Students' Responses to
Innovative Instructional Methods:
Exploring Learning-Centred Methods and
Barriers to Change

by

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Author's Declaration

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

I understand that my thesis may be made electronically available to the public.

Abstract

This exploratory research investigates students' responses to innovative instructional methods, focusing primarily on identifying the barriers that discourage students from engaging with methods that are new or not expected. The instructional methods explored are examples of learning-centred teaching and assessment methods, and are considered to be innovative since they are not yet widely used in higher education.

To investigate this issue, literature from organizational change management, resistance to change, and higher education is reviewed. Gaps from the higher education literature suggest that no comprehensive framework or model exists regarding students' barriers to engaging with innovative, learning-centred instructional methods. Additionally, few studies compare faculty member and student perceptions, clarify whether the instructional methods studied are innovative for the students, or apply theories and concepts from the change management literature. This research attempts to address these gaps.

Case study methodology is selected to enable a detailed study of a course that employs innovative instructional methods. A modified grounded theory approach is used to inform both research instrument design and data analyses. Data are collected from multiple sources and via multiple methods, and both thematic and comparative analyses are presented.

Overall, support is found for the four research propositions posed. The students' barriers fall into eight key themes, and comprise various codes and properties to provide further understanding. The saliency of the codes appears to vary by time of term and type of instructional method. Other relevant factors include: the students' year of study and amount of instructional variety, the academic discipline and culture of the innovative course, and misalignments between the students' and instructor's perceptions of the barriers to change. The value of course evaluation data as feedback about innovative courses is also questioned. Finally, connections are made between the findings and the Reasoned Action Approach theory for future possible research.

The findings provide a new comprehensive barrier framework, analytic fishbone tool, and testable theory to help guide the development of future research projects. Additionally, future practitioners – both faculty members and educational developers – can benefit from

knowing what factors to consider when planning for and confronting student resistance to innovative instructional methods.

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Dedication

This thesis is dedicated to those closest to my heart:

To the boys who surround me every day – my three wonderful sons and my loving husband – I am on my way back to you, thank you for waiting.

To the women who made me who I am – my late mother and maternal grandmother – you will be with me always and forever.

Finally, to my late father – in some of your last words to me, you told me to get this project done, and so I did.

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Chapter 1: Introduction

Faculty frequently report to me that students often become nervous and mildly anxious when they face a new unfamiliar way of teaching. Students seem to get uneasy when someone appears to be changing the rules of the game. Many prefer a known challenge to an unknown challenge, even when the new way is intended to be more interesting and beneficial, and they can dig in their heels and resist efforts to get them to participate. When students react this way, it discourages faculty from trying new ways of teaching. (Fink, 2003, p.221)

When faculty members change an instructional method to one that is new or not expected for students in the context of a given course, they are, from the perspectives of their students, imposing an innovation. This innovative instructional method is a teaching and/or assessment method used in a course, and while it is typically not brand new to the higher education environment, it is novel to the students experiencing it. One common result of such a change is that students resist (Akerlind & Trevitt, 1999; Albers, 2009; Allen, Wedman & Folk, 2001; Doyle, 2008; Felder & Brent, 1996; Keeney-Kennicutt, Gunersel, & Simpson, 2008; Modell, 1996; Pepper, 2010; Reimann, 2011; Weimer, 2002; Woods, 1994, 2003), and this resistance can come in various covert and overt behavioral forms, including refusal to participate in class, complaints to department Chairs, and low course evaluation scores (Kearney & Plax, 1992). In some cases, the resistance seems to dissipate by the end of the course, although the reasons for this have not been studied empirically (Kember, 2001; Felder & Brent, 1996; Mallinger, 1998), but in many other cases, the resistance continues term after term, and how or whether it gets resolved is also largely not well-understood (Keeney-Kennicutt et al., 2008).

When resistance occurs, particularly when it is maintained throughout a course and occurs again in subsequent offerings of that same course, the results can be a poor learning experience for the students and a demoralized faculty member. In some cases, the resistance may be justified, such as when the new method is a poor choice in relation to the intended course learning outcomes. However, at other times the resistance may be unwarranted, and it can lead faculty members to give up and resume their former and often more traditional ways of teaching, thereby not enabling the profession to learn whether the new method has

pedagogical value in their context (Felder & Brent, 1996; Hockings, 2005; Messineo, Gaither, Bott, & Ritchey, 2007). Some researchers suggest that institutional administrators should come to expect such resistance in relation to the implementation of innovative instructional methods and avoid penalizing faculty members for it (Allen et al., 2001; Kember & Wong, 2000), but this stance could make it difficult to discern viable new methods from those that truly should be abandoned.

It is beneficial, then, to learn more about the factors underlying student resistance to innovative instructional methods as a first step in learning how to mitigate this resistance so that the value and utility of new methods of teaching and assessment can be assessed. Very few studies of course-level resistance from the perspective of students have been identified (see Albers, 2009; Pepper, 2010; Reimann, 2011), enabling this study to move forward early conversations in the research literature.

Based on Lewinian change management theory, this research aims to explore why students may resist instructional innovations so that an empirically based, comprehensive framework and model of possible barriers to change can be constructed. To guide this exploratory investigation, the research focuses on the following questions:

- What are students' barriers to change for a course that uses innovative instructional methods, beginning from the outset of the course through to the end, and which are most salient?
- How might the students' year of study, academic discipline, and amount of instructional variety experienced affect the possibility of resistance, and how could any effects found inform decisions about when it is best to innovate in a curriculum?
- Do students and faculty members identify the same barriers to change? If not, what are the differences and what are the implications of these differences?

This research is descriptive in nature and not normative or prescriptive. It is based on a theoretical and empirical foundation that allows for a systematic way to analyze the situation, isolate the components, and begin to understand the relationships between and amongst the components. This is the first step in the scientific method – to identify, categorize, and understand. The creation of a barrier framework assists with model creation and should help to inform and focus future research and practice on how student resistance may be overcome.

Using case study methodology and a modified grounded theory approach that was based on literature from change management and higher education, two sections of one course that employed innovative instructional methods were studied. The primary focus was on identifying reasons that would discourage students' willingness to engage with the methods used in the course. This comprehensive perspective revealed eight barrier themes that comprised 18 codes and 35 properties, all of which were captured in an analytic fishbone diagram. The most salient codes included: methods preferences, effect on grades, time, clarity, peers, class time, autonomy, and acceptable methods. These codes were then distilled into two key overarching themes of risk of negative consequences and lack of control, which assisted in identifying how the exploratory findings may fit into an existing theoretical framework for future testing.

Findings from this exploratory research, while tentative, suggest that students have a multitude of possible barriers to change that instructors may not be aware of or may not understand in the same way as the students and, therefore, may not address. The findings also suggest that the barriers may vary according to time of term and type of instructional method employed, and the resistance may be affected by the students' year of study and amount of instructional variety, and the academic discipline of the course – all of which can add to the complexity of this change management situation. This research has relevance for both instructors and educational developers who seek to better understand and mitigate students' resistance to instructional innovations, as well as for higher education administrators who aim to understand the results of innovative courses.

In the rest of this chapter, the research problem is described in more detail to provide a deeper understanding of the underlying context and the push for instructional change involving learning-centred methods. Then, an outline of the dissertation concludes the chapter.

1.1 Innovation in Higher Education: The Call for Change

Current higher education research literature encourages faculty members to adopt new and different teaching and assessