study that is a part of this dissertation—what I naively considered to be the “real” research—I was inattentive to the fact that my inquiry, my heuristic inquiry, had already long begun. I had, in fact, been
engaged in the process of making sense of my practice in other ways: conducting pilot studies; reporting on the professional learning that post-secondary teachers reported to have resulted from their engagement in learning&assessment-focused educational development; and situating some of my approaches to, and tools of, practice in the literature. I had been engaged in sense-making using my own lived experience of learning& assessment-focused educational development, all along. All of it was research; all of it was part of my heuristic process of inquiry. I just did not recognize it as such until I was through to the other side of the empirical research when it was brought to my attention by my supervisor, Susan Wilcox. Then I realized it was the sense-making I was able to do through the papers I wrote that led me to undertake the collaborative qualitative study that extended the heuristic and my understanding of my own practice. It had become apparent to me, after my preliminary doctoral work, that if I was to gain the depth of understanding of learning&assessment-focused educational development that I sought, then further Immersion needed to emerge from the initial Realizations I had made.

The collaborative nature of the empirical research I had planned to conduct was important because understanding learners’ lived experiences “is something that should be considered the educational bottom line” (Adams, 1996, para. 18) for teachers and, presumably, for educational developers as well. For that reason it was imperative that this heuristic study included the lived experiences of post-secondary teachers with whom I have engaged in learning&assessment- focused educational development.
Structure of the Dissertation

Beginning with a context-setting introduction, I situate my work in current and pinnacle literature and delineate what it means to engage in a learning& assessment-focused practice. It is here that I outline the questions that guided the heuristic and my rationale for the overall approach to the research.

That introductory chapter is followed by the presentation of three of my peer-reviewed, published manuscripts, each of which is presented in a separate chapter. Each manuscript is supported by a context-setting introduction and supplemented by an epilogue through which I explain the significance of the paper to my developing understanding of learning&assessment-focused educational development and the subsequent inquiry that arose from the piece. It was through the writing and academic discourse occasioned by each of these papers that I was able to develop the conceptual and contextual awareness and scholarly curiosity that led to the empirical study.

The first paper, presented in Chapter 2, is a manuscript co-authored with Dr. Susan Wilcox in which we reported a pilot study inquiring into the assessment practices of four highly successful post-secondary teachers. Note that post-secondary teachers are variously referred to as teachers and faculty members throughout this dissertation. Originally published as a monograph in To Improve the Academy (2010) the paper presented in Chapter 2 is significant in that it:

• identifies the factors and values that underpin the assessment choices post-secondary teachers make in supporting their students’ learning,
• suggests that the lack of an overarching conceptual framework or working theory of learning is a significant barrier to teachers’ ability to effectively communicate their expectations for learning, and

• demonstrates how discussions about assessment reveal teachers’ underlying assumptions and beliefs about learning.

Rounding out the chapter is an explanatory note of how engaging in that study, and the results of it, shaped my thinking and led to further inquiry.

Chapter 3 is the text of a conference platform presentation. In it the practicalities of ICE, the model of learning and assessment that was first introduced by Wilson in 1996 and later elaborated upon by Fostaty Young and Wilson in 2000, is discussed. The paper outlines the ways in which the ICE model has been understood and used by post-secondary teachers to improve their teaching and, through a heightened ability to communicate their expectations, also improve their students’ learning. Following the format of Chapter 2, I conclude Chapter 3 with a short transition piece that contextualizes my development as a scholar and the next phase of my thinking about what it means to engage in learning&assessment-focused educational development.

The conference paper is followed, in Chapter 4, by an article published in the *International Journal for Academic Development*. In it, I explored the epistemology and language of three taxonomies of learning and the ways each might be used in an educational development context to support the development of post-secondary teachers’ conceptions of teaching and learning. The paper explores a way of guiding faculty members through a critical
examination of their own epistemological and ontological beliefs—through a process of examining currently accepted theories of learning for congruence with their own emerging working theories. The chapter concludes with a rationale for empirical inquiry into learning&assessment-focused educational development.

Each of these three chapters is representative of a discrete body of work that contributed to the evolution of my thinking about teaching, learning, assessment and the educational development practice that evolved through that learning. The voice and theoretical complexity of each of Chapters 2, 3 and 4 are relative to the audience, intention and context for and in which they were originally written. I have retained those differences here quite purposefully for, as I have come to appreciate through my practice, in the same ways that audience, intention and context are critical factors in any teaching interaction, they are just as much so in the purposeful decision-making process that is principle-driven educational development.

The last three chapters of this dissertation report on the method I adopted, and the findings and eventual conclusions that resulted from the empirical research. The methods chapter, Chapter 5, outlines the methodological and theoretical underpinnings of the collaborative part of my research. Chapter 6 is a report of findings, both about the nature of my practice and faculty members' perceptions about their own professional learning. In Chapter 7 I discuss the relevance of the findings from the empirical research and outline what I consider to be six essential characteristics of learning&assessment-focused educational
development. In conclusion, the implications of both the empirical research and the heuristic inquiry as a whole comprise Chapter 8.
CHAPTER 1
INTRODUCTION

In this chapter I clarify the purpose of my research by discussing each key feature of my purpose statement and present the questions that guided the inquiry.

Purpose

The purpose of this qualitative, heuristic study was to better understand how educational development undertaken with a focus on learning&assessment might facilitate transformative professional learning among post-secondary teachers.

The purpose statement has, within it, four embedded features: (a) what learning&assessment-focused educational development is and (b) how I practice it; (c) defining and identifying post-secondary teachers’, and my own, transformative professional learning; and (d) the notion of what it means, within the context of this study, to better understand a phenomenon. The statement also alludes to the two critical perspectives through which this work evolved: my own perspectives as an educational developer and educational development scholar and the perspectives of the teachers who engage in educational development.

Learning&Assessment-Focused Development

In my more than 11 years as an educational developer working closely with new and experienced college and university teachers, I have observed the difficulty most have in articulating their conceptions of teaching and learning, including their expectations for their students’ learning. With little pedagogical preparation for their role as teacher (Boice, 1991), many college and university
faculty members do not have a reliable way of thinking and talking about their conceptions of teaching and learning or for articulating their expectations for learning to their students (Fostaty Young & Wilcox, 2007; 2010). Many have had no reason or opportunity to take the time to investigate the underpinnings of their practice. Without awareness of and insight into one’s current practice it is very difficult to work toward improvement or to plan for change (e.g., Postareff, Lindblom-Ylänne, & Nevgi, 2007). Because teaching is a purposeful endeavour (Pratt, 1992), a critical first step in the development process is to have faculty members communicate about what they do and why they do what they do. It is a way of highlighting the process of change from one state to another. Often, those conversations are the first opportunities that teachers have to put their practice into words (Fostaty Young & Wilcox, 2010).

My experience in engaging with faculty members, as well as engaging in more formalized research (Fostaty Young & Wilcox, 2010; Leger & Fostaty Young, in review), has led me to discover that one of the easiest ways to undertake a discussion about conceptions of, and intentions for, teaching and learning is to invite faculty members to talk about the choices they make in their approaches to assessment. At their core, conversations about assessment are conversations about learning. Through the study presented in Chapter 2, I will elaborate on how it is through these conversations that teachers’ systems of values, beliefs, and working theories about learning come to light. Because of my realization that conversations about assessment are so substantively about, and enmeshed with, learning, I began to use the term “learning/assessment” when
writing about the focus of my development practice until it was brought to my attention that the use of the virgule implies an either-or relationship between learning and assessment. Preferring to convey the enmeshed qualities of both factors I now make use of the embedded ampersand. My intention is to convey the interconnectedness of the phenomena and the conceptualizations that inform it. Throughout this document I refer to my practice as learning&assessment-focused.

The literature on teaching and learning in higher education consistently depicts assessment as the single most influential factor shaping students’ choices about what and how to learn (e.g., Biggs, 2003; Boud, 1990; Ramsden, 1992). More significantly, assessment has also been identified as a very public declaration of the values upon which teaching practice is built (Brookfield, 1995; Gass, 2004; Ramsden, 1992). In fact, Pratt (1992), after conducting a series of interviews with 218 teachers, concluded that, “assessment provided a window on what they believed about knowledge, learning and the purposes of education” (p. 219). The results of Pratt’s study led him to assert that assessment, more than any other teaching activity, revealed an individual’s dominant conception of teaching and learning. Thus, in inviting discussion about assessment practices I am often able to help teachers reveal many of the intentions, assumptions, conceptions, misconceptions and values upon which their practice is based.

Through conversations teachers have revealed aspects of their practices to be quite purposeful and intentional and others insidious, deeply tacit or even surprisingly incongruent to their stated intentions (Fostaty Young & Wilcox,
2010). Those factors which influence practice so insidiously are often not revealed, even to the teachers themselves, until the discussions about learning&assessment take place.

**My Learning&Assessment-Focused Practice**

Though most approaches to educational development can best be described as eclectic, that is they employ multiple methods to serve multiple intentions (Gibbs & Coffey, 2000), many individual developers acquire an affinity for and expertise with their own preferred strategies. My development practice is decidedly learning&assessment-focused. That is, I consistently use learning&assessment to frame development activities and interactions in such a way as to discern the underpinnings of teachers’ practice and prod a shift in focus from teaching to learning. Chapter 3 outlines the ways in which learning&assessment can serve as the focal point in discussions of all teaching practice: setting learning outcomes; selecting and developing teaching strategies; and assignment selection and design.

Like all educational curricula, educational development programs and approaches are guided by sets of values, beliefs, conceptions and philosophies that influence practitioners' orientations to development. The model adopted by a developer, whether specifically articulated or tacit, influences the types of professional learning that are facilitated and consequently influences the types of evidence that might be sought in investigations of teachers’ skill and conceptual development. In much the same ways that faculty members' conceptions of teaching and learning influence their approaches to teaching (e.g., Kember 1997;
Pratt, 1992; Samuelowicz & Bain, 1992; 2002), developers’ conceptions of teaching and learning, along with their epistemological and theoretical orientations, influence their approaches to educational development (Smyth, 2003). The influences on my own orientations to practice are threaded throughout the following chapters and presented most fully in Chapter 6.

I have found that inviting conversation about assessment is an effective way of turning faculty members’ attention to learning—what students do, and diverting, for just a little while, the attention away from teaching—what teachers do. In so doing, my intention is to cause faculty to first become strategically alerted to their intentions for students’ learning and then to talk about the ways in which they make decisions to occasion that learning. Strategic alertness, described by Entwistle and Walker (2000), involves the purposeful refocusing of attention from one aspect of a phenomenon to another. The shift in focus, usually from a highly-attended-to aspect to another, previously un- or under-attended-to aspect, often leads to expanded awareness of the phenomenon under study. In using a learning&assessment-focused development approach to help make the transition in awarenesses, faculty members are invited to confront and articulate their currently held conceptions of learning and to put into words what their expectations “look like” and then reconsider them after a shift in strategic alertness.

The ICE Model of Learning and Assessment

As a means of facilitating dialogue on teaching and learning, I have found it useful to introduce the ICE model of learning and assessment (Wilson, 1996;
ICE, an acronym for *Ideas, Connections* and *Extensions*, is a comprehensive, yet simplifying, surrogate for a complex conception of learning that includes cognitive transformative theories of learning as well as enactive recursivity: an ongoing, non-linear, non-hierarchical learning loop of developing expertise. The model distils current cognitive transformative theories of learning into an accessible framework that seems to resonate with many faculty members’ experience of what learning looks like. The every-day vocabulary and accessibility of the model provides a reliable, portable, working framework within which to conceptualize and communicate about learning.

I have chosen to use the ICE model as the framework within which to conduct my learning&assessment-focused practice because it is entirely congruent with my own conceptions of how learning occurs and is enacted. The ICE model and the theories through which it evolved are more thoroughly elaborated in Chapters 3 and 4. A session plan and all learning support materials for a professional development workshop where ICE was a featured component are included as Appendices A, B and C.

It is entirely possible to conduct an assessment-focused development practice without using ICE. It is also possible to use ICE in situations other than a learning&assessment-focused development practice. For the purposes of this study then, *a development practice with a focus on learning&assessment* involves the investigation of several nested factors, including: (a) the effect of using assessment as an inroad to help both post-secondary teachers, and me, as the developer, make sense of their conceptions of teaching and their practice; (b)
the effect of using ICE as the framework within which to conduct a learning&assessment-focused practice; (c) the way in which I, as an educational developer, use ICE as a development tool; and (d) the role I play in, and the features of, a learning&assessment-focused development process.

Because development practice implies an interactive process, it was imperative that the perspective of each side of the interaction be represented in the empirical study. Thus, the factors listed above are inclusive of a faculty perspective as well as my own perspective as an educational developer.

**Post-Secondary Teachers’ Transformative Learning**

The purpose of educational development is to improve students’ learning by way of improved teaching (e.g., Åkerlind, 2003; Gibbs, 2005; Ramsden, 1992). The improvement of teaching is a complex, multifaceted undertaking. Of course, because meaningful changes in teaching practices are unlikely to occur without concomitant changes to teachers’ conceptions of teaching and learning (e.g., Åkerlind, 2003; Ho, Watkins, & Kelly, 2001), educational development very often occurs at both the conceptual as well as skill-development levels, though not always at the same time. In many ways, educational development practice is about helping faculty members think about their teaching in ways different from their habit (Kreber, 2004). The goal is to help teachers develop increasingly sophisticated conceptions of teaching and learning while at the same time supporting the acquisition and development of the teaching skills they will need to enact those newly developed conceptions.
Observable changes in faculty members’ approaches to teaching are frequently used to gauge the degree to which teachers’ professional learning has occurred (Gibbs & Coffey, 2004) as well as to judge the relative success of the targeted development initiative. While behavioural change is certainly one manifestation of professional learning, we need to be open to the possibility that meaningful learning might not always manifest itself overtly and might, in fact, be perceptible only to the person who undertook the learning (Farrell, 2005).

I have had opportunities to work with a wide range of faculty members, some with quite simplistic conceptions of learning and teaching and others with exceptionally sophisticated and complex conceptions. Not surprisingly, the results of, and responses to, learning&assessment-focused development activities are as wide-ranging as the participant pool is diverse. Nonetheless, my own anecdotal records indicate that the introduction of ICE seems to have a transformative effect on a significant number of teachers’ conceptions of teaching and learning, and not only for those who hold less complex conceptions upon beginning the development experience. Teachers have told me that learning about ICE has changed their lives as teachers, has transformed the way they approach their work, and the way they talk to their students: “A transformative experience! A novel and practical approach to assessment centred on learning” (anonymous post-workshop feedback, May, 2005); “The ICE approach is especially great! Huge change to my teaching with enormous success” (anonymous post-course feedback, May 2005)
Often, these faculty members also report that the artefacts that arise from their implementation of ICE through rubrics, questioning techniques and tables of specifications provide a variety of teaching tools that enable them to immediately act on their new conceptions of teaching and learning: “I used ICE in my design class, successfully, the very next day” (post-workshop email feedback, December 2009); and “I think this is the best 2 hours I have ever spent – this has changed my academic life!” (anonymous post-workshop feedback, April 2005). Still, despite rich anecdotal records, I did not fully understand what it was about the ICE model (if anything) or the development experience or relationship (if anything) that was critical in occasioning the significant professional learning that teachers were reporting.

The way these teachers spoke about their learning was entirely consistent with Mezirow’s (1981; 1991) and Cranton’s (1996; 2002) depictions of transformative, or emancipatory, learning. Both Mezirow and Cranton contended that learning could be said to be transformative when learners’ view of their world is altered through their learning, enabling them to achieve a more integrative perspective than they had previously. The learning is thought to be gradual and purposeful and involve mindful participation on the part of the learner in order to work through a reorganization of meaning (Mezirow, 1991). Old paradigms are thought to be altered to such an extent as to be transformed into new paradigms and it is through these new paradigms that learners' understandings of their world and their interaction with it are altered. In a very real sense both the learner and the learning are transformed.
Even teachers who already held highly sophisticated conceptions of teaching and learning before their experience with ICE and learning&assessment-focused development had reported their learning as transformative, something I found difficult to understand especially when they sometimes also reported no changes to their teaching practice or instructional decision-making. While it was clear from their reports that learning&assessment-focused educational development informed by ICE was having a positive effect on their thinking about teaching and learning and sometimes on their practices as well, I was still uncertain about what it was that contributed to such positive results.

**Better Understanding of Educational Development**

On the surface, “better understanding” might be easily interpreted and understood as self-explanatory but the simplicity of the phrase belies the complexity beneath it. In this instance “better understanding” involves a complex process that demands the simultaneous investigation and reporting of multiple, inter-related factors.

The ICE model itself is the key to simplifying and organizing this complex process, and so I have used ICE not only as a teaching/teacher development tool but also as a tool for assessing the outcomes of this research. This approach provided a way of reporting on the range and limitations of the ICE model’s applications for educational development and even on its usefulness for helping to define “better understand.” Concurrently, as I conducted a critical review of ICE, I engaged in a parallel critical review of learning&assessment-focused
educational development and explored themes of research as development and development as research.

How did this work? The goal of better understanding begged the questions of (a) whose understanding will be improved and (b) how will better understanding be recognized. At one level, better understanding of the development process meant the improvement of my own understanding of the development process and of the role I play in it. That understanding was assessed through evidence of an ability to articulate the ways in which I engage in my practice (Ideas), make explicit the assumptions, values and philosophies that inform it (Connections) and discuss the implications of that practice, and perhaps propose elaborated approaches (Extensions). At another level, better understanding was also intended to occur for those faculty members who participated in and contributed to the empirical research. Their better understanding was recognized by an ability to identify the features of the development relationship that contributed to their learning (Ideas), comment on the significance of that learning (Connections) and anticipate or create additional opportunities for ongoing development and the improvement of their own and others’ teaching (Extensions).

Of course, “better understanding” will not be limited to my own understanding or that of faculty who participate in the study. The intention is to share the outcomes of this research with the broader community of educational developers and teacher educators and to contribute to the ongoing discussion about effective approaches to teacher development.
Research Questions

Through the articulated purpose of the research that I have elaborated, a series of seven overarching and enabling questions about the development process, my role in that process, and the learning accomplished by faculty members emerged.

On My Role as a Developer

1) What assumptions, perspectives, theories and beliefs inform my work as an educational developer and what are the underpinnings of this conceptual framework?

2) How is my conceptual framework enacted?
   a. What intentions do I have for faculty learning?
   b. How do I use ICE as an educational development tool?
   c. Why do I use ICE the way I do?
   d. What actions and interactions, on my and others’ parts, facilitate the learning that teachers report?
   e. How might a learning and assessment orientation contribute to educational development practice?

3) What evidence is there that the conceptual framework that informs my practice helps to improve teaching and learning?
   a. Of what significance to me is faculty members’ learning?
   b. What new Ideas, Connections and Extensions are faculty members able to make that they were not making before?
4) How might a learning&assessment orientation contribute to educational development practice?

5) What is the relationship between development and research?

Faculty Perspectives

6) How, if at all, does a learning&assessment orientation to educational development influence faculty members’ assumptions, perspectives, theories, beliefs and practices?
   a. What do faculty members report learning?

7) What elements of the development experience or relationship, if any, do faculty members identify as critical to their learning?
   a. How might those critical elements be strategically incorporated into educational development opportunities?

8) What impact does ICE have in facilitating the development of faculty members’ conceptions of teaching and learning?
   a. What is it about the ICE model, if anything, that faculty members identify as critical to their learning?
   b. How is faculty members’ thinking about teaching and learning different after the development experience?
   c. In what new ways does faculty members’ learning enable them to think, act and practice?
   d. Of what significance is that learning to the faculty members themselves?
These research questions arose as I was immersed in work as an educational developer, causing me to feel a need to better understand the foundations, implications and impact of my practice. Chapters 2, 3 and 4 of this dissertation, contributions to the current literature in educational development, grapple with research questions 1 through 4 and represent the preliminary conceptual and contextual inquiry that helped set the epistemological context and provide the impetus for the empirical study described in Chapter 5 and reported in Chapter 6. The latter chapters build on the preliminary answers gained through earlier chapters and address questions 2 through 7 most fully.

The result of this inquiry is a dissertation as composite: three articles and empirical research that represent a heuristic inquiry into learning&assessment-focused educational development informed by ICE. Answers to the research questions will give developers and faculty members a deeper appreciation for the changes they may expect to experience when they approach educational development from a learning&assessment perspective.
CHAPTER 2

The article presented here originally appeared in *To Improve the Academy*, Volume 28, in 2010. It is reprinted with permission from both the publisher and my co-author, Susan Wilcox.

*To Improve the Academy* is the official publication of the Professional and Organizational Development (POD) Network the aim of which “is to instill in educational developers a sense of responsibility for improving the quality of teaching and learning” in higher education (Jossey-Bass™ website, 2012). The paper represents a preliminary investigation of possibilities for educational development practice and inquires into the ways in which conversations about assessment might foster professional learning for post-secondary teachers.

**CONVERSATIONS ABOUT ASSESSMENT AND LEARNING: EDUCATIONAL DEVELOPMENT THAT MAKES A DIFFERENCE**¹

Sue Fostaty Young and Susan Wilcox

Assessment may be a very positive force for student learning. As teachers create tasks through which to gather and interpret information about student learning, they shape students’ approaches to course material (Biggs, 2003). The project we describe here had two broad purposes: first, to explore the connection between postsecondary teachers’ assessment practices and their intentions for student learning by examining influences on the choices teachers make when they conduct assessment; and second, to learn about assessment in a way that offered immediate benefits to the teachers we were learning from, and helped us

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acquire more effective strategies for educational development concerning assessment practices. Our ultimate goal is to promote the development of assessment beliefs and practices that will best support student learning in higher education.

Underlying this initiative is our vision of educational development as scholarship uniting research and practice. We are particularly interested in promoting collaborative self-study with teachers as a means of understanding and improving teaching and learning. Self-study is a mode of scholarly inquiry in which teachers examine their beliefs and actions for the purpose of improving their practice (Louie, Drevdahl, Purdy & Stackman, 2003; Whitehead, 1993). For example, Richards and Barksdale-Ladd (1997) used cases describing educational problems to unearth subconsciously held professional beliefs that influenced teachers’ decision-making processes. Self-study inquiry can promote transformational educational development (Wilcox, Watson, & Paterson, 2004) and as such is entirely suited to the purposes of this particular project. In practical terms, this meant we were committed to reflecting on our own educational development practices while at the same time helping faculty participants take a self-reflective approach to their teaching.

**Background**

Conceptions of teaching are presented in the literature as idiosyncratic, largely unarticulated composites of assumptions, knowledge and beliefs about learning, and how to facilitate it, that teachers amass through past and ongoing experience (e.g., Biggs, 1999; Entwistle, Skinner, Entwistle, & Orr, 2000).
Teachers’ implicit theories have a stronger influence on their practices than their cognitive reasoning does (Kember, 1997; Pratt, 1992; Samuelowicz & Bain, 1992; 2002). Kane, Sandretto and Heath (2002) conducted a comprehensive critical analysis of existing studies on academics’ teaching beliefs and practices and concluded that there is a real need for research interventions “that enable university academics to make explicit their own theories-in-use and to interrogate these in light of espoused theories and intentions” (p. 200). In educational development terms, teachers’ practice is unlikely to develop unless their conceptions of teaching also develop (Åkerlind, 2004; Ho, Watkins & Kelly, 2001).

Therefore, we need to engage faculty members in meaningful interactions that help them develop and then act upon sophisticated conceptions of teaching (Wilcox, 2000) with the ultimate aim of supporting and eliciting the type of learning outcomes and ends expected through higher education. We anticipated that guiding teachers through an exploration of beliefs and practices might facilitate their understanding of the motivations for their actions. We accept Schön’s (1987) assertion that when teachers reflect on their actions, they may be able to uncover the previously unarticulated assumptions that informed those actions. When we can make explicit the assumptions that help shape conceptions of teaching, those assumptions become more susceptible to change (Mezirow, 2000).

Pratt (1992) identified assessment as the aspect of teaching that, more than any other, reveals an individual’s dominant beliefs about teaching and learning.
Assessment is also recognized to be the single most important factor influencing students’ approaches to learning (Biggs, 2003; Boud, 1990; Ramsden, 1992). Students interpret a teacher’s system of values through what and how she or he chooses to assess (Boud, 1990; Gass, 2004), thus the critical need for assessment practices to be aligned with intentions for learning (e.g., Biggs, 2003; Gibbs & Simpson, n.d.). Brookfield (1995) urged teachers to “take a long, hard look at your evaluative criteria and indicators” (p. 112). For all these reasons, we were keen to explore the impact of teachers’ conceptions of teaching and learning on their assessment practices.

Wilson (1990) contended that any effort to understand assessment practices that does not also attempt to locate those practices in an educational context is “doomed to failure” (p. 227), because teachers’ assessment beliefs and practices may be constrained by institutional expectations and conditions. Class size and student ability are two conditions commonly assumed to affect assessment practices, but other factors come to mind as well. For example, in some institutions, course learning outcomes are fixed, but the choices of text(s), delivery method(s), learning activities and method(s) of assessment are up to the teacher. In this case, teachers are expected to make instructional decisions that will support the stated learning outcomes, but it is uncertain how and whether teachers make this connection. In other settings, most aspects of course design and implementation are up to the individual teacher. In theory, teachers in such settings are free to conduct assessment in ways they feel will best document achievement of intended student learning outcomes, but is this the case? We felt
compelled to explore aspects of institutional context as an area of influence regarding teachers’ assessment choices.

Recognizing the impact of assessment on student learning, and appreciating the intimate relationship between teachers’ beliefs about teaching, their institutional contexts, and their assessment choices, we concluded that a collaborative self-study of teachers’ assessment beliefs and practices could be an especially fruitful approach to educational development scholarship.

**Approach**

We invited four teachers to participate in an examination of assessment beliefs and practices with the two of us. We chose four because it allowed us to delve intensely into conversations with teachers about particular practices. Having two educational developers involved in this small project enabled productive conversations with a colleague about the process and findings.

We were interested in how these teachers’ conceptions of teaching and learning related to their assessment practices, and how institutional contexts influenced their conceptions of teaching and learning and shaped their assessment practices. We hoped this critical inquiry into practice would be of immediate benefit to the teachers involved and would help us devise ways of working effectively with teachers to help them reflect on their assessment beliefs and practices and make wise assessment choices.

**Participants**

The authors and project leaders are experienced educational developers with a disciplinary background in adult and higher education. We are skilled
consultants regarding postsecondary assessment practices, but have had few
opportunities to reflect on assessment issues in collaboration with teachers.

Two college and two university faculty members accepted our invitation to
explore assessment with us. We knew the university teachers at our own
institution to be thoughtful and successful teachers who took their teaching
seriously; the college teachers were recommended to us, for similar reasons, by
the Academic Vice-President at a neighbouring institution. (The province of
Ontario’s colleges of applied arts and technology focus on career preparation
through certificate, diploma and apprenticeship programs, although some
programs lead to a degree.) Participating faculty (three women, one man) came
from disparate disciplines: one college teacher taught public relations, consumer
behaviour and marketing, and the second taught accounting. One university
professor taught politics while the second taught microbiology. All were
experienced teachers with fifteen to thirty years in the classroom. As with most
postsecondary teachers, they did not have much formal preparation for teaching.
Although one college teacher had completed a Teacher of Adults certificate, the
others had learned through occasional participation in teaching development
workshops, interactions with a senior mentor, consultation with teaching
development specialists, or informal discussion with colleagues. Each teacher
participant completed a written questionnaire and then met twice with one of us
for conversations about assessment practices.
Questionnaire

We designed and administered a questionnaire, based on items available on standard teaching questionnaires. Included, for example, were items from the Assessment Experience Questionnaire (Gibbs & Simpson, 2003) and items from our university’s new faculty questionnaire, which asks respondents whether particular statements about teaching reflect their own views (based on Kember & Kwan, 2000). In their responses, participants identified relevant material to discuss during our subsequent conversations.

Conversations

We reviewed the completed questionnaires and identified some initial topics for the one-on-one conversations. Our conversations always began with participants’ comments on or questions about the project. We then asked if they wanted to address any one issue first. Together, we then went through the questionnaire to areas that either we had identified for elaboration or the instructor wanted to talk about. We took notes during the conversation. At the close of the first meeting, we asked participants to bring an artifact from their teaching and assessment practice to our second meeting. We left selection of items up to the participants, hoping they would choose something significant and evocative to facilitate a rich discussion.

Luce-Kapler (2006) proposed the side-shadow interview as a useful technique for exploring the nature of a process such as writing or teaching. The technique helps the writer or teacher engaged in decision-making to see “the path of decision nestled among alternative pathways”. During side-shadow
interviews, an interested “other” reviews an individual’s “text” with him or her using both prepared questions and conversational discovery. The interviewer asks the interviewee to talk about the choices they have made in the text. We experimented with this technique during our second meeting with teacher participants. The artifact provided by each teacher served as the “text” under discussion. We audio-taped, and later transcribed, these conversations.

Post-intervention Analysis

After our meetings with the teachers, we reviewed the records of our conversations and the responses to the initial questionnaire. None of the participants accepted our offer of a copy of the transcript of our tape-recorded conversations for their review. But to ensure accuracy, along with a letter of thanks, we sent a synopsis of each conversation to the participants and asked for their feedback. Every participant verified that we had accurately captured what was said. In reviewing the records, our goal was to identify (a) themes and insights about influences on these teachers’ assessment practices and (b) how our future interventions with teachers might improve postsecondary assessment practices. Faculty participants did not contribute directly to this aspect of the project. We did share a final copy of this manuscript with them and once again asked them to advise us if we had misrepresented them, or the process, in any way. All were satisfied with project outcomes as we had described them.

Outcomes

Here we focus on communicating the value of this “inquiry” approach to educational development by describing some of what we learned in the process
of working with the participating teachers. We do not mean to suggest that our specific findings about these teachers’ particular approaches to assessment are especially significant. We do wish to convey something of the flavour of our conversations with teachers so that others who wish to engage in this form of developmental scholarship might know what to expect from the process.

**Questionnaires**

Responses to the initial questionnaires furnished us with some helpful information about the teacher participants. For example, we learned that one teacher with thirty years’ experience was not very confident in his skills as a teacher (rating himself as 3 on a scale of 1 to 10, where 10 is very confident), while the other three teachers were very confident (9 on the scale) in their teaching skills. Interestingly, all rated the calibre of their students quite highly, ranging from 7 to 10 on a scale of 1 to 10 where 10 is excellent. We learned that these teachers described themselves as more focused on “helping students learn” than on “measuring students’ learning”. We were encouraged to find that all teacher participants were well able to describe both their strengths and their weaknesses, and were able to describe how their students probably viewed them. They reported that they used or had used quite a range of assessment strategies, including essay assignments, open book essay exams, objective tests/exams/quizzes, take home exams, oral presentations, group project reports, class attendance and participation, and lab reports. Their assessment challenges included: "giving useful feedback", "assigning fair grades", “correcting students’ style”, “avoiding favoritism or bias”, “finding enough time for grading”, and
“attempting to find marks in a poorly presented paper” – in other words, nothing very unusual.

**Conversations**

Our subsequent conversations with the teachers helped us understand how individual teachers think about assessment in specific contexts. One participant simply described his methods of assessment – the oral presentations, participation, journals and exams he used. The other three readily detailed the assessment strategies they had put in place in one or more of their courses. Their strategies incorporated such things as performance criteria, communication of requirements to students, the mixture of assessment methods, grading policies, mechanisms for providing feedback. These participants explained how their assessment approaches fitted the learning outcomes they valued. For example, having maintained strong ties to their respective work fields, both college instructors reported designing assessment tasks that reflected the skill set demanded by prospective employers. Valuing critical thinking and analytic research skills, the politics teacher developed assignments that intentionally targeted those skills. The fourth participant also connected his rather rudimentary notion of assessment with valued learning outcomes, indicating that his students gain a lot of skills through doing the tasks he assigns.

All four faculty were intentional about their assessment strategies, even if the approach was not particularly sophisticated. Their decisions were clearly based on their understanding of what students need to learn in their course. The two university faculty members seemed to rely heavily on personal beliefs about the
content and learning processes that were most desirable for their students to
demonstrate, while the college faculty members used graduate employment
criteria to guide the content and format of their assessment tools.

When discussing assessment challenges, the college teachers seemed
particularly concerned that their grading practices be manageable, reasonable,
and fair. Grades should reflect the students’ level of competence in a particular
field, as measured through tests and assignments. At the same time, these
teachers indicated that the students be expected to demonstrate competence
only in areas that had been taught, and that they must know up-front what is
expected of them. These faculty also expressed interest in finding ways to
assess that were feasible given their workload.

The two university instructors were rather more interested in discussing
grading practices that encourage student engagement and promoted learning.
They seemed to assume that most students would meet the basic course
requirements and attain a good grade. Their challenge was finding assessment
strategies to motivate students to do the kind of work that resulted in real
learning.

In discussing the reasons behind their approach to assessment, all the
participants talked about the quality of their students’ learning and identified ways
in which their assessment strategies influenced it. Some participants recounted
how they modified their approach in order to improve learning by introducing
rubrics and authentic assessment tasks to replace tests. Still, their level of
awareness of practices was not especially high. For example, one teacher
explained that his assessment approach differed between two of his courses because one course was more student-oriented while the other was more teacher-focused, but he could not articulate why he approached the two courses so differently.

All four participants said they considered class size in selecting assessment methods, but they did not necessarily abandon worthwhile assessment strategies simply because class size made the strategies harder to implement. Rather, they were more likely to include a complementary assessment strategy (for example, rubrics, group work, self- or peer-assessment) that enabled them to assess a larger class effectively.

Participants were invited to talk about how institutional grading policies influenced their assessment practices. One college teacher insisted that grading policies had no impact at all. Yet she interpreted the college’s policy that “student work must be consistently outstanding to earn an A” to mean that only three or four students in each of her sections could achieve an A, and she graded in a way that reflected this thinking. The other college instructor commented disparagingly on a recent change to an institutional grading policy: a Pass is now 50 percent where it used to be 60 percent. In her view, this change lowered students’ motivation because “many just want to pass”. However, she stated that course learning outcomes and her knowledge of the job requirements in the field most influenced her approach to assessment, not the college’s policies.

One of the university teachers did not know whether his institution had any official grading policies. He described a departmental culture in which faculty did
not discuss teaching, so he did not know how his colleagues approached assessment. He did comment that his graduate students needed to maintain an A average to receive funding, and so he graded in a way that did not put their funding at risk. Rather than addressing institutional grading policies, the other university instructor chose to comment on the reaction of her departmental colleagues to the grades she gave. Her colleagues complained that her grades were too high, while she contended that the grades accurately reflect the quality of her students’ learning. In her department, the official grading policy appeared to be irrelevant, and grading practices were considered a professional prerogative that nonetheless colleagues could challenge. For both these university faculty, the informal assessment and evaluation culture of their respective departments significantly influenced their assessment practices and their reflection on their assessment practices.

When we met a second time with participants, we were able to delve further into the various factors that influenced these instructors’ assessment practices. We were able to identify eight interrelated factors shaping their decisions about how best to conduct assessment (Figure 1).
Factors Affecting Assessment Choices

*Educator identity* (authenticity)
- Who am I and what do I value?

*Educator role* (influence)
- How can I best help students learn?
- What part do I play in their learning?

*Educator limits* (finding balance)
- How much am I prepared to do?

*Prior assessment experiences of educator* (knowledge)
- What have I “learned” about assessment through experience?

*Assessment skills of educator* (ability)
- What do I know how to do?

*Ecology of assessment* (context)
- How does my approach to assessment fit within the assessment climate or culture within my unit or institution?
- What is the relationship between my own values and practices and the values and practices of my colleagues?
- Is it necessary to achieve integration?

*Educator’s assumptions about students* (expectations)
- Who are my students?

*Intended learning outcomes* (broad and specific goals)
- What do my students need to learn?

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*Figure 1: Factors affecting assessment choices*

**Discussion**

Faculty members who participated with us in this critically self-reflective process described purposeful approaches to assessment in their courses. Their beliefs about quality learning and valuable learning outcomes had a more overt impact on assessment practices than did institutional contexts. In addition,
through the collaborative process of inquiry we used, we were able to identify several ways to improve educational development practices.

The Impact of Teachers’ Beliefs on Assessment Practices

Our participants were reflective teachers who cared about student learning and their assessment practices supported their commitment to student learning. They expected their assessment activities to help students achieve the outcomes—that is, assessment was primarily for learning, not of learning.

Although their practices did fit their conceptions of teaching and beliefs about the purposes of assessment, it would be more accurate to say that teachers’ practices reflected beliefs to the extent that their skills enabled them to do so. It was clearly important to them to act in accordance with their beliefs, and they appeared to do so within the scope of their abilities. We sometimes suggested new assessment strategies that they had not yet tried, but if an idea was not congruent with their beliefs, then they did not accept it.

Generally speaking, these faculty articulated sound rationales for their assessment approaches. Even the most tentative one said that he knew when something was “right” to do, even though he could not always explain why his choice was the right one. Like the other three, he looked to students for guidance—that is, he paid attention to students’ responses in considering the legitimacy and efficacy of an approach.

The fact that the teachers were mostly well aware of their intentions enabled them to be purposeful. In our experience as educational developers, many teachers are not so purposeful in their approach to assessment; rather,
assessment is something they do because they have to. We observed that participants’ intentionality was not a function of their specific underlying conceptions of teaching. Rather, it was the participants’ level of awareness of their deeply held beliefs, values, and intentions that allowed them to be purposeful in their approach.

The college teachers’ identity as disciplinary professionals with considerable prior experience in the workplace had a significant impact on their assessment practices. Although they taught full-time and described themselves as educators, they had a very strong connection with the workplace where they had once been and would be sending their graduates. This meant that they described their role as preparing their students for work and viewed their previous work experience as a real asset in determining what to teach.

**The impact of institutional contexts on assessment practices.** We learned that institutional expectations and conditions influenced these teachers in a variety of ways, and the lens of teachers’ conceptions mediated the impact of conditions on practice.

Class size proved to be a significant influence by restricting what was possible, although our participants responded differently to increasing class size. One of the university instructors, for example, stated adamantly that, no matter the size of her classes, she would always include extensive writing assignments because they enabled the kind of learning she valued, even though they increased her workload. The other university teacher commented that he had less confidence in his ability to grade effectively when he did not know his
students, as was the case in very large classes. In his view, his assessment skills were the limiting factor. One college teacher had changed from individual to group assignments to reduce the grading workload, but realized that group work increased students’ learning. This teacher had also introduced multiple-choice questions, but restricted them to testing for factual knowledge. The other college teacher explained that her motivation for introducing rubrics had been to save herself from writing out extensive feedback to her many students, but she also learned that rubrics enhanced learning. Notably, none of the faculty claimed that small classes were necessary to ensure quality assessment.

Institutional policies about grading and assessment did have an impact on teachers, though not in particularly significant ways. Mostly the teachers acted independently. They were responsible for most teaching and learning decisions and could choose to influence policies through their departments, if they wished. Most interesting to us was teachers’ blindness to how institutional policies might influence them, because they were so enmeshed in the environment. When institutional contexts and personal beliefs are congruent, it is more difficult to tease out the direction of the impact. Participants were more likely to remark on those policies they did not agree with, and would then explain how they managed to act in ways that reflected their own beliefs, or how they might persuade colleagues to change the policy.

Institutional contexts did seem related to participants’ conception of teaching. The two college teachers leaned toward student- and learning-centred conceptions, while the two university teachers leaned toward a teacher and
content focus. Both college teachers noted how important it was that students
develop and demonstrate skills that would enable them to be successful in the
workplace, whereas the university teachers spoke of their interest in assessing
the quality of their students’ critical thinking. One college teacher did express
some interest in developing her students’ criticality but her learning outcomes did
not reflect that goal. Conversely, the university instructor who gave assignments
to develop workplace skills felt like the “odd one out” in her department.

The climate for collegial interaction around teaching had a significant impact
on the participants. The university teachers highlighted negative aspects of
institutional climate, whereas both college teachers described a more supportive
climate. The latter described regular opportunities to get together with
departmental colleagues to discuss approaches to teaching and assessment.
The university teachers described situations with no collegial interaction or with
very uncomfortable, even antagonistic, interaction. They ventured outside their
academic units to find colleagues with whom to discuss teaching and
assessment.

At the outset of this project, we had wondered about the impact of preset
learning outcomes on teaching. Might they affect a teacher’s sense of ownership
of the course and commitment to it? In fact, we learned that, because of their
experience at the institution, the college instructors had shaped the learning
outcomes in the courses they taught. Outcomes were not distributed from “on
high” but were negotiated among the faculty who taught the course or related
courses. The teachers explicitly tied their assessment practices to course
learning outcomes and valued preset learning outcomes to guide their approaches to assessment.

**Working with Teachers to Understand and Improve Assessment Practices**

We hoped that this initiative would afford us the opportunity to encourage post-secondary faculty to adopt a critically self-reflective approach to assessment. In many ways, it did. Our asking teachers to give rationales for their assessment practices meant that critical self-reflection was inherent to their participation. We sometimes elicited quick responses indicating that reflection regularly permeated their practice. To other questions, notably those about collaborative approaches to criterion setting and the effects of negative language in rubric descriptors on learning, the response was, “That’s an interesting question; I never thought to ask that before.”

We identified some specific questions that were effective in inviting participants to explore their approach (Figure 2) and found some general approaches that worked well in our interactions with these instructors (Figure 3).
Effective Questions to Ask Teachers in Exploring Their Assessment Practices

• Have you ever done/tried this. . . ?
  Is there something you would like to try?

• What do you anticipate would be the result if you did this. . . ?

• How do you imagine your approach might change if. . . ?
  . . . there were no institutional requirements or policies?
  . . . class sizes were smaller (or larger)
  . . . you had no one to answer to?

• I noticed. . . Did you notice that as well?
  How did you or do you make sense of that?

• Would you tell me more about. . . (for example: the odd student, the difficult scenario, or the curious situation) that you mentioned earlier?

• My perception is that you do that. . . for this reason. . . Am I correct?

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Figure 2: Effective questions

The last two approaches of the five listed in Figure 3 recall Entwistle and Walker’s study (2000) in which they guided university instructors to attend to previously ignored aspects of their practice. This shift in teachers’ strategic alertness expanded their awareness of their practice and frequently led them to develop more sophisticated conceptions of teaching and learning. We found that our own attempts to guide teachers’ attention in similar ways gave them the chance to view their practice through an alternative lens.
Effective Strategies for Interacting with Teachers Regarding Assessment Practices

• Tie suggested or possible approaches to assessment to learning outcomes that are valued by the instructor—that is, explaining how a particular (alternative) approach might also support a specific goal the instructor has for students.

• Invite further reflection on how students have responded to their assessment practices, especially in terms of whether students have achieved valued learning outcomes. Assume teachers are interested in furthering student learning.

• Acknowledge at the outset their success as teachers.

• Introduce an alternative perspective by indicating, “in my experience…” because most teachers value experience. Done sensitively, this approach honours all teachers’ experiences but also invites teachers to reflect critically on their experience.

• Notice details and consider underlying intentions concerning teachers’ assessment practices. Assume that instructors had or have good reasons for the particular choices they make, but do not assume approaches are cast in stone.

Figure 3: Effective strategies

What didn’t work? First, we found that paying too much attention to the assessment practices of their colleagues or the response of their colleagues to their own assessment practices seemed to provoke anxiety and discomfort and led some to focus on justifying their approach. Considering colleague’s approaches had only one positive outcome: helping instructors articulate the uniqueness of their own approach. Second, we found it was challenging to use the side-shadow interview technique in this context. Because many faculty already believe that it is professionally risky to give a third party access to their teaching tools, methods, strategies and decisions, our participants seemed to
interpret our “what if” and “why not” questions as challenging, almost adversarial. So we quickly decided to focus instead on such questions as, “What else have you tried and abandoned?” or “What other methods have you heard about and liked but haven’t yet had a chance to try?”. 

We had also hoped that the project might help us improve our own practices as educational developers. Certainly the way we facilitated conversations with the participants fostered our own critical reflection. Rather than sticking to a set list of questions, we used any tactic that seemed reasonable to help the teachers explain how they undertook assessment tasks and why they approached the tasks as they did. This, we think, was crucial. So much of educational development is normative and interventionist without sufficient attention paid to faculty’s current understandings of teaching and their own practice. In this project, we engaged in in-depth conversations, open-ended dialogue that is not typical of many educational development interactions. Because we focused on helping ourselves better understand each teacher’s approach, rather than helping the teacher better understand assessment, the instructors were quite willing to share and explain. Our questions tended towards those that requested further information, though we did not shy away from sharing our own experiences and ideas if we thought it would stimulate further reflection and a deeper response to our questions. This type of dialogue did indeed encourage reflection, and the issues raised by the teachers challenged us to really listen. In turn, our deep listening appeared to help the teachers address—and in some cases resolve—challenging assessment issues on their own. Inviting them to discuss artifacts
from their assessment practice stimulated especially concrete, fruitful discussion about particular practices. In addition, our checking with participants about the validity of our assumptions as to the meaning of particular artifacts (or of particular responses to the questionnaire) was sometimes affirming (when we got it right) and at other times a well-deserved prompt to loosen our own tightly held views about what matters. Participants’ stories of teaching included statements we did not readily agree with, and thus challenged us to see the faculty in all their personal and professional complexity. In a traditional educational development context we might actually feel compelled to voice our disagreement and perhaps even become directive but in this sharing-and-listening scenario, we felt no such compulsion. That may have been a factor contributing to such openness among the teacher participants. Perhaps this factor also increased the participants’ openness. We heard the best stories after we had spent some time with participants and had established trust.

Conclusions

Because we selected the four participants on the basis of their reputation as reflective and effective teachers, we were not surprised that they all focused on their students’ learning when they designed and carried out assessment. They also responded to the particulars of their teaching situations, observant of class dynamics and fully prepared to adapt their practices to suit their students’ learning needs. Their teaching beliefs had more of an impact on their assessment practices than did institutional context. However, the insidious
pervasiveness of institutional context seemed to blind instructors to ways in which it might shape beliefs and practices.

Our conversations highlighted the complex relationship between teachers’ beliefs about teaching and their experiences of teaching. Teachers’ beliefs are immediately affected by their experiences in the classroom with particular students, which in turn are shaped by their beliefs. Conceptions of teaching, which guide practice, arise through the back-and-forth interplay of experience and beliefs. For example, a beginning teacher who believed in the importance of feedback gave her students lots of it. When a student remarked on how helpful that feedback had been to his learning, the teacher vowed to make time to offer all her students extensive feedback on their work. Her experience would have been very different if her first few students had never remarked on the feedback she gave them. Clearly, in working with teachers, we need to address both teaching experiences and teaching beliefs and tease apart the relationship between the two (Åkerlind, 2003). In this way, conceptions may become more sophisticated and faculty can learn to appreciate the implications of their conceptions.

Although participants articulated rationales for how they conducted assessment, they reported being less successful in sharing their assessment frameworks with their students in a way that reliably helps to improve student learning. We intend a follow-up project to investigate the impact on faculty members’ teaching development and students’ learning development when faculty are provided with a means to more closely tie assessment practices to
intended learning outcomes through use of a formalized framework such as the ICE approach (Fostaty Young & Wilson, 2000) to learning and assessment.

We found genuine value in working with successful teachers. Talking with those who excel at what they do put into words – teachers’ words – what good practice is, and made the tacit explicit. The participating teachers told us they learned through this project, and three of them want to pursue their search for an assessment framework to share with students that would support their learning. We too learned a great deal. The project provided us with valuable opportunities to examine our interactions with faculty and helped us to determine practices and questions that are most successful in helping postsecondary teachers understand, improve, and align their practice. Rather than intervening, we simply asked questions. We have modified our practice accordingly to respond to the real needs of instructors wanting to improve their assessment practices.

Epilogue

At the same time as I was engaged in this series of conversations about assessment practices with these four post-secondary teachers, I was also leading other, more interventional educational development events, workshops specifically, where a formalized framework (ICE) of teaching, learning and assessment was a key feature. Consequential to the workshops, I began to amass anecdotal data on the practical effects on post-secondary teachers’ practices of that type of framework-focused interaction. While it was clear that employing a questioning, rather than directive, approach to educational development was an effective means of helping teachers understand and
improve their practice, it was becoming equally clear that presenting teachers with a utilitarian framework was also helpful. Feeling the need to share what happens when post-secondary teachers adopt a reliable framework to guide their thinking about assessment and learning, I next prepared a conference presentation based on what teachers told me about enhancements to their practices as a result of their professional learning.

It was not until much after completing this pilot study that I considered that the learning-focused framework I had been using to inform my practice may have contributed to the success of the question-based approach we employed for this inquiry. In fact, it was not until much after completing this pilot study that I made the conscious decision to step back, reflect and systematically investigate my practice. It is only in the retelling of the process that I became aware that it was from this point that my research questions began to take form and become significant to me. In the language of heuristic inquiry, I was, by this time, not past a state of Initial Engagement (Moustakas, 1990). My Immersion phase (Douglass & Moustakas, 1985) of inquiry had not yet begun.
CHAPTER 3

The following paper was presented at the annual Improving Student Learning (ISL) Symposium hosted by Oxford Brookes University and held at Imperial College, London in 2005. Assessment was the theme of the symposium and all contributions detailed practice-based and literature supported approaches to effective assessment in the higher education context. Aside from introducing the ICE framework to the higher education community, the paper was a means for me to formally document the unsolicited reports I had been getting from post-secondary teachers of the ways in which understanding and using the ICE framework had affected their practice.

TEACHING, LEARNING, AND ASSESSMENT IN HIGHER EDUCATION: USING ICE TO IMPROVE STUDENT LEARNING

Assessment has long been recognized as the single most influential factor in shaping what and how students in higher education choose to learn (e.g., Ames, 1992; Pintrich, Marx, & Boyle, 1993; Ramsden, 1992). In fact, it seems that no matter what innovative and engaging teaching methods are used, assessment will “swamp the effects of any other aspect of the curriculum” (Boud, 1990, p. 103) causing students to base their decisions regarding approaches to learning on how they will be graded, not on how they are taught. The influences of assessment on approaches to learning are so strong that Ramsden (1992, p. 187) insisted that, for students, assessment “defines the curriculum”. A case in

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point serves to illustrate these contentions:

A group of in-service firefighters was required to complete a senior secondary level chemistry course as part of their ongoing professional upgrading. The experiential and inquiry-based sessions were specifically designed to meet the group’s professional needs and to reflect their day-to-day experience with chemistry. The firefighters were highly engaged and quite successful in their mastery of the material during the active-learning sessions and they actually looked forward to demonstrating their understanding of the course material through the mid-term exam.

After being faced with a 50-item multiple-choice exam that was based entirely on the text used as a reference in the course, the group presented a united front in their refusal to participate in any further activity-based sessions. They acknowledged that the learning gained through past sessions was superior to that likely to be gained from more traditional, lecture-based classes, but argued that to do well on the exams, the approach to the material needed to be changed. They were willing to give first priority to the pursuit of grades rather than to the pursuit of learning, something that Wilcox (1993) acknowledged as a major obstacle to adopting deep approaches to learning in higher education. Rather than ask that the method of assessment be brought into alignment with the teaching methods that enabled deeper learning, the group asked for the teaching methods to be brought into alignment with the assessment. The firefighters evidently perceived that the method of assessment, and not the teaching, set the criteria for course expectations and did indeed define the
curriculum for them.

Brookfield (1995) cautioned teachers to consider that what we choose as evaluative criteria serves as a public declaration of what it is that we value and stand for in our work. Certainly, the firefighters seemed to interpret assessment as such. Boud (1990) went further in stating similar beliefs in very practical terms, asserting that students view “grades as a kind of currency indicating what teachers value” (p. 103). Evidence to support those contentions emerges, without fail, on the first day of every course I teach. When the course syllabus is distributed, students will, almost without exception, turn immediately to the last page of the document to review the assessment plan for the course—to determine, as Gass (2004) explained, what they would “get paid for” in the course. The information on that last page helps students to determine their focus and responsibilities and to make determinations about approaches to course material. After all, preparing for multiple-choice exams requires an entirely different approach from preparing a seminar presentation, which in turn is entirely different from approaches to material for laboratory work or practica.

Aside from having the potential to reveal what it is that we value, our assessment plans can also serve to give cues about our beliefs about the nature of learning (Schrag, 1992). I wanted to ensure that assessment in the courses I teach conveyed a value for personal meaning-making and for deep approaches to learning. Moreover, it was important that assessment methods were congruent with more of a cognitive transformative view of learning than a behavioural one. I wanted to find an effective and efficient way to help explain to students why more
of the same is not always better, or more accurately, that when professors ask for “more of an answer” we are not looking for more words or more pages but rather, looking for more depth and greater expertise.

**Taxonomies: Ways of Understanding Learning**

Taxonomies of learning can help inform decisions about teaching, learning and assessment and aid in sharing views and expectations about learning, but finding one that meets faculty's expectations for ease of use can be challenging. Some taxonomies, such as Bloom's (1956), compartmentalize learning into separate domains, almost as if cognitive, psychomotor and affective learning are discrete processes, mutually exclusive from one another. Having separate taxonomies for each of the different domains of learning, and each with at least five levels of learning, makes the model unwieldy and, for many teachers, reduces its portability for effective use in the classroom.

Biggs’ and Collis’ (1982) SOLO taxonomy follows a Piagetian view of cognitive development, and depicts learning as growth from novice toward expert, something that resonates with many faculty members. Learning is viewed, not as the accumulation of discrete information but rather, as a transformative process where the learning as well as the learner is altered through development. While the taxonomy is useful in developing educators’ and researchers’ understanding of how learning occurs, the five levels of learning (prestructural; unistructural; multistructural; relational; and extended abstract) make it difficult to use in anything less than a formalized way. Faculty members report that while the model does reflect the way in which they believe learning
occurs, students with whom they shared the model spend more time trying to decipher the model than they do on their own learning of the course material.

**The ICE Approach**

In an effort to condense the cognitive transformative literature into a portable model that would be accessible and easy for both teachers and students to use, Wilson (1996) developed and introduced the ICE approach. The approach is portable in that it is easily remembered and called to mind and it is applicable to learning across domains and levels of education. It is accessible in that the language of the model makes it easy to share and understand, so much so that Grades 4 and 5 students were recently responsible for explaining the model to a group of pre-service teachers enrolled in an undergraduate course in learning assessment. The model is simple without being simplistic.

Elaborating upon Wilson’s introduction, Fostaty Young and Wilson (2000) presented *Ideas, Connections, and Extensions* (ICE) to represent three different levels of learning growth from novice through to competence and expertise. *Ideas* represent the building blocks of learning. They are the fundamental, discrete pieces of information that make up the basics of new learning. Some teachers describe *Ideas* as being only information, something students acquire then possess. *Ideas* include facts, definitions, vocabulary, steps in a process and the acquisition of discrete skills. Any reiteration, or recall of information from a textbook, notes or lecture can be said to be a demonstration of *Ideas*-based learning.

*Connections* are of two kinds: content *Connections*; and those that may be
said to be personal meaning-making. Content Connections are demonstrated when students are able to articulate relationships among discrete Ideas. When students are able to describe cause-and-effect relationships, articulate the relationship between or among concepts, or when they are able to successfully blend two or more discrete skills into a fluid, efficient movement, they are demonstrating Connections at the content level. Connections at the more personal, meaning-making level are demonstrated when students are able to relate their new learning to what they already know. It is during this phase of personal meaning-making that learning appears to take on a new dimension in that it seems to become more easily retrievable and longer-term than learning at the Ideas level. Truly, when Connections are made, learning is transformed. Discrete bits and pieces can become inextricably combined to become something new.

At the Extensions stage, new learning is created from old so that students are able to use it in novel and creative ways that may well be quite far removed from the original learning context. The learning becomes internalized to such a degree that it helps students answer extrapolative questions, articulate implications, and anticipate outcomes. Extensions are referred to by some as the AHA! phase of learning and by others as the “so now what?” phase. The “so now what” question is the one that is often left unasked in the post-secondary classroom: So, now that you know what you know, what difference does it make to the way you see the world and to what you can do? Students reaching Extensions are able to answer questions about the implications of their own
learning.

**Using ICE to Shape Student’s Learning**

The questions we ask have an interesting effect on the answers we receive. To a great extent, the questions asked determine the answers supplied. Closed questions inviting reiterations from texts and multiple-choice questions might not afford students the opportunity to demonstrate Extensions even if they are capable of making them. Invitations by way of questions need to be made accessible to students at each level of learning development as well as being extendable by those who are able (Fostaty Young & Wilson, 2000). That is not to say that every assessment event must include opportunities for demonstrations at every level of learning. There are times when it is important to determine that students have acquired the basic, fundamental aspects of the material before moving on. In such cases testing entirely at the Ideas and content-Connections levels may be exactly what is warranted. It is important, however, that we become conscientiously aware of the types of opportunities we are providing and question whether or not we are providing sufficient opportunities for the learning we hoped to facilitate and elicit. As one Engineering professor remarked, “What is measured is what is produced.” Similarly, what is asked is what is answered.

Having a systematic framework that facilitates our ability to plan and review exams increases the likelihood that we are actually asking the questions we would like students to be able to answer. Tables of specification, coupled with using ICE as a framework, function as effective tools for such tasks. The tables are a type of spreadsheet that helps to clarify the elements of a course that are to
be highlighted on a particular exam. Typically, they are in the form of a grid with course-content areas along one axis and frames of learning along the other. Topics for the test are decided upon and listed, a total point value for the test determined, and then a decision is made as to the relative weighting of each topic. Finally, decisions are made as to the level of learning that each topic area will target. The following example from a course on contemporary issues in business serves to illustrate:

Table 1

*Table of Specifications*

<table>
<thead>
<tr>
<th>Content Area</th>
<th>Ideas</th>
<th>Connections</th>
<th>Extensions</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Privatization</td>
<td>-</td>
<td>10</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>Mergers and Acquisitions</td>
<td>10</td>
<td>10</td>
<td>-</td>
<td>20</td>
</tr>
<tr>
<td>Gender Discrimination</td>
<td>20</td>
<td>10</td>
<td>-</td>
<td>30</td>
</tr>
<tr>
<td>Ethics</td>
<td>-</td>
<td>-</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>30</strong></td>
<td><strong>30</strong></td>
<td><strong>40</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Table 1, a sample of a table of specifications for exam construction, indicates that the exam is relatively evenly balanced across the listed content areas but that *Gender Discrimination* will deal primarily with fundamental details whereas it is likely that students will be expected to be able to interpret, postulate and problem solve in the section on *Ethics*.

Interesting to note is that even if the totals for each content area remain the same, by changing the grade-weights among the *Ideas, Connections* and
Extensions cells, the difficulty level of the exam will be significantly affected. To ensure that exams that are made available to you from outside sources are meeting your expectations as well as the learning needs of your students, you may choose to use a table of specifications to conduct an analysis. Review each question on the existing exam and categorize it as one that invites responses at Ideas, Connections or Extensions and make note of the grade values associated with each, recording your findings on a blank table. You may then be better able to determine the appropriateness of the test for its intended purpose. Additionally, you may be able to systematically cull the questions that were difficult for the wrong reasons - not because they required more expert levels of learning but because they were poorly posed.

ICE and Grading

While ICE was originally designed and developed as a formative assessment tool to help teachers and students plan and improve learning, it is increasingly being adapted for use as a summative tool. Faculty, in particular, seem to view Ideas, Connections, and Extensions as representations of Acceptable, Better, and Ideal, levels of learning growth, respectively. They frequently understand Ideas to be the fundamental elements of the course content that students must be able to demonstrate if they hope to be at least minimally successful in the course. Given that most faculty members also express the opinion that acquisition of subject content is not enough and that their goals for their students’ learning include creative problem-solving and novel use of knowledge, they are unwilling to assign much more than barely passing grades to demonstrations of
learning that are confined to the reiteration of Ideas. Because Connections learning represents more cognitively complex, more meaningful learning, it is generally more highly valued and faculty members consistently award demonstrations in that frame higher grades. Since demonstrations at Extensions are almost unequivocally regarded as ideal learning in higher education, many faculty members reserve the highest grades for demonstrations at that level.

Sharing ICE with Students

As the result of a recent study, Rust, Price and O'Donovan (2003) concluded that student learning can be improved significantly through developing their understanding of assessment criteria and processes through structured intervention. Their intervention included providing students with a criterion-referenced grading grid, or rubric, that included a matrix of detailed performance indicators across grading levels. They also provided an opportunity for students to attend a one-off workshop to familiarize them with expectations for the course’s major assignment. Findings suggested that students who attended the workshop not only did better in the course than their non-participating cohorts but that the positive effects were long term and seemed to transfer to other, similar learning situations.

Through a much less structured but apparently equally successful approach, faculty members who have become familiar with ICE are sharing the model with their own students, often as early as the first day of class. Typically, the process begins with a brief description of Ideas, Connections, and Extensions and illustrative examples from their own disciplines or from the wider world. Such
examples serve to practically illustrate the model in a way that makes sense to the students. One example that has been widely borrowed (Fostaty Young & Wilson, 2000, p.54) was supplied by a Business professor's use of analogy to convey his conceptions of “adequate”, “good” and “exceptional” approaches to case study analysis. In discussing the variability of his students’ completed analyses, the professor likened the case study to a broken toaster. Some students responded to the task by itemizing all the elements of the toaster (case study) that were malfunctioning. He conceded that while students had done a good job at doing that, some had stopped there, making no attempt to go further (Ideas). Another group of students, he said, also indicated which parts of the toaster/case-study were malfunctioning but they then also proceeded to postulate how those parts were affecting the mechanisms that were still operational (Connections). Further, a smaller proportion of the class pointed out the parts that were broken, indicated what effects those were having on the functioning parts and then, suggested how the toaster might be repaired and how future malfunctions might be prevented (Extensions).

Another innovation that some faculty members are using to develop their students' awareness of differences in the quality of cognitive output is in inviting students to read with a critical eye. As a preliminary exercise students are assigned an article and asked to use different coloured highlighters to identify the Ideas, Connections, and Extensions expressed by the author. In addition to helping students learn the differences among the frames of learning in the ICE model, the exercise also helps to reinforce the use of a common classroom
vocabulary to discuss learning and assessment criteria.

Sharing assessment criteria with students, and in some cases, developing the criteria with students is a critical part of the ICE approach. Most faculty who are using the approach have developed rubrics as a means of sharing those assessment criteria with their students. The rubrics are typically grids with no more than five content elements listed in a column on the left and the types of learning described in ICE in rows across the top. In each corresponding cell, qualitative descriptors are provided that outline expectations at each level. Table 2 presents an excerpt of a rubric designed to assist students in their approach to an assigned discussion paper in a university level geology course (Remenda, personal communication, 2005).

Table 2

Rubric for a Discussion Paper

<table>
<thead>
<tr>
<th>Element</th>
<th>Ideas</th>
<th>Connections</th>
<th>Extensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content</td>
<td>• Identifies the hypothesis</td>
<td>• Draws attention to the relationship among topics within the paper</td>
<td>• Extrapolates from the paper to other situations</td>
</tr>
<tr>
<td></td>
<td>• Statements are accurate in terms of the assigned paper</td>
<td>• Provides real-life examples to illustrate concepts</td>
<td>• Evaluates the applicability of the hypothesis and why it is of general interest</td>
</tr>
<tr>
<td></td>
<td>• The summary provided accurately depicts the content of the paper</td>
<td>• Connects the content of the paper to course topics; explains the applicability of the data</td>
<td>• Relates topics from the course and the paper to other disciplines or to the field</td>
</tr>
<tr>
<td></td>
<td>• Provides accurate definitions for the vocabulary used in the assigned paper</td>
<td>• Considers the suitability of the research methods</td>
<td></td>
</tr>
</tbody>
</table>
Note the characteristics of the rubric. Learning is described only in positive terms and in terms of what is in evidence, not in terms of what is preventing the piece of work from being judged at a higher level. The learning demonstrations listed under Ideas are the professor’s basic, minimum requirements for success on this assignment. The descriptors under Connections and Extensions represent qualitative rather than quantitative criteria through which the work will be assessed. The rubric conveys a view of learning as a qualitative, cognitive transformative process rather than as a quantitative, behavioural one. It enables us to move beyond learning that is content-based and beyond a reliance on assessment that focuses on knowledge, recall and demonstration. It instead turns our attention to the interaction between the learner and the content and places emphasis on learning as meaning-making.

During the deeply reflective process of articulating various types of learning outcomes, many faculty members become acutely aware of the implications of using ICE as a framework for assessment. One such implication involves the necessary and concomitant shift in ongoing teacher/student interactions. Instructional methods necessarily evolve from presentation of content material to creating opportunities for meaning-making and students’ active engagement with the course material.

**Creating rubrics to increase understanding of learning expectations.**

Creating qualitative rubrics is much more difficult and time consuming than creating the more typical quantitative rubrics that outline criteria of “few”, “some”, “many” and “almost all” or “inconsistently”, “generally” and “consistently”. It
requires a focused attempt to specifically articulate what it is that we seem to intuitively and tacitly know when reviewing students' work and there are a variety of ways in which to approach the task.

One method is to review a set of work that you have already graded. Select a few to which you awarded barely passing grades, others to which you awarded mid-range grades, and some to which you awarded high grades. Next, set out to outline characteristics of each group that led you to award the grades you did. Confine the descriptors to statements of evidence; try not to describe the work in terms of what it is missing. It is likely that you will find patterns among the groups of papers or assignments that will enable you to create an explicit rubric representative of the tacit one you had been using.

If you do not currently have access to an already graded assignment-set, you may use another equally effective approach to construct a grading rubric. Select a specific assignment that you are prepared to set for your students and list what you consider to be the minimum requirements for success. That is, what are the basic criteria that students absolutely must fulfill in order to achieve a passing grade? After listing all the minimum requirements for success, group the criteria into similar categories, then determine what each category should be called. Continue filling out the remaining cells using descriptors that represent differences in what students are able to accomplish with the basic Ideas rather than differences in the number of times they demonstrate the same skills. For example, in a rubric for mathematical problem solving, rather than using descriptors such as demonstrates limited understanding; general understanding;
and overall understanding for each of the levels of learning, consider descriptors that detail the desired processes and approaches to learning such as: makes valid observations based on available information; articulates the relationship between the known facts and the problem to be solved; and is able to explain his/her thinking using ideas from different situations to help explain new ones. The qualitative descriptors provide a blueprint for learning for the students without confining them to specific content or to behavioural demonstrations.

A young Biology professor preferred to use an altogether different approach to rubric construction. She decided to involve her 4th-year students in creating the rubric for their seminar presentations. She invited the 16 students in the group to list what they considered to be the basics of a good seminar – what they would consider to be a passable presentation. As elements were proposed and agreed upon she began to insert them onto a grid on the chalkboard. Next, they generated the qualitative descriptors for a presentation that they felt would be worth a B-grade then continued on to describe a stellar performance, one they all felt would be worthy of an A. There was much discussion, but through a process of general consensus, the group developed a grading rubric that included descriptors for Ideas, Connections and Extensions and for elements such as seminar content; context; use of media; and facilitating group discussion. The professor typed up the rubric and solicited students’ feedback before declaring it ready for use. Using the rubric they had generated as a group, they all, students and professor, assessed each seminar.

While the generation of the rubric in the Biology seminar course was time
consuming, both the professor and the students now consider it a worthwhile investment. Not only did the students claim that the process had helped them tremendously in the seminar course by clarifying expectations, but they reported a transfer effect and felt they were able to apply the principles of ICE to their learning in other similar courses. Most notably, other faculty members within the department have since commented that students from the seminar course are, in terms of their approaches to learning, setting themselves apart from their counterparts in the rest of the program.

In sharing ICE with students, professors report a developing consciousness and greater awareness in themselves and their students about learning, about how to foster it, and how to demonstrate it. Students become better able to self-assess and, as a result, can better plan for improvement.

**Using ICE Across the Disciplines**

The portability of the ICE model certainly seems to increase its utility. The approach is being successfully used across disparate disciplines for skills-training and other activities typically referred to as psychomotor learning as well as for cognitive learning. Departments of physical and health education, rehabilitation therapy, nursing, languages, history, fine art, and applied sciences are all finding uses for ICE within their disciplines. Many are discovering that ICE provides the necessary vocabulary and supporting framework for offering feedback and guidance, especially for difficult-to-assess areas of study and for decision-making purposes:

1) Rather than use a behavioural checklist to assess occupational therapists’
work with clients, one department has devised an ICE rubric that takes into account and values the critical analysis and expertise than can result in abandoning rule-sets in favour of adhering to maxim-informed expertise to guide action. The move is one way of acknowledging and valuing integrated competence over acquisition of isolated competencies.

2) Students in fine arts courses are learning the specifics of the previously tacit criteria their professors were using to assess their artwork. Together, students and their professors are reviewing pieces of work in specific genres and describing the qualities of brush technique, shading, colour mixing, and balance that distinguish exceptional art from amateur work and then creating rubrics with which to plan, and then assess, course work.

3) Recently a professional school adopted ICE as the framework within which to evaluate letters of application from prospective students. In the past, admission committee members had difficulty distinguishing among the almost uniformly stellar students. Using ICE, they are now able to distinguish the letters that itemize evidence of academic suitability from those that demonstrate the writer’s awareness of the potential impact of that academic excellence on future success and suitability to the field.

Closing Remarks

The ICE approach seems to resonate with faculty and students alike. It is easy to use and seems to be applicable to almost any learning activity. Because it is not content-specific, professors are discovering that it is not necessary that every student produce identical products, that evidence of learning can be gleaned in a
variety of ways.

Reaction to the approach has been overwhelmingly, though not unanimously, positive. Nonetheless, even those who find no reason to adopt the ICE approach outright find that the model’s accessibility furnishes a vocabulary that facilitates discussions about learning, assessment and the aims and values that inform both. In addition, the relative simplicity of the model allows for easy modifications and adaptations to be made that might enable a more accurate representation of individual professor’s values and expectations for learning. The model’s simplicity, and the language it provides, help to facilitate discussion not only about assessment in higher education but about teaching and learning as well.

**Epilogue**

This paper served as an effective catalyst for dialogue on the effectiveness of the ICE framework in supporting post-secondary teachers’ professional learning about learning and, by extension, the learning of their students. Discourse at the conference at which the paper was presented ranged from postulations that, given the characteristics of *Extensions*-type learning as potentially transformative, irreversible and integrative, they might be thought of as equivalent to, or an abstraction of, threshold concepts (Meyer & Land, 2006). An alternative discussion questioned how, or if, the conception of learning depicted through the ICE framework was congruent with Vygotsky’s (1934/1986) theory of zones of proximal development. The opportunity to deliberate about ICE, on such a theoretical level, provided the impetus to situate the framework in the literature on taxonomies of learning and to explore the epistemological as well as practical
implications of its use. Having had the opportunity to reflect on the ways I shared ICE and incorporated the model into my development practice caused me to start a more systematic and purposeful review of practice. This review of practice marked the beginning of the Immersion phase of my inquiry, where I began to “live the question” (Moustakas, 1990, p. 23) of naming learning&assessment educational development.
CHAPTER 4

This paper, the last monograph in this series of three, was originally published in *The International Journal for Academic Development (IJAD)*, the journal of the International Consortium for Educational Development (ICED). The purpose of the journal “is to enable academic/educational developers in higher education across the world to exchange ideas about practice and extend the theory of educational development” (http://www.tandf.co.uk/journals/journal.asp?issn=1360-144x&linktype=10).

THEORETICAL FRAMEWORKS AND MODELS OF LEARNING: TOOLS FOR DEVELOPING CONCEPTIONS OF TEACHING AND LEARNING

Conceptions of teaching are idiosyncratic (Biggs, 1999; Entwistle, Skinner, Entwistle & Orr, 2000), largely unarticulated composites of individual teachers’ assumptions, knowledge and beliefs about teaching and learning. Whether tacit or explicit, those conceptions are amassed through personal experiences of teaching and learning, assimilated through interactions within changing contexts (Pratt, 1992) and have significant influence over faculty members’ approaches to teaching (Kember & Gow, 1994; Pratt, 1992; Samuelowicz & Bain, 1992, 2001). Conceptions of teaching are of such significance in informing approaches to teaching that Åkerlind (2004), and Ho, Watkins and Kelly (2001) before her, reported that meaningful changes in approaches to teaching are unlikely to occur unless teachers’ conceptions of teaching also change. Fortunately, as

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assimilations of beliefs related to experience, conceptions of teaching are malleable and susceptible to ongoing change. Changes in conceptions occur as a result of reflection on the effects of continued teaching experiences as well as from simply being exposed to alternative conceptions held by other teachers (Åkerlind, 2004; Entwistle & Walker, 2000). In these ways, conceptions of teaching and learning can be understood to be in ongoing states of development. Not surprisingly then, much time and effort in educational development is devoted to finding ways to help faculty members think about teaching in new ways – ways that will enable them to develop increasingly sophisticated conceptions of teaching consistent with current theories of teaching and learning. During the development process we, as educational developers, also try to help teachers become more aware of how their perceptions, assumptions and conceptions of teaching and learning play out to affect approaches to teaching. Developing this type of increased awareness has been identified as critical for growth as a teacher (Cranton & Carusetta, 2002; Farrell, 2005; Ho, 2000; Schön, 1987).

The academic development literature provides an array of examples of the ways in which faculty members’ sometimes inadequate or inappropriate conceptions of teaching and learning have been challenged and subsequently changed. Cranton and Carusetta (2002) described the ways in which reflecting on changes in teaching contexts served to challenge and subsequently change faculty members’ already-formulated conceptions of and approaches to teaching. Ho, Watkins and Kelly (2001) reported on the development, implementation and
effectiveness of a conceptual change approach to faculty development that began with a process of helping to raise teachers’ awareness of their current conceptions. After an initial self-awareness phase, faculty members were led through a process of confronting their own assumptions and subsequently, through discussion, exposed to alternative conceptions of teaching. The approach culminated in faculty members making a commitment and then planning to actively initiate changes that had been enabled through their more elaborate and sophisticated conceptions of teaching. More recently, Quinn (2003) documented that faculty members with whom she worked in an accredited university professional development program reported that, even if their conceptions of teaching had not been substantially changed as a result of the program, the theoretical frameworks that had been introduced supplied them with the language with which to communicate about their conceptions of and approaches to teaching. The participants also reported that the vocabulary of the theoretical frameworks helped them define and articulate what their conceptions of teaching actually were – something they had found difficult to do before acquiring that vocabulary.

While each of the studies cited reported different approaches to conceptual change, three common factors seem to have been a part of each. In each instance, faculty members were afforded the opportunity to (a) reflect upon, (b) name, and (3) reframe their conceptions. Reflecting on alternatives, whether contextual or conceptual, and contextualized language seem to have contributed to success in developing teachers’ awareness and revision of their conceptions.
of teaching. It appears that the process of naming and framing was critical to developing conceptual awareness in support of desired change.

Entwistle and Walker (2000) contended that the process of naming and framing requires strategic alertness – the refocusing of attention from one aspect of a phenomenon to another. Strategic alertness requires a shift of attention to previously unattended-to factors through the use of a selected frame of reference. The shift in focus, these authors argue, is likely to lead to expanded awareness.

In educational development, we can create adventitious opportunities for perspective-taking and conception development through strategic awareness when we invite the formal and informal use of alternative theoretical frameworks and their identifying epistemologies, ontologies and associated vocabularies to help focus faculty members’ attention on the nature of learning within their own discipline, and then on the implications for teaching.

**Frameworks and Frames of Reference**

**The Function of Frameworks**

Theories, models and taxonomies of learning provide systematic, well-delineated ways of describing and explaining the teaching/learning process, often with the support of a distinct vocabulary representative of underlying epistemological and ontological perspectives. As a reflection of distinct epistemologies and ontologies, each theory provides its own system, template and vocabulary to help organize and filter thinking about teaching and learning and each provides a unique and alternative perspective on those phenomena.
Frameworks are purposefully structured to help focus attention on the characteristics of teaching and learning that are salient to each individual theory.

**The Distinctive Language of Frameworks**

In addition to furnishing an organized and structured way of looking at teaching and learning, many theories and taxonomies of learning also provide characteristic vocabularies, often metaphorical, that reflect their underlying epistemologies. The use of metaphorical language serves an important function because metaphors “represent a fundamental way that human beings have evolved to express and organize their world, especially the world that lies beyond immediate perception” (Kliebard, 2001, p. 13). The use of metaphors helps to shape the way we come to understand any phenomenon for which we use it (Gentner, 2003) and enables the construction of a perspective (Collins & Green, 1990). An example from an undergraduate poetry class serves to illustrate this point: As an invitation to students to explore their understanding of the nature of poetry, an English professor asked his students to complete the phrase “poetry is a giraffe because. . ..”. When the students adopted giraffe as a frame of reference, they were able to articulate their perception that poetry, like giraffes, can be perceived as haughty. Additionally, they offered that both giraffes and poetry can be awkward and poorly balanced, especially in early stages of development. The students also proposed that poetry is a giraffe because it is unfamiliar and, as such, exotic to many people. Once the students had extracted what they could from the insights that the giraffe metaphor could provide, they moved on to consider how poetry is a train.
Each metaphor, because it served as a frame of reference, focused the students’ attention on specific characteristics of poetry while necessarily diverting their attention from others. The use of each successive metaphor evoked unique insights to characteristics of poetry that were inaccessible through the others and each metaphor contributed, to a greater or lesser extent, to students’ developing conceptions of poetry. The metaphors afforded different perspectives from which to examine poetry and each, in turn, resulted in a different awareness. Once students reached the point at which a particular metaphor ceased to contribute to their conceptual development, they abandoned it and sought out another. Similarly, if a suggested metaphor did not resonate in any way with students’ experiences or conceptions of poetry, it too was abandoned. In repeatedly adopting alternative metaphors, the students were able to broaden and deepen their conception of poetry in ways that adhering to a single metaphor is unlikely to have done. It was through reflecting on those alternative perspectives that greater insights, understanding and conceptions of poetry were gained. In educational development we have a comparable opportunity to help faculty members unpack and develop conceptions of teaching and learning through similar engagement with the theoretical perspectives and frameworks of teaching and learning that are at our disposal within our field.

**Frameworks Provided by Taxonomies of Learning**

Not all frameworks available to us have metaphoric language associated with them, though many do have distinctive vocabularies that help focus attention and frame thinking. The value of frameworks is that, like metaphors, they serve as a
“cognitive map of organizational dynamics” (White, 2002, p. 113) to focus our attention according to a specified frame of reference. They provide parameters within which to name, and frame and it is through the act of naming and framing that we may come to better understand and articulate the beliefs and conceptions that influence our teaching. Taxonomies of learning are such frameworks; using them is a way to help faculty focus on different schemas for understanding learning and question their assumptions of, and expectations for, learning and teaching within their own contexts.

At our disposal are several models or taxonomies of learning that afford alternative views of its nature. Because conceptions of learning are integral parts of one’s conception of teaching, investigating alternative theories of learning is likely to help in the process of revealing, defining, articulating and revising conceptions of learning. Because conceptions of teaching and learning are often tacit, faculty members may have great difficulty getting started as they try to articulate them. In an approach very similar to the use of metaphor in the undergraduate poetry class, faculty members can be invited, either individually or in workshop settings, to “try on” a variety of learning theories. Initially, the process is an exercise of trying to find the taxonomy or model of “best fit”—that is, the taxonomy or model most congruent with one’s own conceptions of learning and teaching.

In my own development practice, in both workshop and private consultations, I invite faculty members to explore and reveal, largely to themselves, their own conceptions of the learning that occur within their discipline and immediate
teaching context. To achieve that end, I typically begin by offering a very short
synopsis of each of three taxonomies or models of learning: Bloom’s Taxonomy
(Bloom, Engelhart, Fust, Hill, & Krathwohl, 1956) or the revised taxonomy
(Anderson, Krathwohl, Airaisian, Cruikshank, Mayer, Pintrich, Raths & Wittrock,
2001; Krathwohl, 2002); the SOLO Taxonomy (Biggs & Collis, 1982); and the ICE
model (Fostaty Young & Wilson, 2000; see also Fostaty Young, 2005; Wilson,
1996). Based on divergent ontologies, each of the three models provides an
alternative way of conceptualizing learning.

Bloom’s revised taxonomy supplies a vocabulary for teachers to communicate
about learning at various levels of complexity from Remembering through to
Creating and often contributes to teachers’ appreciation of the contrasts between
deep and surface learning (Ramsden, 1992). The assumption informing the
taxonomy is that each progressive level of learning, within each of three separate
domains, presupposes competence at preceding levels and that learning is
sequential, hierarchical and unidirectional.

SOLO, based on constructivist theories of learning and on the work of Piaget,
depicts learning as an initially cumulative process. In later stages of
development, accumulated knowledge and skills are qualitatively restructured by
the learner. The taxonomy invites a view of learning as both a quantitative
process and one that requires qualitative restructuring of the learning material in
increasingly complex ways. Learning is depicted as being both cyclic as well as
hierarchical and this model invites consideration of learning as other than domain
specific. Learning, within this taxonomy, is understood to progress in cycles and
through different learning modes.

ICE, an acronym for Ideas, Connections and Extensions that represent three qualitatively different frames of learning, is based on cognitive transformative theories of learning and informed by the novice-to-expert literature (Benner, 1984; Daley, 1999). This model depicts learning as non-linear and non-hierarchical in that competence in one frame of learning is not presupposed for competence at another. The model is consistent with cognitive transformative theories of learning in that learning is understood to be a cyclic, recursively elaborative process requiring active manipulation and reconfiguration of the learning material by the learner. Within this framework, the learner, as well as the learning, is believed to undergo the transformative process.

Each of these three taxonomies is representative of a different conceptualization of learning and each provides a defined vocabulary through which to communicate about learning. The frames of reference that each taxonomy provides furnish points of comparison against which teachers may test their own beliefs about the nature of learning.

After each of the taxonomies is introduced, faculty members are invited to explore the ways in which their experience of learning is congruent with the assumptions of the taxonomy. In much the same way that poetry students were invited to consider how poetry is a giraffe and then how poetry is a train, faculty members are invited to consider how their conceptions and experience of learning are like those which are depicted through Bloom’s taxonomy, then SOLO, then ICE. Like the giraffe and train metaphors, each taxonomy focuses
attention on some aspects of the phenomenon under study – in this case, learning – while diverting attention away from others. Using a variety of taxonomies encourages faculty members to shift focus and entertain new perspectives and new levels of awareness, perhaps even borrowing elements from several taxonomies to create one of their own.

While conversations about the ways in which taxonomies are representative of one’s own conception of learning generally prove valuable, it is the invitation to explore the ways in which the taxonomy and teacher’s experiences are incongruent that often yield the greatest insights. The probe about incongruence invites a certain criticality of the models and perhaps of the teachers’ own assumptions about teaching and learning. In repeatedly being invited to assume such a critical vantage point, faculty members begin to become accustomed to engaging in the type of disciplined inquiry into the ontologies of their own conceptions.

**The Architectural and Organic Metaphors of Constructivism**

Predominant conceptions of learning currently influencing education, and much of the work in educational development, is based in theories of constructivism (Biggs, 1999, 2003; Shepard, 2000) that are most widely attributed to Piaget. Within theories of constructivism, learning is understood to be an ongoing and developmental process of active meaning-making undertaken by the learner. Learning is thought to involve a process of building meaning systematically as new knowledge combines with old in a process of restructuring.

A related but significantly distinct theory of learning that is currently influential
in the development literature is that of transformative or emancipatory learning (Mezirow, 1981, 1991; see also Cranton, 1996). Consistent with constructivist theories, transformative theories of learning understand the process of learning as a gradual, purposeful one involving mindful participation on the part of the learner to work through personal reorganizations of meaning (Mezirow, 1991). Where traditional constructivism describes the learning process as a reconfiguration, transformative theories of learning describe the process as more of a transformative evolution. Baerveldt and Verheggen (1999), and Davis and Sumara (2002) drew attention to at least two interpretations of constructivism that they contended arose by virtue of the perspective adopted by those interpreting and translating Piaget’s works. The interpretations resulted in two distinct frameworks within which to describe teaching and learning.

The first interpretation is what is sometimes referred to as a mechanical, or architectural, representation of constructivism while the second has been referred to variably as biological, organic or ecological. While both interpretations yield an understanding and presentation of learning as ongoing meaning-making by the learner, there are significant differences in epistemology and ontology. The differences become apparent through the vocabulary and metaphoric language that each interpretation adopts and evokes. Both are valuable means of conveying alternative conceptions of the teaching/learning process.

**An architectural interpretation.** Davis and Sumara (2002) argued that in constructivist discourse Piaget’s use of the word construire was widely translated as “to construct”. Hence, references to the structure of learning were interpreted
in a decidedly architectural way that implied foundational permanence. The authors contended that this particular translation and interpretation has contributed in no small way to the widespread usage of the currently prevalent metaphoric language in use in education today. The metaphors, however, do supply language that accurately reflects the ontological underpinnings of traditional constructivism. Through the architectural language we talk about teaching as “laying a foundation” and of our students acquiring “the building blocks of learning”. We refer to “scaffolding” students' learning, “setting benchmarks” and to “hierarchies of learning” (Bloom et al., 1956). Through the metaphoric language, we get, and convey, a sense of the step-by-step, deliberate and sometimes linear aspects of discrete, procedural events that can be conceptualized to be critical elements of teaching and of learning.

Encouraging faculty members to consider how learning within their own discipline is represented through the architectural metaphor invites them to investigate and confront a view of learning as an aggregate of accrued knowledge that the learner manipulates or restructures in meaningful ways during the learning process. The architectural interpretation and its metaphors invite consideration of learning as stable and permanent yet versatile enough to be redesigned as required. It also invites consideration and examination of the deliberate and planned aspects of teaching and how they might be accomplished.

**An ecological interpretation.** Educational complexivists (International Journal of Complexity and Education, n.d.) and proponents of enactivist theories
have chosen to interpret Piaget's work through an alternative lens – one that pays homage to Piaget's background in biology. In the more organic of the two interpretations of constructivism, Davis and Sumara (2002) invite us to consider that construire may also reasonably be translated as "to construe", that is, to interpret or to take to mean. Using “construe” invites us to consider learning as a fluid process of analysis and interpretation within a particular set of circumstances or context. As such, a practical alternative to the architectural interpretation of “structure” is that which is suggested by biological references to the structure of an organism or to the structure of an ecosystem. The ecological perspective provides an alternative frame of reference and that reference invites probing into some possibilities within the teaching/learning dynamic that may not be accessible through the architectural perspective.

Where architectural structures require deliberate, step-by-step planning and an expectation of, and reliance upon, the stable permanence of the foundation, biological structures are in an ever-continuous state of emergence within an interconnected ecology. Inviting faculty members to contrast the two frameworks may be a way to have them explore consideration of contingencies within learning environments rather than causation within them. They become pressed to consider the possibility that learning is an evolutionary process rather than a progression through a hierarchy and that some aspects of learning might be recursive, not unidirectional. Further, using construe, rather than construct, as part of the new framework invites consideration of alternatives to the order,
permanence and deliberate step-planning that can be a part of teaching and learning. Using the ecological framework encourages investigation and consideration of the not entirely deliberate, though certainly not random, aspects of the dynamic teaching/learning interaction and for the need to revisit old learning from new perspectives. Again, the practice of inviting teachers to cite examples from their own experience that are consistent with and divergent from each theory provides them with the opportunity to probe and explore the depths and limits of the ecological model in relation to their own experience.

Similar to the ontology of the architectural framework, the ontology informing the ecological version regards the learner as the active agent in meaning-making. The significant difference is that within the ecological/enactivist framework, the self and learning are considered to be in constant states of emergence – that is, who we are as learners, and the learning that is being done, emerge through moment-to-moment interrelationships with the world. As a result, learning is understood to change as the learner changes, a significant difference from the implied stability of learning as evoked through the architectural framework. The two perspectives, based on differing epistemologies and ontologies afford different language sets through which to communicate about teaching and learning. The power of language helps to set the context of each perspective thereby providing well-defined parameters within which to organize thinking and focus attention. It is in the focusing of attention that we, and the faculty members with whom we work, can begin to uncover, name, frame and refine conceptions of learning and teaching.
By extension we may entertain consideration of the notion of alignment, itself a highly architectural term. Constructive alignment (Biggs, 1996) is the blending of theoretical underpinnings of constructivist theories of learning with those of instructional design’s emphasis on the purposeful agreement among learning goals, instruction and assessment so that all components of a course or program work together to achieve the same ends. Here we can investigate the implied linear cause–effect dynamic that is suggested by the use of alignment in naming that process.

Extending the ecological framework to the instructional design aspects of teaching as we did within the architectural framework presents additional opportunities to examine underlying beliefs about the nature of learning. Frielick (2004) argued, “alignment is a linear concept. It means that every aspect points in the same direction. . . .This leaves no room for the inherent unpredictability or chaotic nature of the dynamic teaching/learning system” (p. 176). Given Biggs’ (1996) use of the term complex system to describe teaching as emergent, it is not entirely clear that he meant to convey linearity and causality when he coined the term “constructive alignment” (p. 350). What is clear is that the influence of perspective and its associated language compels Frielick, and others, to question the underlying ontology and to propose alternatives. Adopting an enactivist epistemology within an ecological framework and using that framework’s metaphoric language to illustrate, Frielick invites us to consider that teacher and students are engaged in a mutually reciprocal relationship with subject matter within the ecosystem of the classroom. Within this interpretation,
he argues, it makes little, if any, sense to talk about alignment. He confronts us with the concept of “enactive coherence” as the “ecological post-modern equivalent of the modernist concept of constructive alignment” (p. 175).

Davis and Sumara (1997) argued that when metaphors become literalized the way they seem to have been in education, they become entrenched and we may cease to appreciate that they are indeed metaphors that shape our ongoing assumptions. Inviting faculty members to explore the use of educational metaphoric language may help them uncover, articulate and develop some of their own epistemological assumptions currently influencing their practice.

**Closing Remarks**

In affording faculty members the opportunity to explore teaching and learning through the perspectives of a variety of frameworks we may be able to provide better opportunities to explore possibilities and discover or revise personal conceptions of teaching and learning. Moreover, in engaging faculty in the systematic scrutiny of conceptions of teaching through a variety of frameworks we have the opportunity to model the reflective transformative process that is critical for growth as a teacher.

Each of the frameworks presented offers systematized ways of describing teaching and learning that may provide teachers with a means of making tacitly held assumptions, beliefs and conceptions of teaching explicit. Each of the frameworks provides a unique perspective and vocabulary that serves as a means of focusing attention, naming and communicating about teaching and learning. They each serve as a type of conceptual template through which to
engage in systematic scrutiny of conceptions and theories of teaching and learning. The templates, through their structures, perspective and vocabularies, provide frames of reference that help teachers organize their thinking. Additionally, the vocabularies supplied by the frameworks furnish a well-circumscribed and shared way to communicate about teaching and learning. As Quinn (2003) documented, teachers reported that even when frameworks were only vaguely understood, they provided useful ways to think and communicate about teaching and learning. Having a frame of reference and a shared vocabulary seemed to be a significant step forward in helping faculty members make their tacit understandings explicit.

**Epilogue**

The production of this paper, I now realize, represented an iteration of Realization, the third phase of Douglass and Moustakas’ (1985) conceptual framework of heuristics. The writing had made it necessary for me to step back from my tacit knowing and attempt to piece together exactly what it was that I was doing through my learning&assessment-focused practice. It made me interrogate the largely tacit rationale I had for doing things the way I did. It was through the writing and naming of what I do in practice and why I do it that I was able to develop the intentionality that Douglass and Moustakas contended characterizes Realization. Emerging from that Realization, I had a clearer sense of direction about the questions I wanted to ask, necessitating a return to Acquisition, the collection of more data.
While I felt certain the ICE framework was critical to the success of my practice, without taking on a systematic inquiry, much of what I assumed about my practice would remain educated conjecture. At another level, I made a Realization, or became strategically alerted to, my use of language when speaking about learning. Thoughts that the vocabulary I use might shape or somehow influence conceptions of learning began to take a more prominent place in my thinking. I started to question the possible effects of referring to Ideas, Connections and Extensions as “phases” or “stages” of learning. The linear and hierarchical implications of “stages” and “phases” was not an implication I wanted to make.
PROLOGUE TO THE EMPIRICAL STUDY

The results of the pilot study reported in Chapter 2 indicated that engaging in discussions about assessment helped teachers make explicit the beliefs and values they had for students’ learning. Indications were also that even those teachers identified as highly effective appeared to lack a systematic way of communicating their expectations for learning to their students. Given that the ability to make one’s values, beliefs and conceptions explicit is an integral step in processes of transformation and growth (Mezirow, 2000), the development of those abilities appears critical. It would seem that if teachers could learn and adopt a framework of learning that was both congruent with their own epistemological beliefs and grounded in current theories of learning, they might then have a framework and a vocabulary to both facilitate full articulation of their tacit understanding of teaching and learning as well as facilitate communication about expectations for learning. As Quinn (2003) indicated, post-secondary teachers who had learned vocabulary associated with theories and taxonomies of learning reported that they were better able to articulate their conceptions and intentions for learning, even if the taxonomy or theoretical framework was incongruent with their own. It appeared that teachers needed a framework that is sophisticated enough to support complex conceptions of teaching and learning but also is accessible enough to use in everyday communication with students. Anecdotal evidence from teachers, gleaned through my day-to-day interactions with them, indicated that neither Bloom’s nor the SOLO taxonomies were facilitative in their communications with students. They did however report that
ICE was both an effective communication tool and instrumental in bringing about their own transformative professional learning. The next step in my own journey of understanding of the role of learning&assessment-focused development in the improvement of teaching was to investigate the ways in which my approach to educational development and my use of the ICE model supported faculty members' transformative professional learning.

I now recognize that the preliminary work leading to the production of the three preceding manuscripts served as the foundation for the empirical research that was to follow. While the papers themselves did contribute to practice-based and literature-informed educational development and teaching practice, each was also successful in helping me identify gaps in an understanding of my own practice. To gain the full picture of what learning&assessment-focused educational development is and the potential impact of it, I needed to move beyond the preliminary investigations and theoretical explorations I had done and adopt a systematic investigation of the way I practice. The study that resulted was the next logical step in my ongoing sense-making of practice and represented a return to the Immersion and Acquisition phases of my ongoing inquiry.
CHAPTER 5

METHOD

In this chapter I outline the purpose of my empirical research and provide a methodological framework and rationale for my approach. Details on participant demographics and procedures, including recruitment, data collection and data analysis are included.

Purpose

The purpose of this qualitative empirical research was to identify and name the defining characteristics of learning & assessment-focused educational development and better understand the professional learning that may be occasioned through it.

Methodology

The process of meaning-making I set out to undertake required a qualitative approach. Three critical elements informed my research method choices: (a) a commitment to including post-secondary teachers’ voices and perspectives on their own professional learning, (b) ensuring that the investigation was a collaboration and (c) presenting an opportunity through the research for an educative and development experience for everyone involved.

Including Post-secondary Teachers’ Voices and Perspectives

Teachers are generally isolated when experiencing and perceiving teaching events (Behar-Horenstein & Morgan, 1995) and many university and college faculty have few opportunities for collegial discourse around teaching. The intention in providing an opportunity for teachers to share their experiences and
perceptions was “an attempt to bring teachers’ professional reasoning to conscious awareness” (p. 145) which can provide them with additional awareness through self-reflection. Contributing to the research was a way of inviting teachers to confront and name their practice and their professional learning around it.

Involving participant contributors to name their own learning and conceptions of teaching and learning is significant because much of the current literature focuses on faculty learning that is interpreted and reported from the developer-researchers’ perspectives and, usually, defined a priori (e.g., Ho, Watkins & Kelly, 2001; Kember, 1997; Samuelowicz & Bain, 1992; 2001). Most often, studies investigating changes in post-secondary teachers’ conceptions of teaching and learning rely on either Samuelowicz and Bain’s (1992; 2001) or Kember’s (1997) categories of teaching conceptions (e.g., Ho, Watkins and Kelly, 2001) as a framework. Routinely, interview data is reviewed and interpreted in terms of whichever of the scales is being used and researchers categorize responses in relation to the set categories.

Not surprisingly, because conceptions of learning have been characterized as hierarchical and sometimes nested within hierarchies, it is not uncommon for a single participant to evince more than one conception of learning. In such cases, the researchers place the participant into the highest category of conception for which there is evidence, regardless of the frequency of demonstration. Interestingly, there are reports of problems of consistency in indexing teachers’ responses (e.g., Ho, Watkins & Kelly, 2001). Recurrence of indexing consistency
problems might be an indication that the continua are not sufficiently complete representations of the full range of existing conceptions or perhaps that the categories are not as discrete as the original authors had intended. It is unclear as to whether researchers are able to detect and document intra-category changes as well as inter-category changes or if problems in indexing responses result in mis-categorizations that in turn result in either false positive or false negative change indices. More significantly, using pre-set categories that might not accurately reflect the current research population’s conceptions of teaching skews the results by forcing responses into the researchers’ paradigm of conceptions of teaching and necessarily restricts findings of change within those set parameters. For example, if a teacher was found to demonstrate a conception of teaching as a two-way interaction between teacher and student and then, at a later time, indicated that teaching is a three-way interaction that involves student-to-student interaction as well as teacher-student interaction, there would be no way to record that change using Kember’s (1997) system of categorizing conceptions of teaching. The change index in the Kember model is from one-way communication to two-way communication and does not include conceptions of teaching as a three-way phenomenon. All that would be noted is that the teacher in question currently holds the higher of the two conceptions of teaching. This is problematic if the intention of a study is to investigate conceptual development and not just changes due to learning that fall within a researcher’s current paradigm, hence a drawback to defining conceptual change—learning—a priori.
Pre-existing categories impose artificial limits on the phenomenon and may eventually begin to have the effect of squeezing outliers into categories of best fit. As Graham Webb (1997) said, “the ‘qualitative’ methods employed appear to have more to do with the quest for positivist generalization than the development of hermeneutical understanding” (p. 198). For these reasons, the research reported here was designed to afford all contributors, including me, an opportunity to both reflect upon and articulate the lived experience of professional learning.

It was essential to consider perspectives other than my own. In addition to giving voice to teachers about the significance of their own professional learning, including their perspectives served as a limited validity check on my interpretation of findings.

**Ensuring Collaboration**

Educational development is not something that is done “to” faculty members. Rather, it is a collaborative endeavour undertaken in partnerships among teachers and developers. This type of active collaboration leads to what Richardson (1998) referred to as reflective and collaborative staff development, the purpose of which is collaborative construction of an “ecology of thinking” by both the teacher and the learners (para. 22). While my own lived experience of learning&assessment-focused educational development is certainly rich, it affords insight into the phenomenon from only one perspective. My own heuristic sheds light on a mere few of the questions I set out to answer. The full story of learning&assessment-focused educational development required inclusion of the
perspectives and insights of the faculty learners in a process of collaborative meaning-making.

If, as Peseta, Hicks, Holmes, Manathunga, Sutherland, and Wilcox (2005) contended, educational development is indeed about “engaging others in a rationale for understanding and participating in teaching and learning change” (p. 61), then it became an imperative to give voice to those who have most to contribute to creating that understanding and to hear those voices through the processes of data collection, analysis and interpretation (Douglass & Moustakas, 1985). Thus, it was necessary for me to invite participants to become contributors to the research and to involve them in a process of collaborative member-checking to interpret the data they helped to generate. Also, collaboration is an essential element of successful self-study (Loughran, 2002) and self-study is a critical component of heuristic inquiry (Douglass & Moustakas, 1985). Hearing others’ perspectives enabled the possibility of moving through and beyond my own firmly held views (Samaras & Freese, 2006). It was through collaboration and the willingness to share our lived experiences of learning & assessment-focused educational development that the faculty contributors and I were able to define its characteristics and the professional learning supported by it.

Providing an Educatively and Developmental Opportunity for Everyone Involved

It was imperative that the research approach was consistent with educational development practice by providing all contributors opportunities for (a) reflection on practice, (b) conceptual and skill development, and (c) planning for the
improvement of practice. The intention was for all of us to engage in educational development rather than for me to merely study educational development. Ideally, engaging in the research would include opportunities for contributors and me to learn from one another through the development experience. In this sense, while the study was not intentionally interventionist, it was anticipated that professional development would occur as a result of engagement in the reflective processes demanded through participation. For as McAlpine and Weston (2000) and Boud, Keogh and Walker (1985) acknowledge, the outcome of reflection is enhanced knowledge.

To honour the collaborative and mutually beneficial interactions that typify most development relationships, and in the tradition of the reciprocal teaching model introduced by Palincsar, Ransom and Derber (1989), I set out to invite post-secondary teachers to join me in collaborative heuristic inquiry. The intention was that engagement in the research would, in itself, be an opportunity for all of us to learn more about teaching, learning and assessment educational development and, through reflection, make our learning explicit.

**Rationale for the Approach**

The objective of heuristic research is to explain an event, process or phenomenon as it was experienced; “at the base of a heuristic discovery is the power of revelation in tacit knowledge” (Moustakas, 1990, p. 20) or lived experience. Critical interactions among teachers and learners contribute to each one’s lived experience (Robertson, 1996). That being the case, I extended the heuristic to include a collaborative aspect. The intention was to capture the
essence of the critical interactions that are learning&assessment-focused educational development and document the learning that I perceive, and teachers report, to ensue. The heuristic included two distinct yet integrated components (a) my own lived experience of learning&assessment-focused practice and (2) post-secondary teachers’ lived experience of the same phenomenon.

Participants

Invited to participate with me in this study was a group of post-secondary teachers with whom I had worked. The target group for this research was purposefully selected as representative of the higher education teacher populations with which I most frequently work: college and university teachers from across disciplines. My intention was to invite participation from faculty with as wide a range of higher education teaching responsibilities as I commonly encounter in my day-to-day practice. Most, but not all, participants were faculty members, though all had regular, on-going teaching responsibilities in post-secondary institutions. Here, I outline the demographics of participants, including my own.

Me as Educational Developer

I have a background in adult and higher education and am generally regarded as a skilled educational developer. With more than 11 years of professional experience as an educational developer, I have worked with post-secondary faculty members from across disciplines, in both college and university settings. Much of the work I have done has been as an independent
consultant though through several longer-term contract positions I have gained greater experience as a member of an educational development unit in an institutional context.

**Post-Secondary Teachers**

In total, 16 post-secondary teachers contributed to the research. Each of the participants had engaged in educational development where ICE was a featured component. Fourteen had attended development workshops, presentations or consultations in which the ICE model had been a featured component. One of the other two had become familiar with ICE as a framework for teaching, learning and assessment through collegial discourse with peers and the other through reading on their own. Only teachers who were familiar with ICE contributed to the research. Implementation of the model into practice was not a condition of participation. Table 3 outlines the breakdown of participation. Of the 16 post-secondary teachers who contributed narratives, 12 were able to contribute to dialogue through to the study’s natural conclusion.

**Table 3**

*Participants*

<table>
<thead>
<tr>
<th>Institutional Affiliation</th>
<th>Gender</th>
<th>Participation</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Narrative</td>
<td>Canada</td>
</tr>
<tr>
<td>College</td>
<td>4</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>University</td>
<td>4</td>
<td>8</td>
<td>6</td>
</tr>
</tbody>
</table>

The sample of college teachers included representation from a cross section of disciplines: LB from Computer Technology; CA and DC who taught in Early Childhood Education programs though at different institutions; IM who taught discipline specific English Communications courses; LW from Environmental
Studies; GL in General Studies; RK2 who taught several courses in Justice Studies; and KS who had a prominent role in Veterinary Sciences at her home institution. The university teachers included representation from Engineering and Applied Science with participation from CR, JS from Drama, VR who taught Geology, RK1 from a department of Mathematics and Statistics, and JF, a physicist. Completing the list of university teachers who participated were MT, a librarian who found that teaching was becoming a more regular part of his day-to-day experience and AO and ME, from departments of Rehabilitation Medicine at different institutions. ME, in addition to her role in Rehabilitation Medicine had taken on an associate role at her institution’s teaching development centre. Duration of participants’ teaching experience ranged from one to eighteen years.

**Procedure**

**Recruitment of Faculty Participants**

After having secured clearance from the General Research Ethics Board at Queen’s University (Appendix D), I sought and received ethics clearance, in compliance with Tri-Council Standards, from the two other Canadian universities and four Ontario colleges with whom I had a working relationship with faculty members. An email recruitment message (Appendix E) with an attached letter of information and consent (Appendix F) was sent via third-party mailing to approximately 250 college and university teachers. Because the Canadian Freedom of Information and Privacy Act prohibits institutions from disclosing information, including email addresses and other contact information, about faculty without their express consent, I was not able to rely on direct recruitment.
to solicit participation. Those who were responsible for organizing the professional development opportunities at the Canadian institutions at which I had presented agreed to recruit by email on my behalf. Any faculty members who had initiated contact with me themselves and those with whom I had regular professional contact were recruited directly. Through the letter of information I asked faculty members to write a one-to two-page narrative about the learning they attributed to have resulted from educational development where ICE was a featured component. They were also invited to consider continued participation through online discussions after submitting a narrative.

Because my interest was in the study of ICE-informed, learning& assessment-focused educational development and the learning that results from it, it was imperative that the research not be limited to faculty members from the immediate local educational community. Having secured no funding to support and facilitate this research, I was determined to be as inclusive as possible without incurring prohibitive costs. That being the case, the decision was made to invite teachers to participate in the study via electronic media. While the use of electronic media introduced the benefit of expanding the participant pool, there was a potential hazard in the uncertainty of the effectiveness of the indirect communication that would result.

The decision to use electronic means to initiate contact and to interact with faculty members was not taken lightly. One of my professional strengths is face-to-face communication and professional interactions with the teachers with whom I work. One of my limitations is in my ability to overcome the barriers I perceive to
be inherent in technologically supported interactions. It is likely that the evolution of educational development will involve the ever-increasing use of learning technologies, perhaps reducing opportunities for face-to-face, real-time interactions. This research project provided a rich opportunity for me to try to learn to transfer some of my strengths in face-to-face interactions to a virtual arena and to include reflections on my learning as part of the data report.

Potential participants were encouraged to contact me directly to indicate their interest in participating, to pose questions regarding the study or to simply submit the requested narrative via email. Submission of a narrative was taken as informed consent to participate. All participants were informed of their right to withdraw from the study at any time without penalty, or negative consequences. Participants who wished to withdraw were asked to notify me, or my supervisor, of that intention directly by email, by phone, or in person. Though offered the option of removing all or portions of their data from use, none of the four participants who withdrew from the study before its conclusion elected to do so.

**Data Collection**

Multiple sources of self- and faculty member-generated data were used to gain insight into the transformative effects of learning&assessment-focused educational development. Workshop content from multiple development sessions and my own research journal were used as data sources about the content and processes of the development experience and my ongoing sense-making through interactions with participants and my day-to-day work. The post-secondary teachers contributed narratives of their own professional learning and

100
agreed to have our ongoing email correspondence collected as part of the data set. An additional source of data, intended as a collaboration, was the interpretive diagrams I created that were representations of the learning I understood the teachers to have reported. Table 4 outlines the data sources specific to each participant group.

**Table 4**

*Participant data sources*

<table>
<thead>
<tr>
<th>Participant</th>
<th>Number of Participants Contributing</th>
<th>Data Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Me as Developer</td>
<td>1</td>
<td>- Workshop Materials</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Research Journal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Learning Diagrams</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Email Correspondence</td>
</tr>
<tr>
<td>Post-secondary</td>
<td>16</td>
<td>- Narrative</td>
</tr>
<tr>
<td>Teachers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td></td>
<td>- Learning Diagrams</td>
</tr>
<tr>
<td>12</td>
<td></td>
<td>- Email Correspondence</td>
</tr>
</tbody>
</table>

As a study of lived experience where the researchers live the research questions, everything connected with the questions “becomes raw material for immersion, for staying in focus” (Moustakas, 1990, p. 23). That characteristic of the method of inquiry method meant that anything that helped make sense of learning&assessment educational development or teachers' transformative learning became a valid source of data.
Educational developer data.

Workshop materials. The content of seven ICE focused learning&assessment workshop events and support materials were reviewed in an attempt to identify patterns of practice and content. The seven workshops selected were those that members of the participant pool had experienced. A sample workshop and the support materials used for it are included as Appendices A, B, and C.

Research journal. Throughout the weeks of ongoing dialogue I maintained a research journal, keeping notes, recording my intentions, reactions to and perceptions of the learning being evidenced and articulated. Doing so enabled me to document my “systematic observations of and dialogues with self and others” (Patton, 2002, p. 108). That documentation took the form of a handwritten journal through which I accumulated 129 pages of reflections, intentions for practice, insights into my practice, questions, reminders and Connections. The research journal represented my own narrative of practice and professional learning. I revisited entries repeatedly, supplementing previous writings with new insights and connections to the literature, documenting patterns and themes on each revisit.

Interpretive diagrams. Subsequent to reading and analyzing the initial narrative contributions, I diagramed my understanding of each participant’s learning, including factors that seemed to have contributed to their learning and any impact of conceptual change that they reported; an example of an interpretive diagram of learning is included as Appendix G. The diagrams
provided me with an opportunity to conceptualize and communicate in a less-preferred manner and afforded an opportunity for teachers to either validate or refute my interpretations of what they had to say about their professional learning.

Individual diagrams were shared, electronically, with individual contributors for their input and analysis. Contributors were asked to review the diagram and to edit for accuracy. This member-checking process was intended to provide an opportunity for communication and mutual understanding of each contributor’s learning as well as to provide an additional opportunity for reflection after the point of initial engagement. Because the diagrams failed to spark dialogue, they yielded no data on participants’ professional learning.

**Post-secondary teachers’ data.**

*Narratives.* Participants were invited to submit, via email, a one to two-page personal reflexive narrative in response to the questions informing the research:

1) What new things did you learn about teaching and learning when you learned about ICE?

2) What impact does that learning have on your approach to teaching and on your conceptions of teaching and learning?

Conle (2001) and Savvidou (2010) both identified narrative as not only a method of inquiry but also as a means of individual or personal professional development. Both authors describe narrative or professional storytelling as opportunities for teachers to explore their own knowledge and understanding of their teaching. If engaged in concert with others, better understanding of one’s
own and others’ narratives come about through questioning and dialogue. That being the case, in contributing a narrative, participant-contributors were actually engaged in educational development rather than merely commenting on educational development.

Conle (2000) described narrative as being “great for when you get, or give, yourself permission to get on the road intellectually on which you are already travelling existentially” (p. 211). Writing becomes “a method of inquiry that moves through successive stages of self reflection” (Denzin & Lincoln, 1994, p. 10).

Writing a narrative initiated teachers to the reflective process necessary for heuristic inquiry and prepared them for what I intended to be equally reflective dialogue. The narrative component invited participants to explore and articulate their learning and conceptual growth. Additionally, narratives provide a way of negotiating meaning and it is through that negotiation that the inquiry is shaped and moves forward (Clandinin & Connelly, 2000).

One university faculty member emailed me directly and indicated that while she was very interested in contributing to the research, she was not interested in submitting a written narrative. I obliged her request for a face-to-face meeting. Her responses to the two introductory questions, cited above, were audio recorded and transcribed verbatim. She turned down an offer to review transcription records.

Usually when making an accommodation for one participant I would, if feasible, offer the same opportunity to all others. In this case, I would not have
been able to accommodate similar requests from any but local respondents so
did not openly offer the accommodation as an option to all contributors. The
accommodation I did make was entirely consistent with my usual, individually
responsive, way of interacting with faculty members in my development practice.
I make every reasonable effort to support faculty members’ learning in ways that
make sense for them while at the same time in ways that do not compromise the
effectiveness of the activity.

In total, sixteen narratives of professional learning, including the one gained
through interview, were included as data sources. One contributor, CA, withdrew
from the study due to ill health after having submitted a narrative. Another, CR,
became non-responsive after making his submission. After three unanswered
messages, including one about the learning diagram, I stopped attempting to
contact CR. Neither contributor requested that their narrative be removed from
the data pool.

Inviting faculty members to submit their narratives electronically served a
number of significant intentions. The format provided a comparatively open
environment where contributors might reflect, write and return to their narrative,
at their convenience, revising, as they saw fit, before submitting their piece.
Without being confined to a single time episode, such as would be provided
through an interview, I hoped to afford faculty members reflective time that they
might otherwise not have taken (James, 2004).

The electronic format also eliminated travel costs and opened participation to
other than just a local population. Opening up the study to include individuals
from across Canada, the United States, Sweden and South Africa served to add to the richness of the data while also serving to reflect the multi-national make-up of the university and college faculty members with whom I routinely work. The reports of results may thus appeal to a larger and international readership.

The narrative component of the study was designed to initiate contributors to the reflective stance required for heuristic inquiry and to address the research questions pertaining to their learning and its effects on conceptions and practice. In other words, the narrative was intended to be a vehicle through which contributors could articulate the Connections and perhaps the Extensions that their professional learning had enabled though that language was not used in the invitation to participate. Additionally, the narratives were intended to serve as the foundation for the learning diagrams intended as starting points for the ongoing dialogue that was to follow.

**Email correspondence.** The original design of this study included the intention that contributors participate in a discussion that mimicked the face-to-face, interdisciplinary, peer exchanges that had consistently been identified as significant learning opportunities by workshop participants. Study participants stood to learn about alternative perspectives from their colleagues from different disciplines and institutions and who might have held conceptions of teaching and learning that were different and perhaps incongruent with their own. When one contributor asked if I might consider allowing her to participate through one-on-one email or phone correspondence rather than through the discussion forum, I agreed and also offered that alternative to each of the other participants. All 12 of
the post-secondary teachers who had agreed to continue in the inquiry approved
the move to individual correspondence with me rather than through a discussion
forum.

Correspondence for the purpose of data gathering for this research took
place over a defined period of five weeks though collegial correspondence on a
wide range of teaching topics is still ongoing with seven of the contributors.

Though contributors ultimately determined their own level of participation,
they were each advised that an investment of between one and a half and two
hours of time per week for three to four weeks was expected. Participation
required active engagement in interactive conversation as a way to “extend and
capture dialogue and critical reflection” (Kubler, 2005; p. 134). The intention was
for the conversation to allow discourse and exploration, questioning and
speculation for “a true conversation is dialogical in the sense that it is not task
oriented, predetermined by goals or objectives. It is a medium where participants
can be themselves, and voice their half-baked ideas without fear of being
ridiculed” (Keiny, 2008, p. 63).

The asynchronous nature of the correspondence enabled all of us to engage
at our own pace and according to our own schedules (James, 2004) as well as
afford valuable time for reflective responses. It was hoped that the time between
e-mail conversations would support participants’ reflections, allowing them to think
about their responses in a way that would enrich the process (James & Busher,
2006).
While this phase of the study was not intended to be interventional, I anticipated that engagement in this type of on-line dialogue would help us all achieve a better understanding of our own respective practices and the stories of our development as teachers and, in my case, my growth as an educational developer. It was anticipated that the dialogue would be developmental in much the same way as talking about their assessment practices was developmental for the teachers reported on in Chapter 2.

It was through these various dialogues that, as well as discussing individual participant's professional learning, we collaborated in an attempt to identify the critical characteristics of effective development experiences and relationships.

At the conclusion of the five-week electronic conversations that marked our collaboration, I conducted a preliminary analysis of the data and distributed a summary of my interpretation of preliminary findings (Appendix H). Though I requested input from the contributors and solicited comments on the validity of my interpretations, not a single contributor responded to the invitation.

After dialogue for the purposes of this study had concluded and preliminary results had been shared through a conference poster presentation (Appendix I), a second limited validity check was made possible through the observations on my practice made by three other educational developers. Their insights precipitated yet another review of the data, this time in light of the observations they had shared. Their contributions are reported in the findings reported in Chapter 6.
Treatment of the Data

All narratives collected via email, the interview transcription and all email correspondence are kept in a password protected electronic file on my personal computer in my home office. Hard copies of all collected data are in labeled files in a locked drawer in my home office and will be destroyed after a period of five years. My research journal, which I carry with me, is still in use.

To facilitate referencing and collation of analyses, identity codes were developed; they indicate the initials of the contributor, the document type and the paragraph number. For example, a code of KSn4p4 indicates an excerpt from the fourth paragraph of participant KS's narrative. Email was similarly coded to indicate contributor, document type and number as well as paragraph number. A code of KSe1p1 indicates an excerpt from the first paragraph of contributor KS's first email. A code of sLWe4p6 indicates an excerpt from paragraph 6 of the fourth email sent from me (s) to contributor LW.

I made consistent use of an additional numerical notation to distinguish between two contributors with the same initials (RK1 and RK2). Excerpts from my research journal are referenced by page number only. Samples of identity coded narrative and email correspondence are included as Appendices J and K respectively.

While all participants were assured that their anonymity would be protected to the extent possible, none expressed concern about their identities becoming known through their responses; none opted to provide a pseudonym for use in reporting findings in the data.
Data analysis.

**Workshop materials.** I undertook a separate case content analysis (Patton, 2002) of each of the seven workshops that had provided participants' their introduction to ICE informed learning&assessment-focused educational development. The focus of the analyses was on (a) the content of the workshops and (b) the instructional strategies and (c) interactions inherent in the experience. After each individual workshop was analyzed, inductive cross workshop analyses were conducted to determine divergence and similarities among the sessions so that patterns of practice might be identified.

**Research journal.** Journal entries were reviewed on an ongoing basis to determine entries of substantive significance, that is, to determine to what extent the content deepened my understanding (Schumacher & McMillan, 1993) of learning&assessment-focused educational development and the professional learning that resulted from it. Intuition, something Douglass and Moustakas (1985) identify as critical to the Acquisition phase of heuristic inquiry, allowed me to “follow the path that holds most promise for disclosing truth” (p. 49). That intuition led me to highlight passages that I felt were likely to “disclose experiential meanings” (p. 49). This immersion into the journal entries enabled a process of inductive analysis and the creative synthesis (Patton, 2002) of emerging patterns and themes across all data sources. Analysis of the highlighted portions of the journal began with identifying the general utility of each entry in explicating learning&assessment-focused educational development or faculty members' professional learning. Next, a process of open coding was
adopted that enabled me to identify patterns and themes throughout without forcing entries into categories of best fit. The approach made it possible to make \textit{Connections} and highlight themes across data sources. 

\textbf{Narratives and email correspondence.} All narratives, the interview transcription and email correspondence from collaborators were entered into a qualitative data management system (ATLAS.ti 5.2). Cautioned by the writing of Douglass and Moustakas (1985) not to “lose the persons in the process of descriptive analysis” (p. 43), data analysis began with separate case content analyses. Each narrative was read through separately to identify topics and recurring themes (Patton, 2002). A computer crash during the content theme analysis phase resulted in the need to adopt the “Find” feature in Microsoft \textregistered\ WORD 2008 for Mac, version 12.31 to complete the analyses. Data was reviewed “in creative combinations and recombinations, sifting and sorting, looking and listening carefully for the meanings within the meanings, attempting to identify the overarching qualities that inhere[d] in the data” (Moustakas, 1990, p. 104). The theme patterns identified in teachers’ narratives and email dialogue contributions enabled coding into one or more of the following categories: (a) conceptual change, (b) reported learning, (c) factors identified as critical to learning and (d) the significance individual faculty members attribute to the learning they described.

After preliminary analysis of narratives was complete, I constructed diagrams of the learning I had interpreted through each participant’s narrative. The diagrams were a means of seeking consensual validation (Patton, 2002) and
providing impetus for ongoing discussion. “In heuristic research, verification is enhanced by returning to the research participants and sharing the meanings and essences with them and seeking their assessment for comprehensiveness and accuracy” (Moustakas, 1990, p. 33). An additional formalized opportunity for consensual validation occurred when I invited commentary from all 16 contributors on the preliminary summary of findings.

**Summary**

In keeping with the methods of heuristic inquiry, I re-entered the Acquisition phase by inviting post-secondary teachers to contribute to my inquiry into ICE-informed learning&assessment-focused educational development. Targeted sources of data generated for the investigation included contributions from myself, as educational developer, and from those who participated in the development activities I facilitated. Data sources included my workshop materials and research journal, reflective narratives on learning written by faculty members, and transcripts of our ongoing email discussions about their professional learning. Inductive methods of analysis were used to discern content themes and patterns of instructional strategy used in workshops and to identify themes related to teachers’ conceptual and skill development in their narratives and our email discussions. Consensual validation of preliminary analyses was sought through the generation and sharing of learning diagrams and of a summary report of initial findings with all contributors.
CHAPTER 6

FINDINGS FROM THE EMPIRICAL STUDY

Unlike the linear and categorized way in which the research questions were laid out in Chapter 1, educational development and the interactions inherent in the process are anything but linear; they are iterative, reciprocal and entwined. For that reason, it makes most sense to report on the findings in a way that mimics the nature both of the development experience and the heuristic process. Note that educational development is a reciprocal, interpretive process; sense-making is an inherent characteristic of the interaction. My responses to faculty members’ statements and theirs to mine occurred as the result of in-the-moment analyses and interpretations necessary for development discourse to occur. “I respond to how I’ve interpreted their state” (Research Journal, p. 19). The interactions were our collective engagement in ongoing sense-making.

I begin the report of findings with an overview of the characteristics of the type of learning&assessment-focused educational development I practice and in which, in one iteration or another, 14 of 16 participant/contributors took part before becoming involved in this study. That descriptive report is followed by the report of faculty members’ professional learning—their self-identified conceptual and skill development and the characteristics of the development experience they, and I, reported as critical to the learning they describe. Throughout, accompanying notes draw attention to the patterns of interaction and development strategies I adopted that contributed to faculty members’ learning. I report then on the ways I continue to use ICE as an educational development tool
to engage in and inform my learning&assessment-focused educational development and conclude the chapter with findings related to the ways that electronic rather than face-to-face encounters may have affected the development interactions and findings.

**Characteristics of My Practice**

A review of the workshops I have facilitated, a sample of which is provided as Appendix A, revealed characteristic patterns of practice. While the content of learning&assessment-focused workshops did vary, there were, and continue to be, some clear patterns in my selection of content and facilitation strategies.

**Workshop Content**

I consistently use content that is literature-informed and practice-based with a focus on students’ learning. Figures 4 and 5, slides from one workshop, were used to draw teachers’ attention to the impact of assessment on students’

![Assessment Models and their influence on Students’ Learning](image)

- What and how students choose to learn is, in large part, influenced by what and how we choose to assess. (Boud, 1990)

- The assessment model in place has greater influence over student learning than any other element of the curriculum. (Ramsden, 1992)

*Figure 4: Literature-informed content*
Approaches learning and the ways we, as teachers, might support that learning through assessment practices.

Figure 5: Effects of assessment on learning

Content focuses on learning and includes material on (a) conceptions of learning, (b) what learning looks like, (c) effects of teachers’ conceptions of teaching and learning on students’ approaches to learning, (d) effects of assessment on students’ approaches to learning and (e) the relationship between assessment and teachers’ values and assumptions about learning. To direct teachers’ attention to students’ learning and what learning looks like I most often introduce at least two, and sometimes three, taxonomies or models of learning. Other content includes samples of assessment tools such as rubrics and tables of specifications, test question stems, and directions for creating a variety of assessment tools and for writing learning outcomes. In short, all content is related to learning and teachers’ assumptions about it and to planning for purposeful assessment of intended learning.
Based on the feedback I have received, the most successful workshops I have facilitated are those that have been designed in response to an expressed development need. When I can be responsive to teachers’ immediate or emerging needs, meeting them where they are in terms of their professional learning needs and relative in terms of concept and skill development, the more successful the workshop appears to be.

**Instructional Strategies**

Instructional strategies most often included the use of active and interactive facilitation methods, storytelling, guided alertness, individual responsiveness, modeling and supported practice of new skills and knowledge. Samples of materials used to guide those activities are included as Appendices B and C.

**Active and interactive methods of facilitation.** Typically, invitations to participants to engage in discussion and to explore and question assumptions or review their own current assessment practices and grading approaches occur early in workshop sessions. These introductory activities serve as an initial step in the process of becoming aware of and articulating the assumptions, (mis)conceptions and values upon which each teacher’s own practice is based. Learning exercises afford an opportunity for participants to actively explore, sometime independently and sometimes collaboratively, and grapple with new ways of thinking that might challenge some of their assumptions. The invitation to active engagement early in our time together sets an expectation of participation and of criticality.
In addition to activities that invite exploration of currently held conceptions and assumptions, are activities, such as the one included as Appendix B, that are designed to highlight the assessment skills and frameworks that teachers already have and use, even if only tacitly, and upon which they can build. Routinely, exercises like these are revisited multiple times in the course of a workshop, first as a means of probing assumptions and tacit working frameworks and subsequently as a vehicle through which to practice newly acquired skills. New insights and perspectives are intended to emerge through the iterativeness of the process.

Because past workshop feedback had consistently identified interdisciplinary discussion with peers as a highlight of the development experience, I maintain the strategy as a staple feature. In workshop situations, discussions with colleagues expose participants to alternative perspectives, assumptions, conceptions and approaches and afford everyone in attendance the opportunity to begin the process of articulating their own.

**Storytelling.** Though I have always been purposeful in selecting stories that might facilitate participants’ ability to make connections to their own practice, I had never consciously considered that storytelling might be considered, more formally, as a legitimate instructional strategy. Anecdotes seemed always to have played an important role in my development practice and are integral components of both workshops and one-on-one consultations. In both situations, I relate real-life events that are relevant to the discussion at hand. The stories are not all my own; they are collected bits of wisdom and enactments that others
have shared with me and that I pass on. They serve as illustrations of, or contrasts to, the abstract or theoretical concepts under discussion or as examples of the possibilities of practice from a wide range of contexts. Particularly useful in helping faculty members see the relationship between findings in the research and the realities of classroom practice are stories that illustrate how abstract concepts might be manifested in our own classrooms.

Another element of storytelling is the narrative thread of my own professional journey of understanding learning, teaching and assessment. Typically, I begin workshops by introducing distresses that led to my emerging interest in learning and in how to use assessment to help support and improve my own students’ learning. Through narrative I describe a process of searching the literature related to the disequilibrium that I, and my students, had experienced in the classroom and of my need to contrast findings in the literature with my own experiences and those of my students.

**Guided alertness.** I have chosen *guided alertness* to describe the process I use to consistently draw teachers’ attention to their intentions, stated or tacit, for students’ learning for the purposes of instructional decision-making. Aside from the deliberate strategies I use to draw participants attention to learning, I have, I have come to learn, a distinct penchant for prefacing almost all responses to teachers’ pointed questions about what approaches and strategies they should adopt with “that depends”. “That depends” is most often followed by a question or two that invite(s) consideration of elements of the instructional setting, intentions for learning, assumptions and values that should factor into decision-making. The
response preface draws participants’ attention to the fact that what might be best practice in one learning context might not be in another. It is the alignment of intentions, values and context gained through reflective and purposeful teaching that makes for best practice.

A review of my workshops and consultation notes revealed another tool that I consistently use as an aid in guided alertness. It is a set of questions I have come to refer to simply as the four critical questions. The series of questions are helpful in planning any kind of instructional event from a single class session to a full curriculum:

1) What would you like your students to know or be able to do at the end of your time together?
2) How would you like them to know it?
3) What instructional strategies will be necessary to help them learn to ‘know’ it in that way?
4) What assessment opportunities will be necessary for them to demonstrate to you and to themselves that they know it the way you intended?

The questions draw attention to the ways that we, as teachers, can become intentional and purposeful in our approaches to instruction, including assessment, and what basic elements we might consider as we plan for students’ learning. The questions also serve to guide alertness to notions of congruence in intentions for learning and instructional and assessment decision-making.

**Individual responsiveness.** The use of “that depends” as a prelude to a response to a question in a large group is as much a way of being individually responsive as it is about guiding alertness. Part of the learning or instructional
context to which I referred earlier is the context created by any individual
teacher’s conceptual and contextual reality. My role, as I see it, is to help each
teacher be the best teacher they can be given that developmental context. So,
my response to questions about the selection of instructional strategies would
differ depending on the teacher.

**Modeling.** I can now see that I do, in fact, model a scholarly approach to
teaching though I have now also to admit that I had not set out intentionally to do
so. That is, I did not consciously select modeling as an instructional strategy. It
was that in sharing the narrative of my own development as a post-secondary
teacher, I concomitantly shared the ongoing cycle of dissonance, reflection,
information seeking, criticality and experimentation in which I continue to be
engaged.

I understand now too that “that depends” models (a) resistance to
conventional notions of best practice, (b) acknowledgement that what practice is
“best” depends on context and (c) respectful individual responsiveness.
Moreover, in drawing attention to the range of questions that might be asked
before selecting an instructional or assessment strategy by my “that depends”
response, I model what for those with whom I work is a new way of thinking; it
models a new habit of mind to appreciate the context of any given teaching and
learning event.

**Supported practice.** I believe that supported practice of newly acquired
skills, knowledge and conceptions, in the relative safety of the workshop setting
and in collaboration with others, increases the likelihood that workshop
participants will be able to apply their new learning successfully, in their own contexts, afterward. Because I hold this belief, supported practice of new skills has become an integral feature of the learning&assessment-focused workshops I facilitate. The workshop outline in Appendix A illustrates the ways in which workshop participants are invited to select and apply taxonomies, identify frames of learning, articulate specific learning outcomes and otherwise use their new learning in relation to their own contexts. Most often I choose to use one exercise for multiple purposes. My rationale is that in revisiting the same exercise over time, participants may be better able to identify their conceptions and assumptions and gain insight into their own professional learning and its implications.

**Additional Perspectives**

Most fortuitously, after drawing my formal research to a close, and months after delivering a conference poster presentation on the preliminary findings of this research (Appendix I), I had the opportunity to be hosted by, and work closely with, several educational developers from two post-secondary institutions in Sweden. Over a period of 12 days they witnessed my interactions with faculty members from their home institutions and they attended the professional development workshops I facilitated while there. One of these colleagues was in attendance at each of the four workshops that I facilitated while working at the host institutions. Three others each attended different iterations of similar workshops; all shared spontaneous, unsolicited commentary about my approach to educational development and the ways I interacted with faculty.
Aside from the content of the workshops, the characteristics most commented on by my Swedish colleagues were (a) the use of storytelling as an instructional tool; (b) the modeling of a scholarly approach to teaching; (c) the use of what my colleagues referred to as a “non-normative” approach to educational development; and (d) the pervasiveness of professional respect that imbued all professional interactions. It was through this informal, collegial process that was akin to peer-review that I was able to gain new insights into my professional practice and to begin, in earnest, to identify its elements. It was through their willingness to share their observations that I was able to more consciously explore distinct yet intricately related characteristics of my practice.

It was through my own professional narrative, my Swedish colleagues said, that I managed to lay bare what it means to adopt a scholarly approach to teaching. In inviting those present to join me in a process of critical review of the literature on assessment, models of learning and the assumptions we hold, they contended that I modeled what it means to adopt systematic thinking about teaching and learning, something Bullock (2009) argued is essential to purposeful practice. That systematic thinking was modeled by introducing current research and literature, supplemented by stories about, and invitations to unpack how, or if, the findings in the literature were congruent or divergent from our collective classroom experiences and to consider the effect on our conceptions and practices.

It is storytelling that helps to clarify, illustrate and concretize the theories and concepts that are introduced through workshops. In addition, my Swedish
colleagues were convinced that storytelling, in no small way, contributed powerfully to the overall success of the professional teaching development workshops they attended and the relationships I was able to forge with participants. More than just serve to establish me as a post-secondary teaching colleague, the stories, they said, were an effective way of laying a pathway for others to follow in adopting a scholarly approach to teaching.

It was this individual responsiveness that my Swedish colleagues named non-normative educational development:

I see what you do as non-normative. You have a way of listening to a question that is asked and first answering it for the person who asked and then elaborating, perhaps for others, with other possible alternatives. You work from where people are and help them in that place.

(Post-workshop feedback recorded in Travel Journal, December 9, 2009)

You don’t tell us what to do or what to think. You share your experiences and the experiences of others and ask us to base our choices on our own experiences and ways of thinking. It is most unusual; I have never seen that before. I like it.

(Post-workshop feedback recorded in Travel Journal, December 9, 2009)

They found it most unusual that during the workshop, I acknowledged that others’ teaching and learning contexts and experiences may have led them to develop conceptions of teaching and learning quite different from my own. I had
maintained that it was not my intention to persuade them to adopt and use ICE or my way of thinking. Rather, I was extending a challenging invitation to them to interrogate their assumptions, values and beliefs about learning so that they might find (or even create) a model of learning that was adequately representative of those conceptions and that might serve to frame the alignment or congruence of their own practice. ME and US were intrigued by my willingness to meet teachers where they were in terms of their conceptions, skills and contexts and nudge them along to their own next logical step in development. Both had noted that, in their experience, educational development is largely normative in that a particular conception, orientation or skill is identified as a best practice and developers most often work toward its widespread adoption. Their observations provided feedback to indicate that my focus seemed to be in meeting teachers where they are in terms of context, experience and current epistemology. I came to understand that it was this characteristic of practice to which participants referred when they talked about feeling respected during development activities.

**Faculty Members Report on Professional Learning**

Reporting on their learning was not an easy task for any of the post-secondary teachers who contributed to this study. Eleven of 16 contributors commented outright on the difficulty they had in completing the task of writing a narrative. It is, I think, necessary to first address the difficulties they had in doing so.
Teachers’ uncertainty about engaging in the task highlighted for me that they are not often asked to reflect on their own learning. So it was not terribly surprising when two teachers, AO and KS, initially sent, with no supporting commentary, only artifacts from their practice – collections of rubrics, assignment attachments and course syllabi – as evidence of their learning. Initially they were able only to express their learning in terms of the ways they were implementing tools. There was, at the outset, no evidence of reflection on their parts on possible concomitant changes in their thinking about teaching and learning that had led them to adopt new tools or even an accompanying rationale for the development and use of these new tools. A comparable lack of reflection was evident in CA’s submission, a mere itemization of the schedule of her development activities rather than a reflection on her learning.

I pulled out my notes and handouts about “ICE” and ordered Sue’s book. The idea to “ICE” the Field Placement evaluation was starting to take form. In May, I attended the second session with Sue. The timing was perfect and it confirmed my decision. I returned to the college, developed a proposal to revise the field placement evaluation based on the “ICE” model and presented it to my Dean and faculty team. They embraced the idea and I was on my way. (CAnp3)

While it was clear that CA’s professional learning had enabled her to reconceptualize both her classroom and her department’s practices and to take action on those reconceptualizations, she was not, at the time, able to articulate her learning in any more than a perfunctory way or as anything other than
instrumental. She talked about her department’s transition to her proposed model of assessment as “a paradigm shift for all involved” (Canp5) and about her perception that the ICE model is “student friendly” (Canp10) but stopped short of articulating how or why that was so.

The submissions caused me to realize some fundamental truths about post-secondary teachers’ experiences with educational development: “They are (often) asked about the products of their learning but not asked about the implications of that learning—nothing on meta-processing” (Research Journal, p. 20).

The significance of implementation was a factor for at least two other contributors as well. The invitation to participate in the study was an expression of my interest in hearing about the ways teachers’ thinking about teaching and learning had been affected by engagement in learning&assessment-focused educational development. Yet both ME and RK1 reported being unsure of their suitability to participate in the study because of their lack of experience implementing whatever new knowledge and skills they attributed to that learning. ME was explicit. Until she could implement what she had learned about learning&assessment and ICE, she would not be able to fully appreciate the ways in which her thinking about teaching and learning might have changed.

As I have a lack of experience in implementing and using the ICE I cannot see if there has been a change in my understanding. When I first heard about it I thought about it as a useful tool and I still do so today. To develop and deepen my thoughts I think experience is necessary. (MEnp7)
RK1 too was a little concerned about his ability to talk about the ways his thinking about teaching and learning had been affected: “Thank you so much for the invitation to participate in your research project. Yes, I am willing to participate even though I have not yet had an opportunity to apply ICE in my teaching” (RK1e1p2). His misgivings about his suitability for participating due to his stated lack of implementation was curious in light of the very next sentences of the same email:

I however have been working on the idea that one way to develop ICE assessment within a subject area is through the use of a question bank. The bank could provide a platform for sharing ideas and developing common understanding of concepts. . . .I have therefore been developing such a question bank for my subject area. (RK1e1p2-3)

Clearly, RK1 had begun experimenting with his new learning by applying it in ways that that made sense in his own current professional context, though he had not by then applied what he had learned to his interactions with his students.

I interpreted RK1’s contention that he had not applied ICE to his teaching but had done so to develop a question bank for assignments and tests as an indication that he viewed assessment as an activity that was separate from teaching. It was that tacit insight that shaped the direction of our ensuing correspondence by the end of which R1K had this to say:

Assessment was something I had to do to produce grades and comply with the requirements of my work, but it had very little connection with teaching and learning. . . . To me ICE brought to light the fact that
assessment is an integral part of teaching and learning. (RK1e4p1;p3)

Interestingly and perhaps not coincidentally, ME and RK1 were the only two contributors who had not been a part of an interdisciplinary group development experience. Rather than learning about ICE-focused learning&assessment in a workshop setting, they had done so through independent reading as a result of a colleague’s recommendation. Presumably then, they had not had the same invitation as the other 14 contributors had had to systematically question and confront their beliefs and assumptions about learning, nor to engage in the same types of supported practice of new learning that typically occurred in the workshop settings the others had attended.

Some “faculty, when asked about the learning that resulted from their learning&assessment-focused educational development, cite the things their students are now able to do that they weren’t doing before” (Research Journal, p. 21). An example is RK2 who contributed a narrative that focused entirely on the kinds of learning that his current students were able to demonstrate that his previous students had not.

What eventually changed was the students’ quality of writing in subsequent written assignments not only in my. . . course but also in the following course in the next term. . . I believe this is due to their being able to self-evaluate their writing style better. (RK2e2p2)

It was clear that he was inferring that his students were better able to evaluate their writing style because he had been better able to articulate his expectations...
for their writing than he had been before engaging in ICE-informed learning & assessment educational development.

In fact, 9 of 16 contributors expressly stated their uncertainty about how to talk about their learning either by expressing so outright or by stating that if what they had submitted did not meet my expectations or needs, they would either supplement their writing or re-submit an entirely new narrative. JS captured the frustrations of many of the contributors when, during a chance face-to-face encounter, she remarked that writing the narrative was one of the more difficult tasks she had been asked to perform; she told me that she had never before been asked to confront her own learning—though it was something she often required of her own students.

When contributors did get down to talking specifically about their learning, they talked foremost about learning a system to communicate about learning and of gaining a framework representative of their deep-seated yet unarticulated conceptions of learning. It was through that framework that they became better able to think about, plan and communicate their expectations for learning. They also reported gaining greater awareness about the effects of assessment on their students’ approaches to learning and the importance of congruence or alignment within a curriculum and among intentions for learning and instructional methods, including approaches to assessment all of which enabled them to become more purposeful in their teaching. The end result was an increase in confidence in their abilities as a teacher.
Communication

Overwhelmingly, the post-secondary teachers who contributed to this study indicated that their most significant learning was that of a reliable method of communicating about learning and assessment with their students: “What ICE has done is given me pieces that can be rearranged to pass this along to others” (IMe4p4); “ICE helps to explicitly spell out what kind of information is being taught and/or learnt, as well as the interconnectedness between these types of Information” (MTnp6). RK1 reported: “ICE has given me and my students a common language of connection where each of us understands what is required to successfully understand and move ahead with that material (1e3p3).

My initial joy upon being introduced to ICE stemmed from the realization that I now had a clear, external tool to explain to students why they had received the mark they did. (In the past I had tried to get students to reach beyond the minimum requirements of the assignment by asking for ‘sparkle’ – that was the best word I could come up with to describe the intellectual risks and excitement that come from bold connections and extensions). (JSnp1)

In the same vein, LM, an academic developer in the UK emailed to report:
I use it (ICE) with our course for new staff, usually in the first session of the module on assessment and learner support. Generally it goes down well and each time at least a few of the lecturers tell me they’ve used it with their students as a way of explaining differences in the quality of academic writing. (LMe1p2)
It was, however, during the face-to-face interview with VR that I had conducted in lieu of a written narrative that the nuances of what it is that undergirds an ability to communicate emerged: "But what…was so helpful for me for ICE was that it allowed me even then to frame learning….in ways that I…I, I think I was…I couldn’t articulate before" (VRip3).

VR ascribed her newly acquired communication skills to a burgeoning awareness of what learning is and how to frame it within a conceptual model. More than just acquiring a vocabulary, VR identified the effect of the framework of the ICE model on her ability to conceptualize learning and then speak about it. On reflecting on the implications of what VR had said I wrote:

The ability to name learning seems to arise from finding a framework that resonates with deeply tacit conceptions of learning. So while faculty members talk about being able to now communicate about learning, I think what they’re really talking about is the framework of ICE providing structure for their thinking about learning. Once their thinking becomes focused and organized it becomes easier for them to talk about it.

(Research Journal, p. 26)

The relationship between the ability to communicate and awareness and organization of one’s thinking is an important one that led VR and I to discussions on the ways in which, if at all, ICE-informed learning&assessment educational development affected the ways post-secondary teachers conceptualized teaching and learning.
Conceptual Awareness and Development

When discussing their conceptual awareness and growth in either their narratives or in our ongoing e-conversations, more than half the contributors to this research—nine of sixteen—specifically mentioned Bloom’s taxonomy (Bloom et al., 1956). Most often this taxonomy had been teachers’ initial introduction to understanding and attempting to communicate about learning and assessment. Of those who mentioned Bloom’s specifically, all nine asserted that while the model had initially enabled them to explore aspects of learning they previously had not considered or named, they struggled to use the model in a meaningful way to yield the desired improvements to their teaching and assessment practices and to their students’ learning. Some (IM, GA, VR, AO, RK1, and DC), reported continuing attempts to use Bloom’s taxonomy despite their dissatisfaction with it in meeting their and their students’ needs. After their development experience, they reported that not only was ICE more accessible and easier - especially for their students - to use, but that the model seemed to better reflect their conceptions of how learning actually occurred, though few were able to articulate how or why that was so.

In sharing her experiences using Bloom’s taxonomy to inform curriculum development in her department, GA stated:

We were using Bloom’s taxonomy of learning to level theory, psychomotor skills, and clinical practice courses. This taxonomy is a square peg in a round hole fit with ICE which probably contributed even more to the struggles of seeing how we could use it. (GAe6p2)
Though I invited her, on more than one occasion, to elaborate on the ways in which she understood Bloom’s to be “a square peg in a round hole fit with ICE”, the invitation was never acknowledged nor addressed.

Other post-secondary teachers explored hierarchical or domain-specific representations of learning and contrasted them with their own everyday experiences with the phenomenon:

Somehow or other the implication in Bloom’s is that only very high level thinkers will be doing the Extensions level work. But I know from my work at the university and from watching my daughter, that what is I [Ideas] for some people is C [Connections] for others is E [Extensions] for other people depending on where they are on their Mobius strip in non-Cartesian space (laughter). So, um that’s one thing. The other thing about Bloom’s is that um, it just isn’t easy to internalize whereas ICE is easy to internalize. (VRi12)

Here, VR was referring to a previous conversation she and I had had about the recursive nature and transformative effects of learning. It was during that conversation that she flatly rejected unidirectional linear and hierarchical representations of learning. We talked of the ways that both learners and learning transform, with the transformation of the learner affecting the transformation of the learning so that, as learners, even when we revisit content or a concept, we never see it in exactly the same way we once did. We agreed that, as learners, we felt more like travelers along a Möbius strip in non-Cartesian space than we did travelers along a continuum.
VR was not the only one to take issue with hierarchical and domain specific depictions of learning:

Bloom's doesn't offer this multidirectional and multidimensional approach as it is always about starting at the bottom first. Hence each time it is "time to learn" we need to get out or find our shovels and remember what a shovel is and how to use it. This is not developmental by nature.

(IMe2p12)

In spite of its standing….Bloom's Taxonomy does not deserve such carte blanche treatment as it propagates a long standing imbalance in education. . . give too much time and priority to the cognitive realm and you will find teachers who feel pressured to "fill the empty vessels" in their classrooms with content and checks for understanding. (IMe5p4)

Interestingly, rather than seeing the fundamental ontological differences between Bloom’s taxonomy of learning and the ICE model, some teachers perceived the models to be different representations of the same fundamental framework.

Actually I think Bloom’s taxonomy is quite similar to ICE only that it is more detailed. I view the association as follows: Ideas = Knowledge; Connections = Comprehension, Application, Analysis; and Extensions = Synthesis and Evaluation. I actually find it easier to classify assessment items using Bloom’s taxonomy and then translate them into ICE using the above scheme.

(RK1e6p1)
RK1 erroneously interpreted ICE as being similar to Bloom’s taxonomy and as being simpler. While his preference was to use Bloom’s to plan his teaching and to categorize the types of learning activities in which he wanted his students to engage, he communicated his expectations to his students and created an exam question bank using ICE. When RK1 questioned my rejection of Bloom’s and affinity for ICE, the differences between Bloom’s taxonomy and ICE and the conceptions of learning they each represent became a feature of our email exchanges.

Despite the fact that I engaged in discussions about the epistemologies represented in both Bloom’s taxonomy and the ICE model with several teachers, the ways I engaged with each teacher was influenced entirely by my interpretation of their current conceptual development. In engaging MT, dialogue focused on the fundamentals of what the ICE model depicts and what it does not. Those interactions dealt primarily with Ideas-level attributes of ICE. With RK1, while dialogue also focused on clearing up his misinterpretations that ICE and Bloom’s were two alternative representations of the same conception, the focus of our interactions were on the underlying epistemological differences between the two models (Connections) and the implications of those epistemological differences on potential approaches to teaching (Extensions).

The e-dialogue I had with RK1 and his misconception of ICE as being epistemologically akin to Bloom’s Taxonomy afforded me the opportunity to recognize and confront incongruence between my conceptions of learning, the ICE model and the vocabulary I had been using to convey those conceptions. I
reviewed the conference paper (Chapter 3 of this dissertation) from which RK1 had gained his knowledge of ICE and immediately recognized the error I had made in writing it: I had not been purposeful in the vocabulary I used to describe the model. Employing words like “levels of learning”, “stages of learning”, the vocabulary I had used belied my conceptions of ICE as recursive rather than hierarchical. The realization caused me to review workshop materials as well. Graphic depictions of ICE, like that shown in Figure 6, all depicted a linear rather than cyclic or recursive process.

![Linear depiction of the ICE model](image)


Figure 6. *Linear depiction of the ICE model*
It was evident that while my own conception was clear in my mind, I had been doing a poor job of using language that was congruent with that conception.

**Conceptual awareness.** Related to their newfound ability to communicate about expectations for learning was some post-secondary teachers’ new awareness of previously unattended to characteristics and tacit understandings of learning. Discussions about influences on conceptions of teaching and learning were intriguing. Fourteen of sixteen contributors reported that their conceptions of teaching and learning had not been influenced in any way by their professional learning. That is, they reported, unequivocally, that their conceptions had not changed. Still, two of those who reported that their conceptions had not changed referred explicitly to their learning as transformative in nature: “to me learning about ICE has been a transformative experience because it, for the first time, provides a means by which to actually deliver all the things I think I already knew” (LWe6p10); and:

> It seems perhaps hyperbolic to say that ICE has transformed my teaching practice, but I believe this to be true. Contrary to the metaphorical characteristics of ICE as being slippery, the ICE framework has actually given me a firmer foothold in thinking about assessment. I am now able to clearly articulate the value system of critical thinking skills that underpins assessment in my course. (JSnp2)

The transformation for LW and JS appeared to be less about conceptual change than it was about the development of conceptual awareness. They both talked about the ways in which the opportunities to confront and question their currently
held beliefs about teaching and learning, along with exposure to a variety of alternative possible frameworks, helped them identify the conceptions they already held. Both of them identified that new conceptual awareness as transformative. We broached discussion about the ways that “one might be transformed yet remain the same” (Research Journal, p. 29).

Others too reported that ICE provided language and a framework for their long-held but previously unarticulated conceptions: “In response to your letter to participate in an investigation of the utility of “ICE Model” as an educational tool I, unconsciously, used the concept during the later stage of my teaching career” (CRnp1). Here CR begins to express recognition of the similarities between his understanding of learning and his approaches to teaching and the epistemology and structure of the ICE model. That recognition enabled him to review his practice and name the processes he had already been undertaking to help his students learn. According to CR, his learning was in his ability to now name, with the help of a succinct vocabulary, the processes of his teaching, though he reported no changes to his practice, or to his thinking, that resulted from his improved capacity to articulate it.

A most interesting finding was that some of the teachers who reported significant changes to their teaching practice as a result of their professional learning reported that their conceptions of teaching and learning had not changed. They explained that before engaging in learning&assessment-focused educational development informed by ICE they had a general awareness of a dissonance between their teaching practice and their tacit conceptions of learning.
but they could not name that dissonance. In not being able to name it, they had been unable to create the congruence they had been seeking.

LB, who taught computer programming and digital electronics, indicated that, before he took part in the learning&assessment-focused workshops, he had begun to understand, at least on some level, that there was some misalignment in his practice that was preventing him and his students from attaining the learning results he intended. He knew there was something wrong but being unable to name it, he felt incapable of fixing it: “I often felt obligated to accept the bare minimum—listing unconnected facts memorized from cram sessions or even literally writing out examples from class notes in the hopes that it would be the right answer” (LBe2p4). He went on to explain he felt obligated to accept what students produced, even when their work was not of the depth and caliber he had intended because he had not previously been able to articulate the difference between what he was getting from his students and what he was hoping for. After all, what his students were producing could be said to have been “right” but it was right in a qualitatively less complex way than what LB was hoping to see but had previously had no reliable way of describing. LB reported that the congruence between the ICE model and his conceptions of learning, coupled with a vocabulary to name his expectations for his students’ learning, enabled him to better align his practice with his intentions.

Teachers reported that this type of congruence-finding enabled them to begin the process of bringing their practice into alignment with their conceptions and communicating their intentions to their students. VR indicated that ICE now
framed her entire approach to teaching from planning her instructional sessions to creating exams and giving feedback on students’ work. VR offered: “I think that um, I... was... um..... I think I was dissatisfied by it, but... I couldn’t put my finger on what I was dissatisfied about. Whereas ICE helped me... identify the source of dissatisfaction and then kind of pin it down (VRip4).

For LW, being able to frame his conceptions of learning enabled him to similarly name and frame other facets of his professional life: “As I progressed (through my career), my concept of education was changing though, at the time, I couldn’t quite explain why or how” (LWe6p2). And:

While I was listening to you, and especially when you were speaking about ICE, all I could do was think about it's relationship to environmental education (my field) and how, if the leading concepts were merged, we might have a viable formula for the future of education. (LWe1p1)

LW drew connections between sustainability education and the sustainability of learning, seeing both as exercises in care and purposefulness and primarily related to growth.

Teachers seemed to benefit from the process of “trying on” different taxonomies of learning – in much the way as was reported on in Chapter 3 – to discover what their conceptions actually were. In an ongoing email discussion with DC, I shared these observations:

I've noticed that most people with whom I'm in correspondence are saying that ICE hasn't changed their conceptions of teaching and learning, yet they seem to be undergoing a transformative learning experience. I'm
starting to think that "change" is the wrong way of talking about what's going on.

I think that what's happening is more of an evolution in thinking. That is, while conceptions aren't fundamentally 'changing', they are being uncovered, developing, taking shape and evolving. So that the conception is fleshed out in a way that might look different to the outsider but is really just a more fully blossomed version of what it was before. Jump in any time here to agree, disagree or edit whatever. (sDCe4p2-3)

That dialogue continued to enable me to articulate a realization: “I think in many ways teachers aren't really aware of their own conceptions of teaching and learning so much as they are aware of what their conceptions aren't” (sDCe5p2).

**Conceptual development.** Only one teacher reported that his conceptions of teaching and learning had fundamentally changed through the development experience. LB, the computer programming and digital electronics teacher, reported that he had previously held what might best be described as a quantitative conception of learning where accumulation of discrete bits of knowledge was valued and rewarded. He stated: “I now look at learning as more than just learning about the facts or individual skills. It’s now more about becoming fluent in the subject matter and being able to accomplish practical results in the assignments” (LBe2p1).

I interpreted LB’s use of the word *fluent* as indicative of a fundamental shift from a conception of learning as an accumulative process to one of learning as the development of competence and expertise. His vastly broadened conception
of learning, along with a newly acquired vocabulary and framework through which to articulate it, resulted in reports of some significant changes to practice that included purposeful selection of activities and strategies designed to target his students’ development of Ideas, Connections or Extensions.

From reading about Extensions I got the idea that it was O.K. to deepen the level of understanding in the classroom, as opposed to ‘covering’ the material and hoping the graduate would get to ‘sort it out’ later on the job. (LBe2p6)

This statement represented a conceptual shift in LB’s realization, a replacement of one paradigm with another, about the way that course material might be presented and the ways that students’ learning could be shaped by their engagement with it. As a result the focus of our dialogue turned to differentiating instruction based on intentions for learning.

Another teacher, KS, also reported having had a predominantly quantitative approach to assessment. She reported adopting more qualitative approaches subsequent to her development experience. Interestingly, despite a quite significant change in practice as evidenced through the artefacts she shared with me, she did not report any accompanying conceptual change. What she did report instead was a developing ability to achieve congruence where she once felt dissonance. She, like VR and LB, reported a sense of dissatisfaction with her practice without having been able to name that dissatisfaction:

I felt constrained by the course learning requirements and the purportedly linked evaluation activities that existed in the course outlines to which I
had to adhere, because I began to believe that the learning that was intended by the learning outcome statements would not occur beyond the Ideas stage. I saw that the goals of . . . [course title] were not being met by these outlines. (KSnp4)

After engaging in learning assessment-focused educational development KS reported that she was able to identify and then address the incongruencies in her practice:

I also moved from a ‘checklist’ quantitative approach to grading (if you include all 20 elements, you get 20 out of 20) to a qualitative approach on assignments such as the following: A (extrapolates learning, and/or shows how learning affects world view; B (demonstrates connections between concepts), C (covers fundamentals or basic facts and ideas), D (covers some but not all basic facts and ideas, and F (does not demonstrate mastery of basic facts and ideas. (KSnp7)

So, while KS conceded that she modified her practice quite significantly as a result of her professional development experience, she was adamant that her conceptions of learning had not changed. The difference was that her new knowledge and skills enabled her to more accurately enact the conceptions she reported to have held all along but had no idea how to implement. She, like VR and other post-secondary teachers without formal preparation for teaching, had adopted the teaching behaviours they had witnessed as students, regardless of the effectiveness of those methods:

…the way in which some of my exams were designed was not inviting
anything other than evidence of rote learning….And so…I, I think I had a dissatisfaction with that but I really only knew how to do it that way because I was writing exams in the same way as the exams I had written myself as a student. (VRir3)

Just one of the 16 post-secondary teachers who contributed to the study reported having what was fundamentally described as a teacher-centred, transmission conception of teaching and learning: “At the most basic, my conception of teaching and learning (T&L) is merely the transmission and receipt of information from one who knows to one who doesn’t” (MTnp1). Interestingly, MT reported that ICE lent credence to his conceptions and helped him become more explicit and intentional in enacting that conception.

Given the basic nature of my understanding of T&L, ICE cannot really alter it, but rather adds to it and focuses the practical application of it. There are two ways that ICE has provided an excellent interpretation of how to teach. Firstly, ICE is about different levels of ‘information’…ICE helps to explicitly spell out what kind of information is being taught and/or learnt, as well as the interconnectedness between these types of information.

(MTnp6)

MT’s statements seemed to imply that it is the teacher who makes the Connections and Extensions with the material to be taught and then presents those more complex concepts to the students. Yet, further into the narrative, MT proposed that part of the goal of teaching is to “prepare the learner for future teaching and future learning” and argues that the ideal situation is “that students
are able to discover and come up with extensions (and maybe even connections) of their own, on their own” (MTnp7).

It was clear that MT had a firmly held conception of learning and he engaged in a process of fitting ICE into his conceptions rather than recognizing the inherent differences between the two.

I think you are correct in saying that my "conceptions haven't changed, [but my] teaching practice has."….My basic understanding of what teaching and learning ARE has probably not changed but ICE seems to have given me a concrete (or at least existing) framework to better execute teaching and improve/increase learning (hopefully). T&L is still about the transfer of information from one location (the teacher, the book, the environment, etc.) to another (the student) but ICE showed me that there are different levels of this information, suggesting different "transfer requirements" or methods of guidance. (MTe3p2)

MT’s acknowledgement of differential “transfer requirements”, or instructional strategies for different kinds of learning, presented an ideal opportunity for further discussion and perhaps nudging him along in his conceptual development but an invitation to extend the conversation was left unanswered.

**Skills and Actions in Practice**

Faculty members reported that they had become more strategically alerted to their students' learning and to the ways in which their approaches to assessment might influence that learning.
I was understanding . . . the relationship between learning and assessment. I had read and heard the expression, “assessment for learning” but they were just words up until now. . . . Most Importantly I really get the importance of aligning assessments with the curriculum as lived by the learner in an ongoing, authentic, personally meaningful experience. (GAe6p6/8)

When I read about ICE I realized that with proper planning I could use assessment to change the learning approaches of my students. I reasoned that since assessment was the most important thing for many of them, I could use assessment to change their ways of thinking and ICE provided a perfect framework for the new strategy. (RK1np4)

While the new insights reported on here were attributed directly to ICE by the writers, it is more likely that the new awarenesses were the result of a shift in strategic alertness related more to the learning assessment focus of the development activities rather than specifically to the ICE model. RK1 reported, "To me, ICE brought to light the fact that assessment is an integral part of teaching and learning. It helped me see the contradiction that existed between what I valued as a lecturer and what my students valued" (e4p3). From VR:

I think the lecture form of teaching for the most part, promotes Ideas level learning and assessment…And so one of the things our faculty always complain about is our students aren’t thinking beyond that. Well, yah. Duh!! Because, you’ve set the whole situation up to promote Ideas level learning. What you think you want is Extensions level learning but you’re
not actually providing the environment that promotes that. (VRip17)

In inviting faculty members to talk about the ways their thinking or approaches were different after development, there were consistent reports of elevated awareness. Increased awareness included insight into their own values, conceptions of and intentions for learning as well as more fully developed recognition of the power of aligning intentions for students' learning with purposeful and congruent instructional and assessment strategies. That heightened awareness, coupled with the teachers' newly developed ability to articulate their conceptions and expectations, enabled them to become more purposeful in their instructional decision-making. Their new levels of awareness along with a developing facility in communication about learning plus their ability to be more purposeful and intentional in their teaching stimulated, for many, a noteworthy boost in confidence: "I feel confident assessing students' work based on something else other than my gut feeling" (JSnp2).

One student response pattern that used to bother me intuitively but I couldn’t convincingly argue against if I was challenged on grading was to list every known fact about a topic in the hopes that somewhere in there was the right answer…Obviously, now, that’s an Ideas response with no Connections. Now I feel confident in answering that the student should have been able to pick out the relevant fact(s) in that assortment to respond appropriately. (LBe2p4)

What you think you want is Extensions level learning but you’re not
actually providing the environment that promotes that. So I try to be very purposeful but it doesn’t mean I’m always that way. There are lots of times I’m not. But I do try to. (VRip17)

Teachers reported being “also able to give better feedback regarding assignments” (JSe2p1). The consensus was that having a framework of what learning looked like and armed with a vocabulary to communicate through that framework enabled teachers to give more specific and targeted feedback. They reported too that being able to identify that a student, for instance, had supplied a response that was largely framed in Ideas, enabled them to give the appropriate type of feedback, feedback geared to nudge those students toward making Connections.

Teachers’ new senses of awareness, confidence and purposefulness enabled some (IM, LB, RK1, RK2, GA, DC, JF, JS, VR and AO) to make immediate changes to their communication, teaching and classroom assessment practices while others (CA, LW, and KS) reported undertaking more widespread curricular changes and engaging in educational leadership activities. JS, LW, and RK1 have produced peer reviewed articles for discipline-specific educational journals about their newly adopted approaches to instruction and assessment and IM has developed an ICE-based assessment wiki to share with colleagues. CA reported taking on a significant project, “I returned to the college, developed a proposal to revise the field placement evaluation based on the “ICE” model and presented it to my Dean and faculty team” (np3). LW reported, “it has
fundamentally changed the way that I am planning future courses (and revisions to existing ones)” (e6p11). Further,

As a result of learning about ICE, I was encouraged to develop a…

As far as I.C.E it has become one of the 3 key tenets of my renovation of the [course title] course at my school. . . . and I am tooting my own horn here but the revamp so far of this course has led to ridiculous improvements in attendance and submission rates of progress work for assessment as well as finished evaluated products. (IMe5p2and6)

LB, indicated that before he took part in one of the learning assessment-focused workshops he had begun to understand, at least at some level, that there was a disconnect between what he wanted of his students and what he was getting from them, though he was having difficulty communicating about that. He had become aware that the questions he was asking his students were not yielding the results he had in mind. The type of question he now favours are those that invite students to argue the relative merits of one alternative over another and offer supporting evidence based on their knowledge of the strengths and limitations of each of the presented options. He has also limited his use of multiple-choice tests and now uses them for the sole purpose of students conducting what he refers to as self-checks, arguing that the multiple choice test
he had been using did not get at the deep levels of understanding that he now knows he was and continues to be looking for.

It is significant that 12 of the 16 participants reported undertaking changes to their practices and approaches immediately following the development experience. Those changes included communicating with students about expectations for learning, revising exam questions, creating question banks, devising rubrics, amending assignment attachments, revising instructional strategies, revising course syllabi and undertaking a program review.

**Characteristics of the Development Experience Identified as Critical to Learning**

While most often, contributors identified the ICE model itself as having the most positive impact on their professional learning they also identified dialogue, storytelling and practical examples as also having had a significant positive impact. Findings on each of the most often mentioned are presented from my and faculty members’ perspectives. The section closes with comments from one lone contributor on his views of “that depends”.

**ICE**

ICE has become an embedded component of my learning&assessment focused educational development practice; it is therefore sometimes difficult to isolate the specific effects of the model from those of a general learning&assessment approach. In fact, contributors most often seemed not to separate the model (ICE) from the orientation to educational development (learning&assessment-focused), attributing the full impact of their learning to the
model itself. For the contributors, it seemed, ICE was the orientation. Some sample comments help to illustrate the point: “ICE has helped me to think learner first then me as teacher second. Sounds trite but it has deep significant meaning to me” (GAe6p10); “I use ICE to actually think about my students’ learning if that makes sense” (VRir2); and “ICE helped me to consider the learner’s perspective in outlining expectations. . . By putting myself into the learner’s position, I was better able to clearly and transparently. . . state the outcomes” (AOe4p2).

In truth, the shift in awareness from teaching to learning that these three faculty members reported is unlikely due entirely to the ICE model itself. In fact, a focus on learning, that is to say on what students do, is a characteristic of all taxonomies of learning, including Bloom’s and SOLO and with any number of learning-centered strategies with which both these post-secondary teachers were already familiar. Rather, it is more likely that the tandem effect of finding a model of learning that was congruent with their own emerging conceptions of learning while at the same time engaged in activities specifically designed toward developing strategic alertness to their intentions for students’ learning, enabled the professional learning that they, and others, reported. My interpretation is that the significant learning that these three teachers attributed to ICE was actually due to their newly developed strategic alertness to their students’ learning.

There where however characteristics specific to the ICE model that teachers found particularly appealing. The simplicity, portability and overall utility of ICE was repeatedly mentioned, as was teachers’ conviction that the model perfectly resonated with their conceptions of learning. Teachers reported that ICE was
easier to call to mind, remember and implement than other taxonomies of learning. That ease of recall and general utility meant that the model made it into faculty members’ everyday repertoire almost immediately. The simplicity of ICE enabled them to figuratively carry the model around with them and use it extensively. When asked to elaborate on the impact of ICE on her way of thinking about teaching and learning, VR had this to say:

Enormous. A huge impact. In fact, everything I do in teaching and learning is (laughing) framed by ICE. Are you kidding? I teach it to my first years, second years, I teach it to my third year students, I teach it to my fourth-year students. It informs all of the assessment, it informs all the assignments that I do. Like I’m a total convert. In fact, I’m a cult member.

(VRir1)

The following excerpt came from a faculty member who stated that learning about ICE had been transformative because the framework enabled him, for the first time, to actually plan for and deliver all the things he thought he already knew but, until recently, could not adequately articulate:

The whole is greater than the sum of its parts, but people nowadays don’t think in terms of wholes. They have been educated to think in terms of parts, specializations, minutia, etc. ICE draws learners to make *personal* connections between *fundamental* ideas and, by doing this, the scale of one’s look at the surrounding world gets larger. The more connections and the more inferences about implications, risks and benefits, the greater the comprehension of the “larger picture.” This is the development of systems
thinking at its very finest - developing the concept without teaching anything about systems. (LWnp1)

LW reported to have had his own “aha” moment about ICE and the congruence of the framework to his conceptions of the ethos of sustainability education. My responses to him included invitations to further discuss the relevance of complexity science and systems thinking to his emerging conceptions of teaching and learning and what relationship, if any, he saw between systems thinking, ICE and the discipline of sustainability education that might prove beneficial to his instructional decision-making. I interpreted that he had made multiple Connections and was on the verge of making significant Extensions that might have positive effects on his teaching and, subsequently, on his students’ learning and that those Extensions might be more easily evoked through dialogue. It was through that sustained dialogue that LW articulated the insight that learning, as conceptualized through the ICE model, was represented as personal growth. In that respect, it was unlike any other model he had come across.

It brings learning down to the personal level – FINALLY! It creates opportunities for teachers…to establish a framework within which their learners succeed by understanding the basic information, drawing connections between key points and making inferences about the future…Finally, education (or a model of it) can be oriented to the future of learners! (LWe6p8)

It was the notion that, through a model of learning, he could help his students plan for the sustainability of their own learning in much the same way as he
helped them plan for environmental sustainability. LW, more than any other contributor spoke to his appreciation about the ways that the ICE model captured his own complex yet tacit understanding of learning in such a simple and accessible way yet without distilling the complexities from it.

JS, another contributor who identified ICE as most critical to the significance of her learning reported:

I think the reason (at least for me) of why ICE is transformational is that it speaks to my values of what teaching and learning should be and gives me a shorthand for passing that on to my students. Yes, that’s it. ICE is not a technique or tip. It is a value system. (JSe2p1)

It seems perhaps hyperbolic to say that ICE has transformed my teaching practice, but I believe this to be true. Contrary to the metaphorical characteristics of ICE as being slippery, the ICE framework has actually given me a firmer foothold in thinking about learning and assessment. I am now able to clearly articulate the value system of critical thinking skills that underpins assessment in my course. I feel confident assessing students’ work based on something else other than my gut feeling. (JSnp2)

JS’s reference to the “gut feeling” approach to assessment echoed the feelings of many of the post-secondary teachers with whom I continue to work. Their frustrations seem to stem not from an inability to recognize different calibers of work in a reliable way but from an inability to articulate what their expert-earned intuition enables them to perceive. Perhaps AO summed it up best when she
said: “I would say that having the framework of ICE was instrumental to the changes I described” (AOe5p1).

What seemed to matter most was that these post-secondary teachers had developed a reliable way of thinking and communicating about learning in ways that represented their conceptions of how learning occurs and was reflective of current theories of learning. What they seemed to appreciate most was the pragmatic utility of their learning and their ability to immediately implement it.

For a component to have staying power with me, it has got to be simple, ring true, and have direct implications for how I teach. An excellent sounding philosophy will not stick with me if I cannot see how to test it and how it could have a positive impact in my students’ learning. (JFe2p6)

The implication was that ICE provided a framework through which to do things as well as to think; it provided a practical way to actualize conceptions.

For other teachers, their learning was enhanced through the realization of how sharing ICE with their students might influence their learning. The power of that realization was summed up most eloquently by IM:

The I.C.E method to me advocates the need of the teacher to become a "miner" in a sense. We are all looking for "gold" but rather than simply tell our students to dig we need to ask them to find other ways, be satisfied, not discouraged, when we/they find "nickel or silver" and to press on when it seems unlikely that the piece of earth they are digging in appears to not have what they are looking for. What students "get" from this is that the knowledge and skills they are in the process of acquiring and perfecting
are transferable and reusable. Therefore when it comes time to start
digging in a new place not only do they know what to do, what works, how
to spot opportunities for improvement etc. they become the teachers, the
assessors and ultimately the evaluators of their learning and their actions.

(IMe2p11)

He and others were buoyed by the thought that sharing ICE with their students
helped with students’ ability to engage in learning transfer. IM, GL, VR, RK2 and
JS attributed their students’ ability to engage in learning transfer to the success
they had had in using ICE to help their students learn how to learn.

**Dialogue on Learning and Assessment**

While the ICE model itself certainly had a significant influence over their
learning, there were aspects of the development experience, alluded to by JF in
the excerpt above, that also appeared to contribute, in no small way, to faculty
members’ professional learning. A recurring theme in both the initial indicators for
this study and in conversation and correspondence with the teachers who
contributed to this study was the value of dialogue. Teachers repeatedly
recounted that there were few opportunities to talk about their teaching and they
found that it was through talking, through the very act of giving voice, that
significant learning occurred. “I must say that our ‘conversation’ helps me to see
what I take for granted and helps me to put my thoughts together”(e5p5) and “I
think that a great deal of learning happens through the subtext, the unspoken,
the background hum of discussion and debate” (e2p8), two statements from ME
and JF respectively, were illustrative of teachers’ appreciation of the opportunity to talk about teaching and learning.

The subtext, JF explained, was that part of a workshop experience that is less about content and more about the sharing of professional experience with learning and assessment. He was writing about the kinds of interdisciplinary exchanges of ideas that regularly occur as part of typical development workshop opportunities. Most notably, teachers reported the learning that occurred through hearing about others’ approaches to instructional and assessment practices as being significant to their learning. In much the same way that the teachers in Chapter 3 gained insight into their own teaching through hearing their own thought processes and rationales for practice voiced aloud, so too did these teachers. Additionally, those 14 contributors who had taken part in a learning&assessment-focused professional development workshop had had the opportunity, through discussion, to contrast their own conceptions of teaching, learning and assessment with those of their peers. That process is likely to have helped facilitate the clarifying process.

**Stories and Practical Examples**

What made the whole thing 'click' for me was the 'broken toaster' analogy and the rubrics. (KSe5p1)

Seven of sixteen contributors to this study mentioned the story of the broken toaster, described in Chapter 3 of this dissertation on page 60, as being significant to their learning. The story, they felt, was a translation of or a real-world parallel framework that mimicked ICE; it served to put a workaday face on the model and underscored the practical utility of having a framework
representative of one’s values through which to communicate about learning. On another level I suspect that teachers also appreciated the story as an illustration of the ways that it is possible for instructors to be intuitively good at what they do even without explicit knowledge of current theories of learning.

The stories I told in workshops and consultations were viewed as practical examples of real-life applications of the concepts that were presented, modeling ways of thinking that might make it easier for teachers to begin the process of making connections to their own context. In making connections to their own context during our time together teachers were being supported to engage in learning transfer (Perkins & Salomon, 1988).

Practical examples of such things as effective learning outcomes, rubrics, question stems and tables of specification were also identified as critical to learning. Contributors spoke of the ways that the examples served to clarify their thinking and broaden their understanding. Moreover, the practical examples were illustrative of the immediate utility of ICE and of adopting a learning & assessment framework and orientation.

JF, however, contended that stories were not always helpful in clarifying abstract or theoretical concepts:

Certainly the discussions around the table are absolutely essential for the internalizing of an idea, and the chance to form an opinion. The danger is that examples are too limiting since they come from fields that are too far off from your own. Also, since ICE works so well for Physics, examples from a very different field might be distracting. (JFe2p7)
It was clear that at this stage of his professional development, if stories were to be used to illustrate concepts, they needed to be entirely congruent with JF’s current teaching context. He was not yet ready to entertain broader Connections that are enabled by studying similarities from across contexts. More helpful to him and other novices were examples of direct applications of the newly presented ideas to his own context. It was those that best helped him understand the implications of what he had been learning.

“That Depends”

While just one contributor wrote about my idiosyncratic use of “that depends” I chose to include it as a significant finding for two reasons: (a) it speaks to the claims I made earlier about the characteristics of my learning&assessment-focused practice, individual responsiveness and my resistance to notions of best practice and (b) the contribution triggered my alertness to multiple episodes preceding this inquiry when my own students or workshop participants teased me or openly joked about my almost-habitual use of the phrase. That alertness caused me to reflect on the impact and significance of “that depends”:

Keep answering some of the questions you do with the phrase “that depends”…The revealing fact is that teachers ask questions far too often just to be told what the right answer is. Hence the “sage on the stage” dynamic that is far too often a part of professional development seminars. I don’t know about you, but I ask questions to test my own views nine times out of ten…I don’t ask to be told that I was right or wrong, I ask to see if there was something I had missed along the way. I made a point to a colleague after
that your response, in my opinion, was honest and telling since many of the questions we have in this field require a full and thorough understanding of the context of the issue. It also makes the questioner work hard at understanding their view which, I believe, is much more valuable than having an expert tell them what to think. (IMe2p17)

Impact of the Research Design on Data

There were several significant design-related themes, of which I made note in my journal, which may have affected participation and the data that was yielded. The first revolved around factors influencing faculty members’ participation in the research; the second related to the effects on the email rather than face-to-face interaction; and the third, around the learning diagrams I attempted to create to graphically depict participants’ learning.

Factors Affecting Participation

The post secondary teachers with whom I have worked over the past several years have typically been quite forthcoming in sharing their views about the effects of development events, whether and how, in terms of utility and relevance, the events and activities contribute to professional learning. So, I was surprised and, frankly, disheartened when recruitment efforts yielded so few participants. Even the few expressions of interest that were garnered included some that were surprisingly tentative: “Not sure if you’re interested in hearing from me, as I have limited teaching experience” (JRe1p2); “Not sure I’m the best candidate” (JFe1p2); and “I attended one of your introductory ICE workshops but I’m not sure I would be a good candidate for your research” (AOe1p2).
Coincidently, at about that time, I had face-to-face casual contact with several faculty members who mentioned having received an invitations to participate. While the two teachers with whom I spoke were enthusiastic about the investigation I was undertaking and about the ways that a new focus on learning assessment through ICE had positively influenced their own teaching, neither of them had considered themselves to be a legitimate potential contributor to the study; consequently, neither had responded to the invitation. Further conversation revealed their impressions that in order to contribute to the study recruits needed to be teachers who (a) had extensive experience with ICE, (b) had formally adopted the model as a framework for their teaching and (c) were familiar with at least some educational theory. While I was quickly able to dispel their misconceptions, the interaction gave me pause to review the recruitment materials.

The Letter of Information (Appendix F), and even the original title of the study, had been written with the requirements of the university’s ethics board, not the prospective contributors, in mind. While the language of the letter was certainly accessible, its tone was impersonal, and more formal and technical than the day-to-day language I generally used in conversational interactions and correspondence with faculty colleagues. The letter also conveyed a process much more highly ritualized (and sterilized) than the way I actually practice educational development. It occurred to me then that, in an attempt to legitimize the investigation of my practice as “real” research, I had done exactly what Loughran (2006) cautioned researchers against: sanitizing one’s practice of its
inherent messiness. In doing so, he argued, researchers run a risk of studying a process that has had its essence distilled from it.

I believe this kind of distillation happened almost at the very onset of this research. In the mistaken notion that research was something apart from ED (rather than a quintessential part of ED), my initial contact/correspondence with potential participants was inauthentic. The letter of information was written in another’s voice – that of “educational researcher” (that erroneously constructed archetype in my own mind). It wasn’t written in the voice I use as an educational developer – colleague, collaborator, questioner, coach. I wonder what effect that had on recruitment. (Research Journal, p. 55)

Before making this realization, “I was running the risk of studying something like my practice but not actually my practice” (Research Journal, p. 18).

Another factor that most certainly did inhibit participation, though not related to the research design, was post-secondary teachers’ busy and full schedules. Dealing with the immediacy of ongoing day-to-day activities leaves little time for planning and implementing innovation in the classroom or for meaningful reflection on practice, or, for that matter, for engaging in formalized professional development. The norm seems to be that the time constraints caused by dealing with the crises of the immediate erodes away time that might otherwise be available for professional development. Teachers feel they are left with little time to reflect on practice or to plan for change: “I was impressed with the model and remember thinking at the time that it sounded great but the middle of a teaching
year is not a good time to try to implement it” (CAnp1); and “While I could see that ICE could apply to some of the evaluation tools in these courses, I found it easier to just keep doing what I had been doing” (KSnp1).

In fact, it was not until these teachers reached a stage of critical dissonance in their practice that they adapted their schedules so that they might include opportunities for professional development as a means to address that dissonance. The experience made me very aware of the time constraints that post-secondary teachers find themselves under and the difficulty they have in engaging in educational development and thoughtful, values-informed practice.

The Impact of Using Email

Initially I found it difficult to engage in email discourse with faculty members. There was something about the permanence of the written word that made me feel I had to choose every word carefully, something that I rarely worried about in face-to-face conversations.

At one point I noticed that I was putting off a response (for the purposes of the “research”) so that I might give something more of a “cited” response to a question. Luckily, I came to my senses & realized that that is decidedly not the way I generally interact with faculty members when engaged in a development relationship. I made the realization & commitment then to engage in a more person-oriented interaction –the way I generally do in person. (Research Journal, p. 43)

It was an ongoing struggle for me to write the way I speak and to interact using electronic media the way I do in person. I found it beneficial to answer
email messages from participants immediately upon reading them. The immediacy better reflected the response patterns of face-to-face interactions and, I felt, contributed to the authenticity of the response.

A significant drawback was the lack of immediate non-verbal response cues that so often contribute to and facilitate dialogue. A furrowed brow, on the part of a listener, might cue a speaker to inject an additional example or invite a question—a small gesture, but one that facilitates dialogue like nothing I was able to do via email.

In the same vein, the immediacy of face-to-face interaction enables a more fluid back-and-forth, even allowing in-the-moment interjection and query to either maintain or alter the direction of conversation. That kind of spontaneity is lost in email, resulting in unfinished conversations that may be difficult to resurrect. Particularly in email conversations with MT, RK1 and GA, there were questions I posed or invitations issued to continue a thread of discussion that were not acknowledged, despite repeated suggestions. In a face-to-face interaction, I may have been better able to gauge whether there was resistance to the question or if other factors were at play. It may simply have been that the effort to construct a written response was something respondents were not committed to.

While only two participants, ME and RK2, specifically commented on the barrier posed by having to write everything they wanted to say, I interpreted that, aside from LW and IM who wrote voluminously, most participants would have had much more to contribute if they had been able to do so orally.
Engaging in email dialogue with faculty members did have a positive effect on my ability to discern typical patterns in the ways I interact with faculty members. “I find myself searching for clues in their writing of where they are in their understanding” (Research Journal, p. 19) and:

I notice that I glom on to something in their narrative or message to use as a springboard i.e. LB talked about his desire to become “fluent” in the subject matter. I took his words and used them as a way to nudge him further along in his developing conception of learning.

(Research Journal, p.41)

While engaged in face-to-face interaction, the “searching for clues” and glomming went previously unnoticed by me, entirely tacit elements of practice.

Learning Diagrams

I have a preference for verbal rather than graphic communication and have considerably limited skill in the latter. That deficiency continues to limit my success with some faculty members whose preferences and skills differ from my own.

In choosing to furnish participants in this study with my interpretations of their narrative submissions I was hoping to seize an opportunity to hone my graphic communication skills while at the same time injecting a novel means of instigating dialogue on learning. The approach was intended as a way of altering the communication process in hopes that the different mode of communication would serve as a catalyst to new insights and perspectives. Unfortunately, my novice attempts at graphic communication were superficial and entirely Ideas-based.
The diagrams (an example included as Appendix G) did nothing to inspire new insights and elicited no commentary from any of the participant/contributors.

Summary

The findings identified the patterns of my learning&assessment focused practice and outlined the learning that teachers attribute to their engagement in educational development based on that practice. Also identified are the factors that teachers, and I, determined to be critical to occasioning the learning they identified.

An analysis of the patterns of workshop design and content revealed a reliance on literature-informed and practice-based content that directed teachers’ attention to assessment and to intentions for learning. Modeling a critical stance toward the literature and invitations to active learning and practice of new skills were characteristic features of every workshop. Storytelling as an instructional strategy emerged as consistently used element of practice.

An improved ability to communicate about learning was identified as a key outcome of teachers’ engagement in learning&assessment-focused development. Teachers reported greater awareness of their conceptions of teaching and learning. In fact, conceptual awareness, and not conceptual change, was also identified as a key outcome.

Teachers identified (a) the ICE model and (b) the opportunity to engage in dialogue with peers about learning and assessment as critical to their learning. They determined that stories and practical examples help to clarify the content and concepts that were shared as part of the development experience and they
appreciated being alerted to the ways that context and intentions for learning should influence instructional decision-making.

The chapter concluded with a review of the ways in which the research design may have influenced participation and data. Specifically mentioned were the tone of the research and the use of email.
CHAPTER 7

DISCUSSION

The purpose of this heuristic inquiry was to investigate how educational development undertaken with a focus on learning and learning assessment might facilitate post-secondary teachers’ transformative learning. Early key findings indicated that conversations about assessment help teachers, even exceptionally good ones, clarify their assumptions and thinking about their students’ learning. From the study reported in Chapter 2, indications were that significant professional learning can result from educational development that asks good questions that focus teachers’ attentions on intentions for, and assumptions about, learning. The results provided very real evidence to support Palmer’s (1998) contention that giving voice to one’s thoughts is often the first step in understanding what one thinks. Being aware of one’s own conceptions, in turn, opens one to the possibility of conceptual change or growth (Mezirow, 2000).

Through this chapter, I discuss the key features of my practice and how they are likely to have supported transformative learning. Next, I discuss the significance of post-secondary teachers’ learning in juxtaposition to the literature on transformative learning. In synthesizing the key features of my practice with the findings on teachers’ learning, I then identify six essential characteristics of learning&assessment-focused educational development: (a) guided exploration of assumptions, beliefs and conceptions of learning; (b) confronting the impact of assessment on learning; (c) maintaining strategic alertness to intentions for students’ learning; (d) encouraging the adoption, or creation, of a framework for
learning; (e) providing opportunities for supported skill and conceptual development; and (f) respecting teachers’ conceptual and contextual realities. The chapter concludes with consideration of the evolution of my development practice and scholarship that resulted from the inquiry.

**Supporting Teachers’ Transformative Professional Learning**

My understanding of transformative learning has been informed primarily by the writing of Cranton (2002, 2003, 2005, 2006) and Mezirow (1991, 2000, 2003). Both authors have written widely about features that characterize transformative learning and about how teachers might plan instruction to support their students through it.

Using my understanding of transformative learning, here I review the ways in which both my practice and the collaborative inquiry are most likely to have supported teachers’ transformative professional development.

**My Practice**

Though I had no explicit intention to construct a transformative learning experience, I now recognize my practice as entirely consistent with approaches proposed by Cranton (1996, 2002, 2003, 2006) and Mezirow (2000, 2003) that support mutual respect and attentiveness and that lead to and support conceptual change and facilitate transformative learning. Here, I discuss the ways in which the key features of my practice (a) reflection and critical thought, (b) dialogue on learning assessment and (c) supported practice of new skills may support transformative learning.
Reflection and critical thought. Cranton (2006) contended that “transformative learning is the process of examining, questioning, validating and revising our perspectives” (p. 23). It is when a learner responds to an alternative perspective or attempts to develop a habit of mind different from the one they already use that learning becomes transformative. So, in workshop or consultation situations, when I invite participants to contrast different taxonomies of learning, one to the other, and to their own perceptions, experiences and conceptions of learning, the process of examining, questioning, validating and revising is initiated. When I challenge workshop participants to critique taxonomies of learning or to identify the point at which a taxonomy ceases to be congruent with their conceptions or useful to them, my aim is to promote active and critical thinking and reflection on both current assumptions and practice and to entertain possibilities for new perspectives. Thus, the process of examining, questioning, validating and revising is sustained throughout our time together.

The role I typically adopt in the process of encouraging that type of reflection and critical thought is one that Cranton (2006) referred to as the role of “provocateur” (p. 107). In that role, I pose questions, inject dilemmas and require teachers to provide sound rationales for their instructional choices. In many ways, I view my developing role of provocateur as a modification of the side-shadow interview strategy that was attempted and reported in Chapter 2. Somehow, as provocateur, I seem able to invite reflection and critical thought without being perceived as adversarial. My idiosyncratic and persistent use of “that depends” seems to invite a similar reflective and critical response.
Part of “that depends” requires me, or any facilitator who relies on such a device, to actively listen to the responses proffered. In doing so, we might better formulate questions that help the inquirer to critically reflect on their habits of mind and then become strategically alerted to the contextual and conceptual factors in their own environments that should influence their instructional decision-making. A good educator, or in this case a good developer, acting as provocateur, “can listen and then ask the kinds of questions that help an individual critically reflect on his or her habits of mind” (Cranton, 2006, p. 64).

In and of itself the “that depends” approach, when used consistently, is a form of modeling that cues a new habit of mind for workshop participants and for faculty members with whom I consult. By that I mean that the teachers with whom I worked, after being exposed to repeated responses prefaced with “that depends”, began, on their own, to anticipate the need to seek out the contextual information and to create the epistemological congruence needed to create or maintain aligned practice. The consistent “that depends” cue was an invitation to consider the instructional context and tacit or explicit intentions for students’ learning. “That depends” contributed significantly to teachers’ strategic alertness to context, intentions, practice and the primacy of the congruence among those factors which, in turn, led to a redefinition of what it means to engage in best practice.

Dialogue on learning and assessment. The social process of peer dialogue enables teachers to challenge and develop their knowledge and understanding of teaching (Harrison, 2005). Significantly, it is exactly that kind of
dialogue that can support significant insight and professional change; “discourse, dialogue, and support from others appear to play a major role in transformative learning” (Cranton, 2006, p. 65). Mezirow (2003) defined discourse as “dialogue involving the assessment of beliefs, feelings and values” (p. 59). Most obviously, the role of others in transformative learning is the role they play in questioning and challenging (Brookfield, 1991), helping to reveal not only the speaker’s but others’ hidden assumptions. It is therefore not surprising that feedback from workshop participants consistently identified the opportunity to engage in discussions with colleagues as one of the most positive features of their learning experience. The value of dialogue, especially interdisciplinary dialogue, is in taking the opportunity to “interrupt our taken for granted understandings of our work” (Pinar & Grumet, 1982, pp. 53-54). Those interruptions are what may help to illuminate alternative possibilities and challenge an individual’s ingrained habits of mind.

Related to dialogue is storytelling. While my storytelling might not be evident as a strategy for active learning, I contend that the storytelling in which I habitually engage serves as a surrogate for dialogue in situations when opportunities for interdisciplinary discourse are scant or non-existent or when the level of practical teaching experience of those in the room or their level of expertise prevents them from contributing stories of their own.

Storytelling is born of Connections; that ability to recognize and articulate the relationships and similarities among events and knowledge. Storytelling is also born of Extensions; insight into the implications of new knowledge and skills. My
telling of my own and others’ stories and experiences furnished examples of practical applications of new skills, alternative perspectives and assumptions and occasionally injected disorienting dilemmas that provoked new ways of thinking. Moreover, the telling of stories modeled the ways in which to engage in Connection-making and Extensions-making.

Establishing a broad repertoire of stories and being able to match stories to fit instructional contexts is critical to facilitating post-secondary teachers’ learning. Sharma (2003) contended that transformative learning needs a socially constructed model of storytelling and that the learning that results from storytelling is representative of what new knowledge can actually mean and look like in the learner’s own context. Because learners are learning to be as well as learning to know, stories serve to fill the need for more than just content. JF expressed that sentiment quite specifically when he commented on the value of dialogue and practical examples as ways of helping new learning “stick” (JFe2p6). Stories of professional practice, shared by me and other teaching-peers, continue to provide context and illustrate the potential implications of new learning.

In their study of novice teachers’ professional learning, Loughran, Mitchell & Mitchell (2003) found that storytelling enabled the teachers to engage in a process of meaning-making by linking what they were hearing in their training sessions to the realities of their teaching experiences. “Real meaning was not carried until the knowledge was recontextualized through appropriate linking of the assertions, difficulties and teaching procedures to the individual’s own
practice” (p. 868). The authors contended that because professional knowledge is implicitly embedded in tales of specific and critical incidents of teaching, teachers’ understanding and their professional knowledge-base is powerfully influenced through the sharing of professional stories. Rowland (2001) suggested that such interdisciplinary interaction provides opportunities for perspectives, assumptions, routinized practice and even epistemologies to be questioned, challenged, critiqued and learned from by others.

The colleagues with whom I undertook this heuristic opted not to participate in an online discussion forum, preferring instead to engage in one-on-one e-dialogue with me. I realized early on that I would need to act as a liaison among those participating, conveying one another’s musings and stories, in much the way as I reported in the previous chapter. Other’s stories were shared, but they were re-told by me.

**Supported practice of new skills.** If an innovation or new technical skill is to be effectively adopted for classroom use it must become a natural part of a teacher’s skill set (Guskey, 2002). Practice should therefore be an essential component of each educational development experience. Mezirow (1991) argued that, “action is an integral and indispensable component of transformative learning” (p. 209). Perhaps it is because action is essential for transformative learning to occur that teachers so value supported positive practice during the development experience. Part of supporting faculty members’ transformative learning is in helping them act on their new learning in ways that help to establish new habits of behaviour as well as new habits of mind.
As Cranton (2006) might have explained, learning technical skills, such as learning how to construct a rubric, create tables of specification, or write effective learning outcomes—what she refers to as instrumental learning—can spiral into transformative learning. Because she views learning as a recursive rather than a hierarchical process, she argued that instrumental learning may enable insights that lead to transformation which may, in turn, lead people to a further need for instrumental learning. Interestingly then, it would appear that the same learning event may enable instrumental learning for some participants and transformative learning for others, depending on where in their respective cycles of learning each participant happens to be. For example, both KS and LB attended the same workshop. KS reported that it was the skill-building she had been able to practice through the technical work of rubric construction and practice in developing targeted questioning techniques that better enabled her to articulate and enact her conceptions, something she considered to be transformative. It was clear that engagement in instrumental skill development led to her transformative moment. LB, however, reported a significant paradigmatic shift in his conception of learning when he contrasted, through the ICE model, qualitative growth orientations to learning to those he had previously known; those models that were predominantly behavioural, hierarchical and quantitative. It was that paradigmatic shift, that episode of transformative learning, which led him to undertake the instrumental learning of test construction and rubric creation. His transformative learning led to the need for additional instrumental learning so that he might better align his teaching and assessment practices with his altered
conceptions of learning. As the facilitator of the workshop, it was critical that I respond to each of these participant’s questions and comments in the appropriately corresponding frame of learning development.

KS, interested at that time in increasing her instrumental knowledge, would likely have asked Ideas-fueled questions, wanting to get the steps of rubric-making and question-posing “right”. Once she had the opportunity to work through some examples, she immediately recognized the implications of her newly gained skills for her teaching and her students' learning (Extensions). LB underwent a paradigmatic shift from a quantitative to a qualitative conception of learning. His learning fundamentally changed his understanding of the phenomenon of learning (Extensions) and prepared him to learn the fundamentals (Ideas) of new ways of assessing his students' learning, ways that were congruent with his emerging conceptions.

The Significance of Faculty Members’ Learning

Mezirow (1978) identified 10 precursor steps to transformative learning: (a) being faced with a disorienting dilemma, (b) self-examination or reflection, (c) recognition of some sort of dissonance that is shared with others, (d) exploring possible options, (e) critical assessment of assumptions, (f) trying on new roles, (g) planning a course of action, (h) acquiring knowledge and skills to implement new actions, (i) competence-building, and (j) integrating the newly gained perspective into one’s life. In a recent study using 256 undergraduate students and their reports of the incidence of transformative learning, Brock (2010) suggested that, of the 10 precursor steps identified by Mezirow, the three most
important in supporting transformative learning are (a) critical reflection on one’s own assumptions, followed by, (b) facing a disorienting dilemma, and, (c) trying on new roles. Results of Brock’s study also suggested that the greater number of precursor steps a learner was able to recall engaging in as part of their learning experience, the more likely they were to report their learning as transformative.

With the exception of RK1 and ME, all participants in this study began the development experience by engaging in an activity designed to engage them in critical reflection of their assumptions, values and beliefs about learning. Some participants sought out the development experience because they had experienced a disorienting dilemma, most often a sense of dissonance between the quality of work submitted by their students and their expectations, with no clear notion of how to go about addressing that dissonance. Workshop experiences and consultations were opportunities to explore options for understanding learning by investigating and evaluating alternative taxonomies of learning. Additionally, activities designed for participants to acquire and practice new skills in order to build at least minimal competence by the end of the workshop or consultation were invariably a part of development experiences.

Without initially being aware of Mezirow’s 10 precursor steps to transformative learning, I had successfully designed learning experiences in such a way as to support transformative learning.

Contributors to the study reported in this dissertation were not asked directly to comment on whether they viewed the learning that resulted from learning&assessment-focused educational development to be transformative.
Though only two teachers, JS and LW, specifically named their professional learning as transformative, and, despite Snyder’s (2008) insistence that, “it seems unlikely that transformation can be prompted and brought to fruition within the span of one semester” (p. 176), I interpreted the language used by eight others (IM, LB, RK1, RK2, DC, JF, VR, and ME) as an indication of transformative learning. In each instance the teachers spoke of experiencing a sense of excitement, of heightened awareness, or a different level of appreciation and of new ways of seeing: all characteristics of what Mezirow and Cranton referred to as characteristics of transformation.

In discussions with colleagues about the nature of conceptual change occasioned by learning&assessment-focused professional development it was suggested that, “it may be that the skills they [teachers] develop, which then allow them to change their practice in a positive way and create a different kind of experience for their students AND themselves, creates an environment which promotes conceptual change” (S. Wilcox, personal correspondence, April, 2009). While it’s certainly true that learning&assessment-focused educational development informed by ICE appears to support both skill and conceptual development, it’s unclear if the changes, growth or learning that teachers undergo is adequately or accurately captured in a cause and effect or linear way. My conception of conceptual change (learning) more closely coincides with that which Fullan (1993) described: as a non-linear phenomenon with chaotic tendencies, a more enactive, in-the-moment phenomenon, perhaps more web-like than linear, where conceptual awareness, when linked to a unifying
framework, enables openness to skill development and enhances conceptual
development.

It is sometimes difficult to tell whether skill or conceptual development comes
first or whether they occur in synchrony. What is clear is that the learning
reported here by 16 post-secondary teachers included both skill development,
most notably, enhanced communication skills, and heightened conceptual
awareness, that facilitated the development of additional teaching and
assessment skills.

Communication

Loughran, Mitchell and Mitchell (2003) contended that the tacit knowledge of
teaching becomes eminently more articulable when a meaningful framework is
used for unpacking the knowledge of practice. The newfound ability of the
participant-teachers in this study to communicate arose from their acquisition of a
new vocabulary that was meaningful to them; it was meaningful because it was
related to a framework that helped organize their thinking in a way that resonated
with their tacit or emerging understanding of what learning looked like. Once
teachers were able to organize their thoughts about learning using the ICE
framework, they used the framework’s vocabulary in collegial dialogue to further
clarify their thinking.

Conceptual Development and Awareness

It is important to distinguish between the development of one’s conceptions
of teaching and learning and the development of awareness of one’s conceptions
of teaching and learning. Developing one’s conceptions involves augmenting the
complexity and sophistication of held conceptions that ultimately results in conceptual change or growth. Developing one’s awareness of conceptions refers to the process of making explicit or uncovering or unpacking the value sets and beliefs that undergird practice but that might have previously been left unarticulated or unacknowledged. The data generated through this inquiry has made evident the value and impact of both of those very different learning processes.

As educational developers and as teachers we like to think that the actions we undertake with faculty members, will, in some way, affect and effect conceptual and skill development—learning—that will result in improvements to practice to the benefit of their students’ learning. Being able to demonstrate the positive effects of development programs on classroom practices helps, in a very pragmatic way, to legitimize the work we do. But what are we to make of faculty members who report no conceptual change or no change to classroom practice after engaging in educational development?

In a study of the effects of a graduate course on teaching and learning on participants’ conceptions of teaching and learning, I and a colleague (Leger & Fostaty Young, in review) found that, overall, course participants reported that their conceptions of teaching and learning were unaffected by their participation in the course. That is, they reported that no conceptual change had occurred. However, we, as the teachers of that course perceived that students’ conceptions had indeed changed. We interpreted the students’ increased ability to articulate their conceptions of teaching and learning, along with their newly acquired
theoretical awareness and increase in clarity, conviction and purposefulness, as indices of conceptual change. However, through exit interviews, students were adamant in their reports: their conceptions of teaching and learning had not been changed by the course. Instead, they described the ways in which the course had enabled them to nurture the kernel of the conception that they felt had been there all along. The students’ contention was that they had already held relatively sophisticated conceptions of teaching and learning when they came into the course; the course gave them the means, through frameworks and vocabulary, to clearly express what had been there all along.

Some class participants conceded that their conceptions had been more fully developed through their participation in the course, though those conceptions had not been fundamentally changed in that process of evolution. The difference seemed to be development from a state of relative theoretical imprecision (diSessa & Sherin, 1998) to one of greater maturity and clarity. As one student related, “I’m standing in the same spot but now I know why I’m standing here” (Leger & Fostaty Young, in review).

Participants’ assertions that their conceptions had not changed as a result of their professional development may be explained by the epistemologies they hold about conceptions and conceptual change. Åkerlind (2003) explained that conceptions of teaching are based on different combinations of awareness of key aspects of teaching and learning and that those awarenesses are affected by a person’s experience and context and by that person’s capacity for entertaining variation in any one of those aspects. Norton, Richardson, Hartley, Newstead
and Mayes (2005) also argue that conceptions of teaching are context-dependent, so much so that it is possible that a teacher may hold two or more context-dependent conceptions of teaching simultaneously. It can certainly be argued that part of the development experience is to expose participants to different key aspects of teaching to expand awareness of the possible variations of conceptions of teaching. But Åkerlind (2008) also pointed out that different epistemological stances might also affect one’s interpretations of their own conceptual change. She argued that:

> From a phenomenological perspective, different conceptions are seen as structurally related in a hierarchy of inclusiveness, while from a more cognitive perspective, different conceptions are positioned as independent, even if they can be ordered in a continuum of development or sophistication. (p. 635)

As the instructors of the course, my colleague and I were, perhaps, eager to identify students’ conceptual clarity as change, growth or significant professional learning. In short, we were eager to find evidence of the effectiveness of the development experience we had facilitated.

Perhaps because most of the teachers who took part in this study recognized the ways that their conceptions of learning upon entering into the development relationship were congruent with the conception of learning depicted by the ICE model, it fostered a sense of inclusivity that enabled them to feel that their conceptions had not changed. It was apparent that the one participant, LB, who did report a fundamental conceptual change, viewed his previous quantitative
conception of learning to be entirely incongruous with the qualitative, growth oriented one he adopted after engaging in learning&assessment-focused educational development.

Of course pragmatics also come into play. Educational developers, regardless of whether they hold a phenomenological or a cognitive perspective of conceptions and of conceptual change, are likely to be tempted to look for overt evidence of conceptual change as a way of legitimizing their roles and educational development programming.

**Conceptual development and transformative learning.** Mezirow (2000) differentiated between epochal and incremental transformative learning; the former is brought on by a dramatic event or revelation; the latter, through a more gradual process. Cranton (2006) too differentiates between “the burning bush” (p. 77) type of transformative learning and a more gradual, developmental type of transformation. Her description of the process of the latter evokes thoughts of iteration, evolution, and recursivity, where held perspectives and conceptions, influenced by the social learning environment, are embellished over time, becoming more intricate and sophisticated. In the learning moment, the learner may not perceive the subtleties of the incremental changes their perceptions are undergoing. Over time however, learners become aware of the ways their thinking had been enhanced.

While LW and perhaps JS might be said to have experienced epochal transformative learning—learning where they were figuratively swept off their feet—most other participant/contributors, those like CA, KS and RK2 who
reported no conceptual change, only enhanced conceptual awareness, might be better described as having undergone developmental transformative learning. Their expanding awareness contributed to an evolution of their thinking that occurred incrementally. The “fit” of what they were hearing resonated so deeply with them and was so inclusive of other features of their conceptions that they seemed to appropriate all aspects of what had been presented as part of their original conception. That realization reminded me of a notation I had made on the transcripts of my interview with VR:

During our conversation, VR described what she referred to as an epiphany. It involved the realization that students are often left to guess what professors are thinking when it comes to assessment criteria and to guess what they are expected to learn. She contemplated the impact on students' learning success if they were supplied, at the outset of the course, with the questions that would be on the final exam. What VR described as her own learning epiphany had, in fact, been part of one of the discussion questions that had arisen during the workshop that she attended. It appeared that the notion had resonated so thoroughly with her emerging conceptions and understanding of what she hoped to accomplish in her teaching that she had appropriated it as her own.

It remains unclear whether learning&assessment-focused educational development that featured ICE actually contributed to conceptual change or merely furnished the framework and vocabulary that enabled teachers to articulate an already-held conception. In either case, the conscious awareness of, and ability to articulate, a held conception seemed to better enable teachers to
engage in purposeful instruction and plan for assessment that was well aligned with that emerging conception and with their intentions for students’ learning. What is clear is that participants in learning&assessment-focused educational development benefitted from learning more than one taxonomy or framework of learning. Several of the post-secondary teachers who contributed to this study (RK1, RK2, VR, ME, IM, LW and GA) had been familiar with Bloom’s Taxonomy before engaging with me in learning&assessment-focused educational development and reported that the model had, somehow, ceased to be facilitative in their teaching practice. Still, none of them had moved on from Bloom’s taxonomy until they had been presented with a different model (ICE) that afforded an alternative to how learning might be understood. It seemed to be the presentation of at least one other way of conceptualizing learning that facilitated the process of their conceptual unpacking. For the teachers who participated in this study, it was a lagniappe that the alternative that was presented so closely resonated with their own tacit conceptions.

Skills building

Faculty members reported that increased awareness and a new-found ability to communicate effectively using a framework that was representative of their values enabled them to become more purposeful in their decision-making, not only in matters of assessment but also with respect to instruction. The new conceptual awareness, ability to communicate and purposefulness resulted, they reported, in greater feelings of confidence. Curiously, many teachers, both those who took part in this study and others who attended workshops where ICE was a
featured component, reported adopting new practices or amending old ones as soon as a few hours after engaging in the development activities. These findings are directly contrary to those reported by Gibbs and Coffey (2004) and by Postareff, Lindblom-Ylänne and Nevgi (2007). Both reports indicated a significant lag time of up to a year between teachers’ conceptual development due to engaging in development activities and appreciable changes to practice and to students’ learning. Further study in this area is needed to determine the positive impact, if any, on students’ learning as a result of their teachers’ learning and conceptual development and awareness as a result of learning&assessment-focused educational develop.

**Characteristics of the Development Experience Critical to Learning**

Here, I discuss the five characteristics of the development experience that faculty members and I identified as critical to their professional learning; I then view each through theories of transformative learning.

**The ICE Model**

The data indicated that many faculty members did not distinguish between ICE as a taxonomy of thinking, learning and assessment and the development experience as a whole, though it was clear that having the ICE framework equipped them with a reliable vocabulary through which to organize their thinking and facilitate communication about learning. Because the model either so strongly resonated with their held conceptions or shaped their emerging conceptions, and because the model was easy for them to adopt and apply, it contributed significantly to the success of the learning&assessment focused
experience. The model itself continues to be mentioned in workshop evaluation forms as a highlight and is the most often mentioned aspect when participants comment on “What was best about this session?”.

**Dialogue on Learning and Assessment**

Giving voice to conceptions, assumptions and beliefs about learning gave rise to significant awareness and professional learning. Inviting faculty members to engage in dialogue as part of the development experience and then again through narrative as part of this research provided contributors with repeated opportunities to confront and articulate their own conceptions, assumptions and beliefs and organize their thinking so that they might share that thinking with others. The organization required for the articulation process began during the initial development experience, namely the workshops that 14 of 16 participants attended. Additionally, in listening to others’ they became aware of contrasting perceptions that had the potential to challenge their deeply ingrained habits of mind, allowing them to determine what their conceptions were not, even if they were still uncertain as to what their conceptions were. Engaging in dialogue provided opportunities for naming and framing, a critical first step in examining assumptions and opening up to alternative perspectives (Schön, 1987).

Interestingly, both of the participants (ME and RK1) who had engaged in learning&assessment educational development on their own by reading print materials on the ICE model, but who did not have the same invitation to interrogate their assumptions and conceptions or to engage in interdisciplinary dialogue as the workshop participants did, initially reported being less aware of
their conceptions of teaching and learning or about how, if at all, their development experience might have affected those conceptions. ME reported (MEnp7) uncertainty about whether or not her conceptions of teaching and learning had been affected after undertaking learning&assessment-focused educational development and she attributed that state to the lack of opportunities she had yet had to implement the ICE model in her teaching. However, as she and I engaged in our online dialogue, ME became increasingly aware of her conceptions: “I must say that our ‘conversation' helps me to see what I take for granted and helps me to put my thoughts together” (MEe5p5). It was clear that it was the engagement in the dialogue that emerged from my probing and provocation about learning and assessment, and not the opportunity to implement the ICE model in her teaching, that was critical to ME’s conceptual awareness and developing clarity of thought. To engage in dialogue with me, ME was required to respond to my queries, organize her thinking, reflect, listen, and adopt a critical stance on my, and her own, perspectives:

Narrative and dialogue become important because those types of communication (unlike pure thought) require us to organize our thinking. Organizing enables clarity. The added bonus in dialogue is in hearing what you’re thinking. I can’t say how often I’ve been happy to have the opportunity to talk out an issue and how often I’ve said “sometimes I don’t know exactly what I’m thinking until I hear myself say it”. (Research Journal, p. 76)
This realization is a critical one. I now know that the opportunity to “hear what one thinks” must be built in to any learning&assessment-focused development experience, including those that are led through texts and online learning modules. The opportunity to organize one’s thinking appears to be critical to ongoing conceptual development and awareness and, engaging in dialogue requires organized thinking.

**Stories and Practical Examples**

Stories and practical examples reinforced teachers' new understandings and demonstrated practical applications of the sometimes abstract concepts being discussed. Providing examples as part of a workshop or consultation experience modeled a process of *Connections*-making and initiated the process of learning transfer as participants were invited to look for ways to apply their learning to their own or other new contexts and situations. The most effective stories were, and continue to be, those that are either directly pertinent to a teacher’s own context or simple enough to be generalizable across contexts. Though, as Norman (2008) cautioned, almost all cases are complex for novices who have not yet fully developed their understanding of new concepts and strategies. The limitations of novice transfer is a potential explanation for JF’s report that non-physics-related examples confounded his thinking. New to ICE and to being strategically alerted to students’ learning, JF had not yet developed the expertise necessary to engage in learning transfer; he was not yet able to recognize the features between his own and other unfamiliar contexts that made them similar. This inability to detect similarity and divergence in context and conceptual
congruence is also likely to interfere with novices’ abilities to recognize the conditions under which proffered best practices might and might not work.

**The Power of “That Depends”**

Much about educational development is normative and, through the notion of “best practice”, reflects a decidedly positivist philosophy (Wilcox & Fostaty Young, 2007). Best practices are typically presented as generalizable methods of teaching and interaction and are often referred to as a bag of tricks by workshop participants. The tacit implication is that regularity, causality and certainty are achievable in teaching and that particular practices, if skillfully undertaken, will produce reliably high-quality results in teaching.

While there is a certain appeal to the notion that a successful teaching strategy for one teacher in a particular context might be transplanted with equal success into another, the messiness and problematic enterprise of teaching (Loughren, 2006) and the variety of environments within which teaching occurs do not readily allow for such easy fixes. As well, there is some question as to whether teachers would, or could, effectively adopt, or even mimic, teaching practices that are incongruent with their value set and their assumptions about learning and about what it means to teach well. As Bullock (2009) cautioned, we should not confuse being able to mimic practice with having knowledge about teaching.

My use of “that depends” as a prefix when answering questions is a way of drawing teachers’ attention to the role of context and to the criticality of the influence of their intentions for their students’ learning on instructional decision-
making. It acknowledges the messiness of teaching and guides attention to what might otherwise be overlooked (Mason, 2002). Additionally, “that depends” serves as an invitation to participants to make the tacit explicit, pushing them to articulate their assumptions and tacit theories-in-use (Argyris & Schön, 1974), contrasting them to new learning. “Theories-in-use tend to be tacit structures; they contain assumptions about self, others and environment--these assumptions constitute a microcosm of science in everyday life” (pp. 29-30). Building theories-in-use involves learning about managing the variables in the environment and learning about dealing with changing variables. It is a process of theory-building. Living, evolving educational theory comes from teachers’ systematic reflection on how to improve their practice (Whitehead, 1993). Asking “how do I improve my practice?” is a question of methodology and theory-building.

“That depends” becomes an invitation to test and retest each teacher’s evolving theory of teaching and learning. The phrase also conveys a certain respect, both conceptually and professionally, for each individual. In acknowledging that each participant’s context and experiences differ from the others’, there is a tacit understanding that, “beliefs are justified when they are based on good reasons” (Mezirow, 2003, p. 58) and those “good reasons” are entirely related to experiences that lead to conceptual development and to the instructional context in which individual teachers find themselves.

The development process is all about understanding and acknowledging how teachers have come to that place in terms of their conceptual and skill development and then furnishing some new experiences and contrasting
perspectives that might help them travel to their own next conceptual place. As Masciotra, Roth and Morel (2007) contended, the role of educational developers is to support teachers’ transformation of their existing practices rather than in coaching them to apply new ones that might not be entirely congruent with or appropriate to their conceptual and skill sets. “That depends” acknowledges that the best practice of all is in reflecting on what happens in our own teaching and on the factors influencing the choices we make (Wilcox & Fostaty Young, 2007). “That depends” becomes a shorthand invitation to teachers to attend to the demands of the context and to the values and intentions they may wish to enact through purposeful practice. Knowing that something works is different from understanding why it works (Berry, 2009) and what contextual and conceptual factors are critical to the success of any given “best practice”.

In workshop settings it is common for participants to begin suggesting variations in practice congruent with others’ alternative orientations and matched to their intentions. In short, those taking part in the development activity take the opportunity to engage in the process of purposeful, context-informed decision-making in a highly supportive environment. The “that depends” approach invites teachers to probe the intentions they and their colleagues have for students’ learning, the contexts in which they and their students find themselves and the values that undergird their teaching. The approach involves supporting post-secondary teachers in purposeful teaching that aligns their instructional methods, including approaches to assessment, with their developing conceptions, skills, values, orientations and intentions for students’ learning with the overall context
of the instructional setting and nudges them forward in their thinking. The intention is to support teachers in becoming the best teachers that their skill set, conceptual understanding and instructional context currently and emergently allow and in working to develop skills and conceptions from that point. Moreover, the practice serves to create distance from:

The misconception that there is a definitive “best practice” and opens the door to the possibility that principles of practice are both more flexible and more rigorous approaches to teaching than so called “best practices”. More flexible in that one can take context into account & make the necessary modifications and more rigorous because the decisions are purposeful and based on thoughtful reflection.

(Research Journal pp. 67-68)

The intention is to support teachers as they learn to make purposeful choices with respect to their teaching practice and help them realize that there are any number of ways to teach well and an array of instructional choices that might be congruent with the intentions they may have for their students’ learning (Fostaty Young & McEwen, 2007). It was this aspect of practice that my Swedish colleagues referred to as “non-normative educational development”. A critical nature of educational development is that it should be developmental, that is, respectful of where an individual is and what next logical steps to improvement might look like for them. In fact, Roche (2003) advises that an essential component of development for transformative learning is primary respect for what she refers to as the “change readiness period” (p. 174).
Learning&assessment-focused Educational Development

Despite the wide recognition that professional development has received, there have been few attempts to ground it within a theoretical framework. In other words, the mechanism related to how teachers acquire knowledge and skills to effectively reach out to students are not generally explained with a support of a unified theory. Grounding professional development in a theoretical framework is not only important in revealing the process of development itself but also for devising plans that contribute to the effectiveness of professional development programs. (Eun 2008, p. 135)

During the course of this study I have had ample opportunity to become strategically alerted to the ways I interact with the faculty members with whom I work. I have come to realize that while each development experience is unique due to its contextual factors, there are six fundamental features that characterize learning&assessment-focused educational development. While the activities and approaches I use vary from group to group and individual to individual, the core is consistent. The six characteristics are features that I routinely use in different guises in my practice. While they are presented as discrete characteristics, it is more accurate to say that the features represent my orientation to interaction.

The six characteristics are:

- guided explorations of assumptions, beliefs and conceptions of learning,
- confronting the impact of assessment on learning,
- maintaining strategic alertness to intentions for students’ learning,
- encouraging the adoption or creation of a framework of learning,
- providing opportunities for supported skill and conceptual development,
and
- respecting teachers’ conceptual and contextual realities.

The sixth characteristic, put more colloquially as meeting teachers where they are, is the grounding philosophy that is foundational to the approach.

**Guided Exploration of Assumptions, Beliefs and Conceptions of Learning**

Explorations of assumptions, beliefs and conceptions can happen in a very structured and formalized way through well-defined and orchestrated activities, such as the one depicted in the workshop outlined in Appendix A or merely through invitations to discuss a rationale for the selection of particular exam questions over others. The critical feature of this characteristic of practice is in getting teachers to name what they do and talk about why they do it.

Guided exploration of assumptions includes providing opportunities for post-secondary teachers to explore options and alternatives, rather than presenting one “best” way. From experience I have come to appreciate that, especially for the novice, without an ability to compare options, it can be difficult to express why any one particular framework might not be a good fit. So, for example, while the teachers with whom I worked might not have been able to express how Bloom’s was a “square peg in a round hole” (GAe6p2, p. 130) for them, they were better able to do so after having ICE to contrast it to, even if ICE was not a perfect fit for them either.
Confronting the Impact of Assessment on Learning

Citing the literature on the impact of assessment on students’ approaches to learning and the ways that the findings manifest themselves in our own classrooms, is powerful. Hearing Ramsden’s (1992) contention that assessment defines the curriculum and Boud’s (1990) assertion that, more than any other feature in the learning environment, assessment shapes what and how students choose to learn, causes teachers to take pause and contemplate their own contexts and their own students’ reactions to assessment and their engagement with learning material. Introduction of the literature helps to put some less-than-attractive student behaviour (“Will this be on the test?”) in context. As students, novices in their disciplines, struggle to discern between what is important and what is not, they seek to know what their teachers value. Students, it seems, really do look to a teachers’ assessment practices to gauge what is important to learn. More reassuring to the post-secondary teachers with whom I work is the realization that they have the ability, through purposeful practice, to structure their instructional and assessment practices in such a way as to influence their students’ learning in a very productive and meaningful way.

Maintaining Strategic Alertness to Intentions for Students’ Learning

Loughran (2006) stated:

By narrowing the focus on what to notice, some of the complexity of teaching might be peeled back so that one or two isolated aspects of practice might be better analyzed and acted upon thus helping one accept (rather than overlook) the complexity of the big picture. (p. 34)
Teachers’ lack of knowledge or awareness of what to attend to in the teaching and learning environment can hamper their ability, or flexibility, to respond (McAlpine, Weston, Timmermans, Berthiaume, & Fairbank-Roch, 2006). In workshop or in one-to-one contexts, it is relatively easy to maintain teachers’ strategic alertness to students’ learning. The crux of this feature, aided by liberal uses of “that depends” means that I systematically and repeatedly ask teachers to consider the implications for students’ learning of all that they do. The use of “that depends” is especially useful in drawing teachers’ back to their students so that the focus is on intentional, learning-focused teaching and assessment practices that are aligned with their intentions and grounded in current theories of learning. It is this kind of guided alertness that Mason (2002) refers to as “intentional noticing” (p. 29)

**Encouraging the Adoption, or Creation, of a Framework of Learning**

Loughran, Mitchell and Mitchell (2003) argued that adopting a meaningful framework helps to focus teachers’ attention in ways that enable them to “distill the knowledge of practice this so often inaccessible” (p. 861). Since immersion in this research I have come to appreciate the ways in which frameworks and the vocabularies that are associated with them help to organize thinking. I have also come to appreciate how, once organized, thinking and conceptions become easier to communicate and share. In adopting a framework, teachers become able to share their organized thinking about learning with their peers and with their students. One anticipated effect of improved communication with students about expectations for learning is the possibility that they may then be better able
to conceptualize their own learning and plan for its improvement (Rust, Price, & O'Donovan, (2003).

Presenting one framework to a teacher may get them started in the process of uncovering their conceptions of teaching and learning. Presenting two frameworks enables teachers to contrast one framework to the other in a process of best fit. But presenting more than one alternative also enables the possibility of adopting the best features of each to adapt or create something entirely new.

In discussing her practice, Akin (2005) revealed that using a set of principles or a framework had helped her, over her career, to complicate her understanding. I prefer, instead, to think of frameworks as helping us recognize and name the complexities of our understanding, helping to unpack the intricacies of our knowing.

**Providing Opportunities for Supported Skill and Conceptual Development**

There are times that teachers come to me to consult on constructing a rubric for an assignment they have set. Their intention is to develop skill in rubric writing. What often happens in the process of developing that rubric-writing skill is a deepening of their conceptions of learning and a greater awareness of what learning might look like in the context of that particular assignment. Conversely, when teachers, especially in a workshop setting, have been engaged in activities designed to challenge their thinking about learning, they become curious about what the implications for practice might be of their new or developing understandings of learning. It appears that skill and conceptual development are complementary to one another, each reinforcing the other and impelling learning
forward. Moreover, it has been my experience that when teachers have an opportunity to engage in supported practice of newly acquired skills or skills informed by newly developed conceptions, they are more likely to be able to implement that new skill in the realities of their own teaching context. Engaging in skill development tasks, that is, the practical, skill-based application of new learning appears also to have the effect of clarifying new or emerging conceptions of learning.

Embedded in the learning&assessment development experience is support for the development of critical thought. Consistent invitations to consider alternatives perspectives, reveal principles of practice, and adapt practice to varying contexts and intentions for learning provides supported practice time for new habits of mind that will be necessary to support newly developing habits of practice.

**Respecting Teachers’ Conceptual and Contextual Realities**

A critical feature of educational development, no matter which theoretical framework informs it, is that it should be *developmental*, that is, respectful of where an individual is in terms of epistemology and skill, and what the next logical step to improvement might look like *for them*. This means respecting post-secondary teachers’ conceptual and contextual realities and working with, rather than against them. It means nudging teachers, perhaps by playing the provocateur, toward a next logical frame of development rather than expecting them to work toward a pre-set ideal. The process of identifying a desired state of “best practice” and an ideal conception of learning for teachers to adopt might
pose too wide a gap to traverse. Meeting teachers where they are enables faculty members to be the best teacher that their skill set and conceptual understanding allows, moving on from there, incrementally or epically as the professional learning context allows.

The Impact of the Inquiry on the Evolution of My Practice

This heuristic inquiry led me from an initial state of mindlessness (Varela, Thompson, & Rosch, 1993), through strategic alertness (Entwistle & Walker, 2000), self-consciousness and, ultimately to mindfulness (Varela, et al., 1993). Mindlessness was borne of habitual thought and patterns of practice; strategic alertness was enabled through attending to, and naming, previously unattended-to and unarticulated aspects of practice. A certain self-consciousness followed and was characterized by that type of hyper-alertness that can sometimes interfere with fluidity of practice. Finally, I attained mindfulness—a capacity for purposefulness of practice gained through new habits of mind that resulted from awareness.

Like the teachers with whom I worked, I gained a sense that my conceptions and practice had not changed as much as my awareness of both had changed. That heightened awareness led to an ability to first name what it is that I do, then, secondly, to recognize when I was doing it, and finally to be able to purposefully plan to do it again. It is my perception that the evolution occurred so gradually that, initially, I was uncertain about whether learning of any kind had, in fact, occurred. The most significantly developed aspect of my practice was a burgeoning consciousness of the effect of my interactions on faculty members’
strategic awareness and professional learning and a heightened ability to name what I do and to provide a cogent rationale for it.

In much the same way as heightened awareness enabled a certain confidence and purposefulness of practice in faculty members’ instructional decision-making, my own heightened awareness, brought on through the opportunity to engage in focused discourse with the participants, contributed to a parallel purposefulness in my own practice. There were several aspects of my own educational development practice to which I became more strategically alerted as a result of this inquiry. I became alerted to and became more purposeful:

- in the ways I communicate, verbally and pictorially, about learning, most specifically, about learning as conceived through the ICE model;
- about the ways I function as a surrogate for interdisciplinary, collegial discourse; and
- in meeting teachers where they are in terms of their conceptual and instructional skill development.

One area of my practice in which there has been significant behavioural change, as a result of focused strategic alertness has been in the ways I communicate about learning and what it looks like. Another is in my awareness of the value and importance of providing the teachers with whom I work a variety of viable alternatives rather than single pat solutions.
Communicating about Learning

One of the most noticeable and conscientious areas of growth in my practice is in my increasingly purposeful use of language, specifically in the ways I describe my understanding of the ICE model. At the outset, I used the general vocabulary of widely-used educational idioms to describe learning. I talked of “the building blocks of learning”, “stages” or “phases of learning” and, due to sadly lacking computer skills, used linear graphics to depict the ICE model, knowing full well that they were inaccurate but not having the skills necessary to produce a model adequately representative of my conceptions. I had fallen into a habit of using language that was incongruent with both my own conceptions of learning and with what I was trying to convey about the ICE model. It was the language most widely used in education—language that conveys an epistemology of learning that is consistent with the architectural depictions of constructivism that were discussed in Chapter 4. Something as simple (and poorly thought out) as referring to Ideas as the building blocks of learning (a decidedly architectural metaphor) may convey a sense of permanence or immutability to Ideas. The metaphor also contributes to a mistaken perception that teaching and learning must, by definition, begin with Ideas then build toward Connections. Additionally, referring to Ideas, Connections and Extensions as levels of learning likely contributed to enabling faculty members like RK1 to view ICE as a simplified version of Bloom’s hierarchical taxonomy rather than as an epistemological alternative to it. I came to realize that the language I use to describe learning needed to be distinct from that which is used to describe learning through other
taxonomies. Unlike taxonomies of learning that depict learning as unidirectional and hierarchical with movement through successively more complex levels, ICE supports a representation of learning as fluid and recursive. Learners may move from Connections to Ideas then to Extensions and return to Ideas, gathering more discrete pieces of information which, in turn allow for the creation of still more Connections – though the second round of Connections is likely to be of a more expert type. Similarly, as Connections become givens to learners, that is when discrete Ideas become enmeshed into a unified conception or when steps in a process evolve into a single, fluid movement, that enmeshed Connection actually seems to then, over time, be transformed into an Idea, that is, a newly-formed, fundamental basic unit of knowing. The result is a conception of learning as a spiral of developing expertise where an expert’s Ideas are very likely to have transformed from an earlier series of Connections.

The email dialogue with RK1 about his misconception of ICE as being epistemologically akin to Bloom’s Taxonomy afforded me the opportunity to recognize and confront incongruence between my conceptions of learning, the ICE model and the vocabulary I had been using to convey those conceptions. I have become more purposeful in the language I use, choosing now to refer to Ideas, Connections and Extensions variably as phases, demonstrations, types or frames of learning, the latter a term borrowed from Meyer and Land’s (2006) writing on threshold concepts and transformative learning. My intention now is to depict learning as fluid and recursive, not an event that necessarily occurs within a hierarchy or by successive stages.
Conle (1993, 1996) and Davis & Sumara (2002) drew attention to the power of language to aid understanding and, in fact, to shape thought. The metaphoric vocabularies of architectural- and ecological-focused constructivism are not just figures of speech; they are processes of understanding. In appropriating the more architectural rather than the organic language of constructivism, I failed to distinguish ICE, and my conception of learning, from those with which RK1 was already familiar.

The realization caused me to review workshop materials as well as my use of language. Early graphic depictions of ICE, largely due to my poor graphic communication skills, consisted of words and arrows that depicted systematic movement from Ideas to Connections and from Connections to Extensions rather than an iterative web. I have since begun to represent ICE, as in Figure 7, in a way that conveys that the learning frames of Ideas, Connections and Extensions each affect the other frames of learning.
Figure 7: The ICE model

Though the cogwheel graphic is an improvement over the original linear graphic, it is still an imperfect design. It was evident that the comparatively simplistic language and graphics I had been using, worked at cross-purposes to my intentions. The linear depictions of ICE I had been using, despite my explanations to the contrary, seemed to have influenced at least some faculty members to interpret the model as a hierarchical one where learning always started with Ideas and progressed linearly through Connections and then to Extensions. The more recently adopted cog-themed illustration more accurately depicts the ways that the frames of learning affect one another and that as each frame transforms, it influences the potential transformation of the other frames. What it does not adequately capture is the ongoing recursivity, or iterative nature of learning espoused by the model.
Providing Faculty Members with Viable Alternatives

In what I now recognize, thanks to my colleagues in Sweden, as my “non-normative” approach to educational development, I have become quite purposeful in not offering single pat solutions to instructional and assessment dilemmas or just one framework or taxonomy to spur conceptual growth. My habit of providing alternatives was born of the realization that while many of the teachers with whom I have worked have been able to identify that a strategy, taxonomy or approach does not “work” for them, they are likely to be unable to describe an alternative that might. Offering at least one alternative appears to enable a process of critical evaluation, of contrasting the characteristics of the two options in ways that evoke greater clarity of thought. In some instances being able to contrast two options can lead to creative adaptations that result in hybrid approaches that combine acceptable elements from each option. Providing more than one framework or approach demonstrates that there is rarely just one way of being right and respects teachers’ abilities as professionals as well as the contextual factors that influence their practice.

Why I use ICE to Enact My Practice

The ICE model is entirely congruent with my conception of how learning occurs and what learning looks like. That congruence, along with the model’s simplicity and accessible vocabulary, make it an ideal vehicle through which to engage faculty in conversations about the learning that occurs in their own instructional contexts. ICE has become an embedded element of my educational development practice, as something to share with the faculty members with
whom I work and as a tool for gauging post-secondary teachers’ conceptual and skill development so that I may better plan my work with them.

Wilcox and Jones (2004) described an ideal tool as one that addresses a real problem, is efficient, well designed and that has a specific rather than general function. An ideal tool, they contended, extends the capabilities of both novice and expert users, is robust, flexible and capable of facilitating a range of tasks. They give the example of a shovel: though simple in design, a shovel greatly improves a gardener’s ability to move dirt, dig holes and accomplish a variety of outdoor tasks. It is likely that the tasks could be accomplished without the tool but the tool makes the job easier. Most people can use a shovel at some basic level but a skilled user can execute the intended job with proficiency. By Wilcox’s and Jones’ definition, the ICE model might well be classified as an ideal tool. The model’s simplicity of design belies its complexity and its complexity makes the model both robust and flexible enough to be used by novice and expert teachers alike to support both conceptual development and the development of teaching and learning skills.

In workshop settings I introduce ICE as a contrast to other taxonomies of learning, inviting faculty members to “try on” models of learning to find one of best fit with their own conceptions and experiences of learning and what it looks like. In more intimate one-to-one consultations I might share what I have come to refer to as the 3-minute version of ICE with colleagues who are struggling to put their thoughts on learning into words. The then shared vocabulary of Ideas,
Connections and Extensions facilitates ongoing dialogue and guides attention to intentions for students’ learning within different frames of complexity.

More than just a tool for teachers’ conceptual development and classroom use, ICE also provides me with a framework through which to interpret and respond to faculty members’ learning. Through the language that teachers use to ask questions and make statements about their understanding and the events in their classrooms I have become able to interpret their current frames of learning. Understanding a participant’s question as a request for clarification of Ideas, an attempt to form Connections or a breakthrough to Extensions, means that I can be responsive to their immediate and emerging development needs. The cues they provide through the language they use enable me to anticipate and create learning or dialogue opportunities to nudge them from where they are toward further growth and developing expertise.

Summary

In this chapter I situated my practice firmly in the literature on transformative learning, demonstrating the ways in which learning&assessment-focused educational development, through (a) reflection and critical thought, (b) dialogue and (c) supported practice of new skills, supports transformative professional learning.

Faculty members’ enhanced communication skills, heightened conceptual awareness, and opportunities to engage in skills-building, combined to make their learning transformative. Together, the post-secondary teachers and I identified the ICE model itself as critical to the learning they reported. Also identified as
essential to that learning were (a) the opportunity to engage in dialogue on learning and assessment, (b) stories and practical examples to illustrate concepts, and (c) the flexibility and rigour represented in “that depends”.

Through synthesizing the findings with the transformative learning literature, six essential characteristics of learning- and assessment-focused educational development emerged: (a) guided exploration of conceptions and assumptions about learning and assessment, (b) confronting the impact of assessment on learning, (c) the adoption, or creation, of a framework of learning, (d) opportunities for supported skill and conceptual development, all framed in (e) an abiding respect for individual teacher’s conceptual and contextual realities.

Next, I discussed the ways that, through the process of inquiry, my development practice has evolved. Most notably, I have been strategically alerted to the critical importance of language in shaping understanding, especially of learning; and have developed a conscious awareness and purposefulness in offering faculty members viable options from which to construct their practice.

In conclusion, through realizations afforded through the heuristic inquiry, I outlined the reasons that I use ICE to enact my practice.
CHAPTER 8
CONCLUSION

Three published articles and an empirical study were used to support this heuristic inquiry. In this chapter, I outline the ways in which each component contributed to Realizations about my practice of learning&assessment educational development and the professional transformative learning it supports. The chapter also includes an ex post facto analysis of the heuristic approach and outlines the significance of the research. Further, I discuss the boundaries of the inquiry and possibilities for ongoing research. In conclusion, I outline implications for educational development practice and scholarship that arise from this investigation.

Realizations

Piecing together my lived experience of learning&assessment-focused educational development through three journal articles and an empirical study, I have reached a point of Realization. Here I share the ways in which each element of the inquiry contributed to my understanding of learning&assessment-focused educational development informed by ICE and the transformative professional learning, my own and others', it supports.

Sources of Realization

It was critical, as part of a study of lived experience, that I began the inquiry with questions about the assumptions and beliefs that undergird my practice. The writing process for each of the three articles, presented as part of this inquiry, demanded that I interrogate, and then articulate, the theoretical...
underpinnings of my practice as well as the assumptions, values and beliefs that inform it. Particularly useful to me in gaining better understanding of my practice, and its worth, was struggling to articulate my beliefs about the nature of educational development. It was liberating and satisfying, in Chapter 1, to publicly name educational development as both an educative and developmental process that is, fundamentally, a process of inquiry into teaching and learning.

Proffering evidence that the conceptual framework that informs my development practice “works” began in Chapter 3, where I shared some of the ways in which post-secondary teachers were implementing new strategies learned through their development experiences. The findings from the empirical study (Chapter 6) provided more evidence that ICE-informed learning& assessment-focused educational development is effective in facilitating conceptual and skill development and in influencing teachers’ assumptions about learning.

The process of making my practice explicit began with the paper presented in Chapter 4. It was then that I began the process of articulating intentions for faculty members’ professional learning and outlining the strategies and tools I use to encourage conceptual development. Through collaborating with faculty members as part of the empirical study, I was able to further investigate the ways I use ICE, frame my practice and facilitate learning. It was through faculty members’ willingness to reflect on, and articulate, their learning that we were able to identify the essential characteristics of learning&assessment-focused educational development.
A heuristic approach was adopted as an overarching framework for this inquiry. The intention was to distill "essential meanings connected through everyday human experiences" (Douglass & Moustakas, 1985, p. 39) through a "subjective process of reflecting" (p. 40). Because I would be inviting others to join me in the inquiry, the intention to retain “the essence of the person in the experience” (p. 43) was an appealing feature. The conceptual framework of the approach “offers an attitude with which to approach research, but does not prescribe a methodology” (p. 42). The framework provided the flexibility to pursue all sources of data, including those derived from intuition and tacit understanding, that might help shed light on learning&assessment-focused educational development. Retaining, rather than distilling out, my own and others’ tacit understandings of our practices and our intuitions meant that we were able to maintain and respect two fundamental and pervasive characteristics of post-secondary teaching practice: tacit knowledge, that unarticulated knowledge that enables action and becomes implicit through that action (Moustakas, 1990); and intuition, that bridge between explicit knowledge and tacit knowledge that enables teachers to interpret combinations of discrete components in the teaching and learning environment in terms of their own experiences and emerging understanding.

While Douglass and Moustakas deny a prescribed methodology to heuristic inquiry, they do outline a staged process of Immersion, Acquisition and Realization. Without an articulated intention to follow a path of inquiry, only after
drawing my research to a close did I, retrospectively, trace my path. It was then that I was able to recognize the recursive nature of the investigation.

Self-study is an embedded feature of heuristic inquiry and, I have come to realize, the approach I adopted, in fact, fulfilled all five characteristics of self-study as outlined by Samaras and Freese (2006). My study a) was a situated inquiry through which I probed a discrete and specific approach to educational development; b) involved a process of understanding rather than act as a statement of claim; c) generated self knowledge, for me and for my collaborators. Additionally, d) the inquiry was multifaceted in that diverse perspectives were sought; and e) it was paradoxical in that the investigation simultaneously included elements of the individualistic and the interconnectedness of the educational development experience. Through the process I was able to assemble a whole from the fragments to generate significance (Douglass & Moustakas, 1985), in this case, the significance of ICE-informed learning&assessment educational development.

**Significance of the Research**

As noted by Eun (2008), there has been, to date, little done to ground educational development in theoretical frameworks or unifying theories. Many approaches to development are normative, instruction-based interventions (Sparks & Loucks-Horsley, 1990; Spillane, 2002) aimed at developing identified discrete and desirable teaching skills. Other approaches rely on reflective, conceptual development models (Richardson, 1990) aimed at developing teachers’ conceptions but without the grounding of any particular theoretical
framework. As such, teaching techniques and strategies that are shared through development opportunities are often presented as best practice but sometimes indiscriminately, without acknowledgement of the epistemological and ontological assumptions through which they were derived. The lack of theory or context can make it difficult for post-secondary teachers to select or adapt strategies to align with their own conceptions, values and ways of thinking.

The research reported on here suggests that the articulation and use of a framework helped to focus attention, clarify thinking and facilitate communication. Additionally, a theoretical framework facilitated decision-making thereby supporting purposeful practice, both my own educational development practice and the teaching and assessment practices of the post-secondary teachers with whom I worked.

**The Effects of a Framework on Educational Development Practice**

Adopting an ICE-informed learning&assessment focus in my practice meant that my attention was consistently guided to faculty members' intentions for their students' learning and on the ways post-secondary teachers chose to gather evidence of, and support, that learning. The framework served as an enabling constraint in that it structured my thinking in a way that enabled maintenance of focus and purpose and a means of recognizing and dealing with distractions from that focus (Davis & Sumara, 2006). Well-structured constraints, such as frameworks, can create an orienting space, providing the opportunity to organize the kind of thinking that is required for engagement in complex behaviours (Castro, 2007).
Learning&assessment-focused educational development defined the parameters of my interactions with faculty members. ICE operationalized the learning&assessment-focused framework and provided a simple yet systematic way of engaging post-secondary teachers’ thinking about the complexities of teaching, learning and assessment. The model also supported the development of their conceptions of learning as well as their teaching and assessment skills.

The vocabulary furnished by the ICE model both facilitated communication about learning and influenced my thinking about it. Better aligning the language I used to communicate about learning with my evolving conceptions of learning furthered my thinking and caused me to become more purposeful in my use of language related to learning. The iterative process of language-shaping-thought-shaping-language-use supported the evolution and understanding of my practice.

In the particular case of my own practice, ICE was the framework upon which my learning&assessment-focused practice rested. It served as the basis of my understanding of learning and supported the instructional and interactive decision-making of my learning&assessment-focused development practice. In adopting ICE to inform my practice, I was able to both support and assess faculty members’ ongoing professional development and anticipate their emerging development needs.

The Effect of a Framework on Teachers’ Conceptions and Practice

The same framework that informed my practice helped focus the attention of those with whom I worked. It helped by focusing attention on learning, organizing participants’ complex thinking about teaching and learning, and by providing a
vocabulary and a structure to support post-secondary teachers’ instructional and assessment practices. In a very real way, the framework served as an enabling constraint that supported post-secondary teachers in becoming problem-solvers in their own classroom.

ICE-informed learning&assessment-focused educational development helped to confine teachers’ attention to their students’ learning and to what that learning looked like. The framework provided circumscribed boundaries and an embedded value system that appeared to inform instructional and assessment decision-making in a reliable and consistent manner. Hayles (2001) argued that metaphorical language, like vocabularies associated with conceptual frameworks, when coupled with enabling constraints, can help shape what she refers to as reliable knowledge—knowledge that enables one to engage in dealing with novel complex problems. The constraints of the framework seem to focus teachers’ attention by helping to confine the multitude of variables inherent in any teaching context to a manageable and salient few.

My learning&assessment-focused development approach, informed by ICE, appeared to support simultaneous development of post-secondary teachers’ conceptions and skills. The concurrent and consistent guided alertness to intentions for students’ learning, presentation and demonstration of the ICE model and opportunities for immediate supported practice, meant that conceptual and skill development were equally supported. That simultaneous development, strengthened by immediate supported practice, led to reports of almost immediate positive effects on teaching and assessment practices that had a
positive impact on students’ learning—a significant difference from the one-year lag time reported by Postareff, Lindblom-Ylänne, and Nevgi (2007) and Gibbs and Coffey (2004). It appears, when purposefully structured within a supporting framework that defines specific parameters, that educational development can be the impetus for simultaneous and immediately beneficial conceptual and skill development.

Adoption of a theoretical framework to guide educational development practice does not imply that a practice becomes rigid; it merely implies that a practice becomes informed and shaped by reliable parameters—enabling constraints—that serve as a touchstone for decision-making and interaction. Principles of practice, derived from, and informed by a framework, provide structure and rigour to practice. As sets of principles, rather than sets of rules, principles of practice provide both the structure and the flexibility to support teachers’ decision-making in a variety of contexts.

Adopting ICE-informed learning&assessment-focused educational development as a preferred framework enables enough structure to inform attempts at instructional problem-solving and the flexibility to adapt to individual teacher’s contexts. That flexibility contributes to an ability to meet teachers where they are, and to support them in becoming the best teachers that their emerging skill set and conceptual development allows.

**Boundaries of the Study and Implications for Further Research**

Through this inquiry I set out to understand the ways in which teachers’ transformative professional learning can be supported through a focus on
learning and learning assessment. The scope of the research allows me to feel confident that the inquiry we undertook enabled me, and my post-secondary teacher collaborators, to identify how and why learning&assessment-focused educational development informed by ICE is successful in supporting teachers’ transformative professional learning.

Beyond the scope of the inquiry was validation of the claims that teachers made about new communication, instructional and assessment practices that they attributed to the development process. Also beyond the scope of the inquiry was the effect, if any, on their students’ learning. Empirical research into observable changes in both teachers’ practices and their students’ achievement would be next logical steps to assess the effectiveness of learning&assessment-focused educational development.

While it has been extraordinarily instructive to learn about the positive effects of learning&assessment-focused educational development informed by ICE from the post-secondary teachers who participated in this inquiry, there is still a significant amount to learn from those teachers for whom the model falls short. In fact, a worthwhile pursuit would be an investigation into conditions that minimize the positive impact of learning&assessment-focused educational development or that prevent its implementation.

Tangential but directly related to this research is a nagging question I have about the effect of email, rather than face-to-face, interaction on both the level of participation and the depth and breadth of discourse that was generated. Because of a growing general trend in higher education toward greater use of
online methods of interaction, the effects of technologically assisted methods of engagement on discourse bear investigation.

**Implications for Educational Development Practice and Scholarship**

The research reported here comes at a time of emerging awareness that a focus on assessment, especially in its capacity to enhance students’ learning, has the potential to support transformative professional learning (Reimann & Wilson, 2012). Principally, this research presents a persuasive account of the ways in which a framework of learning & assessment can help organize teachers’ thinking and support purposeful practice that aligns assessment with intentions for learning. Secondarily, this research raises questions about what it means to meet teachers where they are so that they might engage in a truly developmental process of professional growth. At the micro-level this means adapting interactions relative to a teacher’s level of conceptual and skill development. At a macro-level, meeting teachers where they are suggests possibilities for the decentralization of educational development—meeting teachers in their home departments and in their own teaching environments. This type of decentralization enables learning to take place in a contextually relevant setting, which Snyder (2008) contended maximizes the likelihood of learning transfer.

This dissertation has significant implications for conceptions of educational development, serving as testament to the fact that the educational development process *is* research and that real educational development requires engagement in an ongoing process of inquiry into teaching. That act of scholarship requires the educational development researcher to step directly into the inquiry, not out
of it, to learn from their own, and others’, lived experience of the processes undertaken.
References


Leger, A. B., & Fostaty Young, S. (in review). A graduate course on teaching and learning in higher education: Influences on conceptions of teaching and learning. Queen’s University, Kingston, ON.


Wilco, S. (2000). *Promoting educational development: From models to modeling*. (unpublished manuscript) Queen’s University, Kingston, ON.


Appendix A

Workshop Outline

Purposeful Assessment to Support Intended Learning

Sue Fostaty Young

Workshop Plan

- Introductions

- What does learning in your discipline look like?

- Frameworks for communicating about learning

- Implications/Uses/Practice
Intended Outcomes

• Adopt or devise a framework that is representative of your values and beliefs about learning

• Develop a vocabulary that enables explicit communication about intentions for students’ learning

• Apply a framework to your own teaching context

Take a Stand...

• How well students do in a course should be somehow related to how well others in the class do.

• Students’ success in a course should be entirely related to their ability to demonstrate the learning outcomes

• Students’ success should be related to how much they improve over time.

• Students should be able to replace lower scores with higher ones or resubmit work as they improve the quality of their work.

How do you know good work when you see it?

What does learning look like?
Assessment Models and their influence on Students’ Learning

- What and how students choose to learn is, in large part, influenced by what and how we choose to assess. (Boud, 1990)

- The assessment model in place has greater influence over student learning than any other element of the curriculum. (Ramsden, 1992)

Assessment: Glimpses of teachers’ values

- “...what you choose as evaluative criteria and indicators says a great deal about what you really value and stand for in your work.”

  - Stephen Brookfield (1995, p. 112)
  
  *Becoming a Critically Reflective Teacher*

What do your assessment choices say about your values?

- Are they an accurate representation?
How do you know good work when you see it?

- What does learning look like?

Openly Sharing Your Values with Students (so they don’t have to guess or make faulty assumptions)

Students’ learning achievement can be significantly improved through improving their understanding of assessment criteria and processes.


Bloom’s Taxonomy (1956)

- Multi-level taxonomies for three learning domains:
  - Cognitive – 6 levels (Remembering through Creating)
  - Affective – 5 levels (Receiving through Internalizing)
  - Psychomotor – 7 levels (Perceiving through Origination)
**Bloom’s Taxonomy (1956)**  
(Revised 2005)

- One of the earliest taxonomies
- Three discrete learning domains
- Learning is understood to be hierarchical and unidirectional

---

**ICE**  
Wilson, 1996

- **Ideas**
  - Discrete pieces of information
  - Steps in a process
  - Vocabulary; definitions
- **Connections**
  - Articulating relationships; engaging in meaning-making
- **Extensions**
  - Ability to extrapolate or entertain the hypothetical
  - Applying learning to novel contexts – transfer
  - Development of “fluency”

---

**ICE**

**IDEAS** ➔ **CONNECTIONS** ➔ **EXTENSIONS**

- Basic Facts
- Elemental concepts
  - Within the content
  - To already held knowledge
- Novel uses of learning
- Extrapolations
- Fluency

ICE

Wilson 1996

Revisit the cues you used to “know good work when you see it”

Why ICE is useful:

- Portable
- Independent of the task
- Provides a shared meta-cognitive framework for teachers and students to plan and talk about learning
- Encourages deep approaches to learning
- Promotes learner independence through self-assessment
- Easy for students to understand and use
Benefits of Using a Framework

• Provides a way of better defining learning outcomes
• Helps ensure coherence among course elements
• Provides students with a way of learning how to learn
• Facilitates communication about learning expectations and standards by providing a common language

How language can shape learning

• Students will demonstrate understanding of...
  • Describe?
  • Label?
  • Appraise?
  • Discriminate between?
  • Apply strategies to familiar situations?
  • Apply strategies in novel situations?
  • Identify problems? Pose solution?

Let’s practice...

• What effect does _____ have on_____
• Predict how...
• Identify the main...
• What are the implications of...
• Using an example from your own experience...
• According to _____, how is_____
Sharing ICE (or any framework) with students

- 5 minute micro-lesson
- Analogy
- Consistent use of ICE vocabulary
- Rubrics

An ICEd Rubric for Math

<table>
<thead>
<tr>
<th>Component</th>
<th>Ideas</th>
<th>Connections</th>
<th>Extensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approach to the</td>
<td>• Applies skills to familiar problems &amp; situations</td>
<td>• Applies content items across situations</td>
<td>• Uses ideas from different situations to help explain new ones</td>
</tr>
<tr>
<td>Problem</td>
<td>• Makes valid observations based on the information available</td>
<td>• Makes connections between the known facts and the problem to be solved</td>
<td>• Explains his/her thinking</td>
</tr>
<tr>
<td></td>
<td>• Clarifies and organizes the task</td>
<td></td>
<td>• Makes plausible generalizations based on the solution</td>
</tr>
<tr>
<td>Communication</td>
<td>• Definitions provided are accurate</td>
<td>• Uses mathematical language to describe the problem and its solution(s)</td>
<td>• Adapts mathematical language to describe situations from outside the traditional sphere of mathematics</td>
</tr>
</tbody>
</table>

A Quantitative Rubric for Math

<table>
<thead>
<tr>
<th>Component</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understanding</td>
<td>• demonstrates limited understanding</td>
<td>• demonstrates general understanding</td>
<td>• demonstrates overall understanding</td>
</tr>
<tr>
<td>Application</td>
<td>• has several minor errors</td>
<td>• has few minor errors</td>
<td>• rare errors</td>
</tr>
<tr>
<td>Problem Solving</td>
<td>• sometimes arrives at accurate solutions</td>
<td>• usually arrives at accurate solutions</td>
<td>• always arrives at accurate solutions</td>
</tr>
</tbody>
</table>
Cool Palette Painting Rubric

<table>
<thead>
<tr>
<th>Component</th>
<th>Ideas</th>
<th>Connections</th>
<th>Extensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sketch</td>
<td>• preliminary work is displayed on tissue and transferred onto white card</td>
<td>• shading on the sketch indicates light and dark areas and textures to be included in the final work</td>
<td>• sketch is complete enough to use as a painting blueprint</td>
</tr>
<tr>
<td>Unity</td>
<td>• all colours are from a cool palette</td>
<td>• palette-mixed, rather than surface mixed paint</td>
<td>• toned colours combined to create depth, volume and sense of texture</td>
</tr>
<tr>
<td></td>
<td>• pure colours are used throughout</td>
<td>• mixed colours are of equal intensity</td>
<td></td>
</tr>
<tr>
<td>Brush Technique</td>
<td>• brush selection suits the medium</td>
<td>• brush variety is used to create visual interest</td>
<td>• brush strokes used to create volume, texture and depth</td>
</tr>
</tbody>
</table>

Rubric for a Discussion Paper


<table>
<thead>
<tr>
<th>Components</th>
<th>Ideas</th>
<th>Connections</th>
<th>Extensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content</td>
<td>• Identifies the hypothesis</td>
<td>• Draws attention to the relationship among the paper's topics</td>
<td>• Evaluates the applicability of the paper's hypothesis</td>
</tr>
<tr>
<td></td>
<td>• Statements are accurate in terms of the paper</td>
<td>• Provides examples to illustrate concepts</td>
<td>• Extrapolates from the paper to other situations</td>
</tr>
<tr>
<td></td>
<td>• Summary accurately depicts the paper's content</td>
<td>• Connects the paper's content to the course content</td>
<td>• Relates the paper to other disciplines or to the broader field</td>
</tr>
</tbody>
</table>

Case Studies: Nursing
(The "Broken Toaster" approach)

<table>
<thead>
<tr>
<th>Good</th>
<th>Better</th>
<th>Ideal</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Patient's symptoms are accurately identified and classified (point out what the problem is)</td>
<td>• Plausible cause/effect inferences are made (identify potential causes and effects of the presenting problem)</td>
<td>• Viable treatment options are proposed (presents options that will ameliorate the problem)</td>
</tr>
<tr>
<td>• Basic diagnostic protocol is followed</td>
<td>• Differential diagnoses are based on presented physical findings</td>
<td>• Potential preventative actions are suggested</td>
</tr>
</tbody>
</table>
### Tables of Specifications

*Adapted from: Foster Young, S. (2005). Teaching, learning and assessment in higher education: Using ICE to improve students’ learning. Presented at the ISL Symposium, UK.*

<table>
<thead>
<tr>
<th>Content</th>
<th>Ideas</th>
<th>Connections</th>
<th>Extensions</th>
<th>Totals</th>
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<tr>
<td>Privatization</td>
<td>10</td>
<td>10</td>
<td></td>
<td>20</td>
</tr>
<tr>
<td>Mergers and Acquisitions</td>
<td>10</td>
<td>10</td>
<td></td>
<td>20</td>
</tr>
<tr>
<td>Gender Discrimination</td>
<td>20</td>
<td>10</td>
<td></td>
<td>30</td>
</tr>
<tr>
<td>Ethics</td>
<td>30</td>
<td></td>
<td></td>
<td>30</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>30</strong></td>
<td><strong>30</strong></td>
<td><strong>40</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

### Getting started on a rubric for an assignment or project

- If you have access to papers or a project you have already graded:
  - Separate the papers into 3 piles
    - Barely passing grades
    - Middle range grades
    - High grades
  - Record the characteristics of the papers in each pile that enabled you to make the judgments you did
  - Use the ICE word list as a reference to help refine the descriptors
Four Basic Questions:
Purposeful Assessment for Intended Learning

- What do your students need to be able to do, or know, by the end of your course?

- How do they need to “know” it?

- What instructional methods are most likely to support that type of “knowing”?

- What assessment opportunities will enable students to demonstrate that they “know” the material in that way?

Reference List


Appendix B

Workshop Activity

Interpreting Learning through Journal Entries

Journal Entry - Student #1

We covered a lot of material in today’s class! Now I know about member interdependence (the amount of interaction and reliance between group members) and that inter-dependence can be positive, negative or neutral. Positive inter-dependence is when there is co-operation among group members that helps them reach their work goals. Negative inter-dependence is when group members actually work independently or even end up competing with each other and that usually results in a poorer end product. We also covered several ways that teachers can structure working groups so that group members are more likely to co-operate.

Journal Entry – Student #2

In tonight’s class, I finally realized why things often go so badly for so many of the project-teams at work! It makes sense that people use information about the rewards that are being offered to make decisions about how best to approach work to maximize their chances of getting the reward. I now see what had been happening: Management had been creating negative interdependence by offering individual bonuses as rewards but they were expecting us to work collaboratively (positive interdependence). If we’re going to have bonuses of any kind, they need to be GROUP bonuses, not INDIVIDUAL bonuses. The promise of an individual bonus is likely what caused secrecy and competition among group members – the last thing you’d want to happen in a project-team! WOW! It’s now so obvious why those groups weren’t working! There were too many conflicting messages!

Journal Entry – Student #3

The topic of inter-dependence and the effects of reward-structures really became clear when I had a look at the grading scheme for this course and compared it to some others I’ve been in. It’s pretty clear to me now that the teacher set up the grading scheme so that we would work as a group and not individualistically. We’ll actually end up getting higher grades for helping other people in the class do better! I can see how we would probably work more on our own if the grades (rewards!) were given in the usual way. Hmm.
### Words Associated with Different Qualities of Learning

#### Ideas

<table>
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<tr>
<th>verb</th>
<th>verb</th>
<th>verb</th>
<th>verb</th>
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<th>verb</th>
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</thead>
<tbody>
<tr>
<td>assemble</td>
<td>describe</td>
<td>label</td>
<td>mimic</td>
<td>recognize</td>
<td></td>
</tr>
<tr>
<td>calculate</td>
<td>duplicate</td>
<td>list</td>
<td>name</td>
<td>report</td>
<td></td>
</tr>
<tr>
<td>cite</td>
<td>follow</td>
<td>locate</td>
<td>operate</td>
<td>repeat</td>
<td></td>
</tr>
<tr>
<td>compile</td>
<td>identify</td>
<td>match</td>
<td>participate</td>
<td>reproduce</td>
<td></td>
</tr>
<tr>
<td>define</td>
<td>imitate</td>
<td>memorize</td>
<td>recall</td>
<td>state</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>tolerate</td>
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</table>

#### Connections

<table>
<thead>
<tr>
<th>verb</th>
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<th>verb</th>
<th>verb</th>
<th>verb</th>
<th>verb</th>
</tr>
</thead>
<tbody>
<tr>
<td>adapt</td>
<td>classify</td>
<td>coordinate</td>
<td>illustrate</td>
<td>relate</td>
<td></td>
</tr>
<tr>
<td>adjust</td>
<td>code</td>
<td>diagram</td>
<td>infer</td>
<td>solve</td>
<td></td>
</tr>
<tr>
<td>appraise</td>
<td>collate</td>
<td>differentiate</td>
<td>integrate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>assess</td>
<td>combine</td>
<td>discriminate</td>
<td>interpret</td>
<td></td>
<td></td>
</tr>
<tr>
<td>blend</td>
<td>compare</td>
<td>distinguish</td>
<td>modify</td>
<td></td>
<td></td>
</tr>
<tr>
<td>calibrate</td>
<td>compute</td>
<td>estimate</td>
<td>organize</td>
<td></td>
<td></td>
</tr>
<tr>
<td>categorize</td>
<td>convert</td>
<td>explain</td>
<td>rate</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: verbs such as blend, collate and adapt may refer to both skill development and cognitive learning

#### Extensions

<table>
<thead>
<tr>
<th>verb</th>
<th>verb</th>
<th>verb</th>
<th>verb</th>
</tr>
</thead>
<tbody>
<tr>
<td>analyze</td>
<td>critique</td>
<td>evaluate</td>
<td>judge</td>
</tr>
<tr>
<td>appraise</td>
<td>defend</td>
<td>extrapolate</td>
<td>justify</td>
</tr>
<tr>
<td>compose</td>
<td>design</td>
<td>hypothesize</td>
<td>predict</td>
</tr>
<tr>
<td>create</td>
<td>develop</td>
<td>invent</td>
<td>propose</td>
</tr>
</tbody>
</table>

Based on the ICE taxonomy described in:

Appendix D

Ethics Clearance Letter

July 3, 2007

C. Susan Fostaty Young
Doctoral Candidate/Teaching Fellow
Faculty of Education/Centre for Teaching and Learning
Queen's University

GREB Ref # GEDUC-338-07
Title: “Reflexive Narratives of Teachers’ Transformative Learning in Post-Secondary Settings: The Effects of Focusing on Learning Assessment”

Dear Ms. Fostaty Young:

The General Research Ethics Board (GREB) has given expedited approval to your proposal titled “Reflexive Narratives of Teachers’ Transformative Learning in Post-Secondary Settings: The Effects of Focusing on Learning Assessment”. In accordance with the Tri-Council Guidelines (article D.1.6) and Senate Terms of Reference (article G), your project has been approved for one year. At the end of each year, GREB will ask if your project has been completed and if not, what changes have occurred or will occur in the next year.

You are reminded of your obligation to advise the GREB, with a copy to your unit REB, of any adverse event(s) that occur during this approval period (details available on webpage www.queensu.ca/vpr/greb/add/forms.html#Adverse). An adverse event includes, but is not limited to, a complaint, a change or unexpected event that alters the level of risk for the researcher or participants or situation that requires a substantial change in approach to a participant(s). You are also advised that any adverse events must be reported to the GREB within 48 hours.

You are also reminded that all changes that might affect human participants must be approved by the GREB. Examples of required approvals are: changes in study procedures or implementations of new aspects into the study procedures that affect human subjects. These changes must be sent to Linda Frid at the Office of Research Services or FRIDL@queensu.ca prior to implementation. Ms. Frid will seek the approval of the GREB reviewer(s) who originally assessed your application or the GREB Chair.

On behalf of the General Research Ethics Board, I wish you continued success in your research.

Yours sincerely

Lee Fridiger, PhD
Associate Professor and
Vice-Chair, General Research Ethics Board

Copies: Malcolm Welch, Chair of E-REB
Susan Wilcox, Faculty Supervisor
Grad Studies and Bureau of Research
Appendix E

Email Recruitment Message

EMAIL Recruitment Message

*Reflexive Narratives of Teachers’ Transformative Learning in Post-Secondary Settings: The Effects of Focusing on Learning Assessment*

Dear Faculty Members,

Through your participation in one of our _____________, you were part of professional development sessions where the ICE model of assessment was a featured component. Sue Fostaty Young, who facilitated those sessions, is currently conducting research about the use of ICE as an educational development tool. This email is being sent to you on her behalf to inform you about the project and to invite your participation.

The research underway has been given clearance by the Queen’s University General Research Ethics Board and the research ethics committees of Algonquin College, Carleton University, Durham College, Fleming College, St. Lawrence College and the University of Victoria. Details about the project and information about the parameters for participation are attached.

If, after reading the attached letter of information, you are willing to be a part of the study, please contact Sue directly at fostatys@queensu.ca to let her know of your intention to participate. She will then contact you herself and respond to any questions you might have.

Thank you for your consideration of this request, and, for those of you who do choose to accept the invitation, Sue thanks you in advance for your participation.
Appendix F

Letter of Information

Reflexive Narratives of Teachers’ Transformative Learning in Post-Secondary Settings: The Effects of Focusing on Learning Assessment

This is a letter of invitation to participate in an investigation of the utility of ICE (Wilson, 1996; Fostaty Young & Wilson, 2000; Fostaty Young, 2005) as an educational development tool.

This research has been cleared by the Queen’s University General Research Ethics Board.

As someone who has become familiar with ICE, you are in an ideal position to contribute to a shared understanding of the changes that often occur when teachers are introduced to the ICE framework for teaching, learning and assessment.

To date, much of the current literature on teacher change is written from the perspective of the researcher. It is critical to me that the voice of the teacher becomes a central component in investigating the impact of ICE on teacher learning and that the change that results from that learning is defined, interpreted and reported by the teachers who experience it.

There are several alternative ways for you to participate in this investigation of change, all of which revolve around seeking answers to the same questions:

- What is the nature of the learning experience that faculty members undergo when they are introduced to the ICE framework?
- What impact does their learning have on their approach to teaching and on their conceptions of teaching and learning?

Answers to these questions (and other details that you consider pertinent) are being solicited at three phases of participation, each successive phase requiring greater degrees of involvement and each dependent upon participation in Phase 1.

Phase 1 Narrative – Participation at this level is accessible to anyone who has become familiar with ICE, regardless of whether you’ve implemented the framework in your teaching practice. If you’ve experienced learning or change of any kind as a result of your introduction to ICE, I’d like to hear from you.

Everyone who agrees to participate in the investigation is asked to submit a short reflexive narrative of a page or two in length that “unpacks” your own perspective and orientation to the changes you experienced. These narratives should be expressions of your own understandings of the nature and impact of change that resulted from learning about ICE and should also include any other factors that contributed to those changes and your learning. The narratives need not be formal and are not likely to take more than an
hour of your time. You are asked to submit narratives directly to me at fostatys@queensu.ca by November 1st.

Submission of a narrative will indicate your consent to participate in Phase 1 of the study.

After receiving your narrative I will develop a diagram of the theme patterns found and will share those with each individual Phase 1 participant. You will then be invited to edit and verify the diagrams to ensure they accurately depict your own experience of learning and change. You may end your participation in the study at this point if you choose to.

**Phase 2 Discussion Forum** – Up to 18 people will be invited to become part of a password-protected discussion forum on Queen’s University’s Web CT. Those 18 people will represent a cross section of disciplines, institutions, and years of teaching experience who also consent to continue their participation. In this phase, participants will be able to read one another’s reflexive narratives so that they can engage in dialogue that focuses on the nature and impact of the learning and change they experienced. Here we will all discuss not only changes that occurred, but also our perceptions of what the critical elements are of effective development interventions and relationships. I anticipate that engaging in this on-line dialogue with one another will actually help you achieve a better understanding of your own practice and the story of your development as a teacher. I expect that the discussion forum will run from mid-January until mid-March but timing of the implementation and duration of the discussion forum will be largely at the convenience of those who participate. Once a member of the Phase 2 group, you will be able to determine your own level of participation in the discussion forum but it is expected that if you do join the forum you will be an active contributor.

Exchanges on the Web CT site will be accessible only to those who are a part of Phase 2 engagement. You are not obligated to answer any question posed to you through the forum that you find objectionable or that makes you uncomfortable. You may choose to use a pseudonym while participating in the discussion forum though, due to the nature of the forum, I cannot guarantee your anonymity.

If upon being asked, you agree to participate in the Phase 2 Discussion Forum, you will be asked to complete and return a letter of consent.

Participation in this investigation is entirely voluntary and you may limit your participation to Phase 1 (submission of a narrative) if you choose to. Only those who participate in Phase 1 may participate in Phase 2.

You are free to withdraw from the study, without reason, at any point, and you may request removal of all or part of your data at any time.

This research may result in publications of various types, including journal articles, professional publications, newsletters, books, and instructional materials for post-secondary institutions. Your name will not be attached to any form of the data that you provide unless your express permission has been gained to identify authorship of intellectual property.
Neither will your name or the identity of your place of work be known, nor will these appear in any publication created as a result of this research. A pseudonym will replace your name on all data that you provide to protect your identity if you so choose. If the data are made available to other researchers for secondary analysis, your identity will never be disclosed.

If you have any questions about this project, please contact me at fostatys@queensu.ca or Dr. Susan Wilcox (Dissertation Supervisor) wilcoxs@queensu.ca. For questions, concerns or complaints about the research ethics of this study, please contact Dr. Rosa Bruno-Jofré (Dean of Education) brunojor@educ.queensu.ca or the Acting Chair of the Queen’s University General Research Ethics Board, Dr. Stephen Leighton at chair.GREB@queensu.ca
Appendix G
Interpretive Diagram of Learning

Impetus for Professional Development
- Difficulty communicating expectations to students

Reported Learning
- Gained vocabulary to better articulate expectations for learning
  - Used ICE to create rubrics, assignments and questions for classroom use
  - Reported becoming more purposeful in both her teaching and assessment and more aware of her students’ learning
  - Reports satisfaction that assignments now engage students at variable levels of complexity

Effects on Practice

Effects on Thinking about Learning
- Reported no conceptual change though acknowledged that ICE provided a framework that resonated with her own tacit understandings of learning
Appendix H

Summary of Preliminary Findings

Hello all!

After quite a tumultuous year that has resulted in an extended period of silence on my part I’m now making contact with everyone who had expressed interest in participating in my investigation of ICE-focused professional development - whether you were able to contribute to the discussion or not. I appreciated all expressions of interest.

First off, my thanks go out to all of you who took time to answer my (sometimes endless) questions and who engaged in some wonderful conversations about your professional learning. I know that it isn’t often that we, as teachers, have the chance to confront our own learning and probe its impact.

I also appreciate your willingness to share your valuable time with me. Through this study I gained greater insight into just how time-stretched and involved you all are. Thank you.

That said, I thought you might like to know what I was able to glean from your narratives and our virtual conversations. I’m not entirely sure that I’ve captured everything or gotten it all exactly right, so I’m looking forward to hearing from you to help set things straight. I’m anxious to see how our collective insights might be able to shape new approaches to educational development and scholarship.

On the topic of the influences of ICE on teachers’ conceptions of teaching and learning:

- The framework and underpinnings of ICE seemed to help uncover (rather than change) conceptions of teaching and learning that were already held but which, until learning about ICE, were largely inaccessible and unarticulated. It was as though ICE provided a way to get at what was already there.

- For the few of you who did report conceptual change, the most significant aspect of that change was a movement from a quantitative, check-list type conception of learning and assessment to a more qualitative orientation.
What about the ICE model, if anything, do faculty members identify as critical to their learning?

- The focus on student learning rather than on teaching
- The simplicity of the model
- The provision of an accessible framework for easy communication about expectations for learning
- The comparative accessibility and portability of ICE compared to other taxonomies
- Provides a framework through which to do as well as to think; a practical way of actualizing conceptions
- The model represented many teachers’ already existing but deeply buried conceptions of teaching and learning
- The model simplified and clarified learning without distilling out the complexities of it
- It hit home the differences between covering the curriculum material and meaningful learning
- It had direct implications for teaching; it provided a theory as well as furnishing some practical applications

How is thinking about teaching and learning different now?

- Almost everyone reported becoming more purposeful in their decision-making about instructional methods and assessment
- An enhanced awareness that learning can be greatly influenced by assessment; that assessment is value laden and a part of teaching not apart from it
- With ICE as a framework the primary focus is on the students’ learning; decisions about teaching follow only after decisions about learning.

What elements of the development experience were critical to faculty members’ learning?

- Seeing how to implement meaningful changes in one’s own classroom immediately after a workshop/reading
- The sharing of examples of implementations from across the disciplines
- Encouragement to determine what Ideas, Connections and Extensions might look like in one’s own context
- The *Broken Toaster* analogy

Again, thank you all for your expressions of interest in and contributions to this project; I appreciate it tremendously.

Sincerely,

Sue

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Literature and Context
Influencing the Study
- Substantive changes in teaching are unlikely unless conceptions of teaching and learning also change (Åkerlind, 2004; Ho, Watkins & Kelly, 2001).
- There is significant lag time between a teacher’s conceptual development and appreciable change to their teaching practice and therefore to student learning (Gibbs & Coffey, 2004; Postareff et al., 2007).
- Exploration of assumptions and conceptions make them more explicit and permeable to change (Mezirow, 2000).
- Assessment, more than any other teaching function, reveals an individual’s dominant conception of teaching and learning (Pratt, 1992).

Research Design
- Two-phase, dual focus, collaborative heuristic inquiry.
- Investigate faculty learning from faculty member’s own perspectives.
- Self-study of educational developer’s learning-assessment focused practice.
- Analysis of university and college faculty members’ personal narratives of significant learning after participation in assessment focused professional development where ICE (Fostaty Young & Wilson, 2000) had been a feature component.
- 3-month ongoing, electronically facilitated, development relationship and collaboration.

Research Questions
- Faculty Focus:
  - How, if at all, does a learning-assessment orientation to educational development influence faculty members’ conceptions of teaching and learning?
  - What impact does the ICE model of assessment and learning have in facilitating faculty members’ conceptions of teaching and learning?

Principles of Practice
- Invite faculty members to explore what learning looks like.
- “Try on” taxonomies of learning.
- Share examples, anecdotes, and caveats from across disciplines.
- Provide ample time for reflection and supported practice using new frameworks.
- Base all interactions on individuals’ level of conceptual growth.
- Enable faculty members to be the best teacher that their skill set and conceptual understanding allows.
- Maintain focus on intentional, learning-focused teaching practices grounded in current theories of learning.

The Utility of ICE as an ED Tool: Faculty members’ perspectives
- “The primary effect has been to clarify and externalize my beliefs about teaching and learning.”
- “ICE has helped me articulate my existing, but deeply internalized approaches to teaching and to assessment.”
- “This has been transformative because it provided a means to actually deliver all the things I thought I already knew.”
- “For the first time I saw a clear connection between assessment and learning.”
- “I immediately had a structure on which to align and guide my teaching.”
- “I am now much more intentional about my teaching.”

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Appendix J

Identity Coded Narrative

Getting my feet cold: A Teaching Story about ICE and Me

I first encountered the ICE framework at a workshop in December 2004. Even from the start I was very excited about the potential of this model in my teaching practice. My first impression was that ICE articulates my existing but deeply internalized assessment model. ICE reaffirmed my own value system of what makes for a good essay, for example. My initial joy upon being introduced to ICE stemmed from the realization that I now had a clear, external tool to explain to students why they had received the mark that they did. (In the past, I had tried to get students to reach beyond the minimum requirements of the assignment by asking for “sparkle” – that was the best word I could come up with to describe the intellectual risks and excitement that come from bold connections and extensions). In the winter term of 2005, I used ICE “privately” to calibrate my own marking. I developed a rubric for an essay assignment. But for the most part my use of ICE was limited to applying its language to my comments on assignments and in informal meetings with students. When I returned from my maternity leave in September of 2006, I used ICE in a much more broadly integrated fashion. First, I expanded the use of ICE rubrics, printing these on the back of each assignment sheet for all my classes. Second I took time (usually on the second day of classes) to introduce the students to ICE, using a worksheet that I developed for this purpose. Also I have become famous in the department for telling the story of the ICE approach to a broken toaster. Finally, I now carefully apply ICE to the design of the assignment building in an ideas, connections and extensions component into each assignment and highlighting the key verbs in italics. Currently I am composing an exam and am applying the principles of ICE to these questions.

It seems perhaps hyperbolic to say that ICE has transformed my teaching practice, but I believe this to be true. Contrary to the metaphorical characteristics of ICE as being slippery, the ICE framework has actually given me a firmer foothold in thinking about assessment. I am now able to clearly articulate the value system of critical thinking skills that underpins assessment in my course. I feel confident assessing student work based on something else other than my gut feeling. Likewise the students are better able to parse their assignments and understand why they received the grade they did. I also see students studying the rubric and trying to reach for those extensions. The other advantage of ICE comes at the ‘front-end’ in assignment design. ICE helps me to consider the nature of the assignment and to check that the assignment makes use of different levels of critical thinking. I think it is important for students to build from ideas, to connections, to extensions. As a result, I think my assignments are more accessible and interesting to a
wider range of students, allowing a measure of success for all students but also opening opportunities for extensions from higher-achieving students.

JSNp3

You ask, what impact does learning about ICE have on my approach to teaching or on my conception of teaching and learning. Again I think the primary effect of ICE has been to clarify and to externalize what I already believed about teaching and learning. My philosophy, if you can call it that, is that I don’t want to give students a lot of facts or basic ideas. My goal is to ask lots of questions that invite them to make connections and extensions. Even for my first year drama lecture (200 students) in DRAM100, I designed the course this year to move away from delivering a lot of information. Instead the course has been organized around a series of grand questions. These are questions that students will continue to ask through their four years in our program. These are questions which I continue to grapple with in my research. Students are encouraged to apply their current level of experience to engage with these questions at whatever level of complexity they can. My goal is to get them excited about the connections and extensions percolating in the field of dramatic studies. Ultimately ICE provides a road map to the kind of students that I want graduating from our program. Rather than students who can describe the parts of the broken toaster, I want students who will go out into the world and fix the broken toaster. Because as we all know, there are lots of toasters in the world that need fixing.

JSNp4

I think that probably covers it. Let me know if you want clarification about any of this. I am also attaching the rubrics, assignments and worksheets I use featuring ICE.
ICE is so simple and is so learner centred that it was a natural connection for me to make to EE because the focus was not on pushing learning to the learner, but on engaging the learning in working toward their own improvement. To me, this brought learning down to the personal level - FINALLY! It creates opportunities for teachers (and I'll come back to the word shortly) to establish a framework within which their learners can succeed by understanding the basic information, drawing connections between key points and making inferences about the future. This is exactly what EE was/is talking about. Finally, education (or a model of it) can be oriented to the future of learners!

So, back to the word "teacher." I have never been comfortable with this term, nor have I quite liked "instructor" or "professor." To me, they all have prescriptive undertones. Granted, they are the accepted terms in todays education system and, so, I have accepted their use in conjunction to me, but I refer and have always referred to myself as a *learning facilitator*. Now, knowing about ICE, I can actually bring my self-imposed title into action because I have a model now that allows me to facilitate rather than prescribe.

To summarize, to me learning about ICE has been a transformative experience because it, for the first time, provides a means by to actually deliver all the things I think I already knew.

*What (if anything) are you doing now in your teaching that you weren't doing before?*

I am not quite at the point of already doing anything because I just learned about ICE only a couple of weeks ago. However, it has fundamentally changed the way that I am planning future courses (and revisions to existing ones). Learners need to know, not only the basic facts and information in the course but how and why this is important to them. Their learning needs to be offered in a framework of reality, rather than in a silo. So, learners in my new courses slated
for fall 2008 will encounter hands-on and group real-life problem solving and community awareness building exercises and activities. Learners will determine the subjects of their assignments and, as needed, the proposed audience. They will make all the arrangements necessary to plan, decide, problem solve, research and deliver their message - to benefit some community around them (local public school, seniors' residence, shopping mall, the college cafeteria, etc). Their learning will be framed in real experiences, contributing to the body of knowledge, priority setting and planning and public participation. I am determined that learners will not spend hours and hours writing essays to be submitted so that I am the only one who benefits. Learners will become self-directed decision-makers.

*To what do you attribute those differences?*

LW5p11
I attribute these changes to a new way of thinking about education and learning opportunities. This has been provided to me by the ICE model. In hindsight, it seems so simple and I question why it hasn't been as commonplace as I suspect it should be. ICE provides a framework for actually being able to /*do*/. If you think about it a bit, there is an expression about teaching that has been around for years:/Those who can, do Those who can't, teach/

LW5p12
This has always troubled me because not being able to do something and having to teach, to me, doesn't contribute to my world meaningfully. Now, I can do it all. With ICE and with my EE background, I can /*do*/ again and I can still teach or, rather, facilitate learning!

*Because I know that ICE isn't the only factor, please include mention of other things that contribute to the big picture.*

LW5p13
I think I captured this in answers noted above, but I have a few extra thoughts:

LW5p14
In my answer to the first question, I wrote "To me, this brought learning down to the personal level." This statement correlates changes in education to the very nature of sustainability challenges we face. So many of us hear about the world's environmental problems and brush it off as someone else's problem, or the government will
take care of it, or it is the responsibility of industry since they are the cause, or technology will find a solution. "How can /\*I*/ do anything when I'm just one person?" What most people forget is that things like government, industry and technology are human constructs and that we are each responsible for them.

LW5p15

I firmly believe that, if we can fundamentally alter the system of education in order to personalize learning so that each person develops to his/her own potential /vis à vis /such things as self-reflection, critical thinking, and problem solving, then we might be able to personalize the nature of the global sustainability problem.

LW5p16

The whole is greater than the sum of its parts, but people nowadays don't think in terms of wholes. They have been educated to think in terms of parts, specializations, minutia, etc. ICE draws learners to make _personal _connections between _fundamental _ideas and, by doing this, /the scale of one's look at the surrounding world gets larger/. The more connections and the more inferences about implications, risks and benefits, the greater the comprehension of the "larger picture." This is the development of systems thinking at its very finest - developing the concept without teaching anything about systems.

LW5p17

A colleague in Guelph has always said (and I agree and I've taken her words and used them myself), "I am just a sower of seeds. I toss out kernels and nuggets of information, ideas, concepts and allow people to take them and let them germinate. Something expected might bloom over here and something unexpected might bloom over there, but blooming will occur as people have time to assimilate ideas on their own." She is connected with Environmental Education Ontario and has been active for years as an advocate to re-include EE within the provincial public school curricula. To her credit and that of others with whom she worked, the McGuinty government reintroduced EE last fall and, now, folks are working toward establishing a framework for its reimplementation.

LW5p18

There is so much at stake. It's a global issue affecting the future of our species on this planet. ICE provides a framework to help make the change that helps solve the problems facing the future of our species.
This is what I would like to focus on as the primary research project for my doctoral studies - conjoining ICE and EE - and it will start with my paper, *Learning and the ICE Age*, expected in draft hopefully before the end of June.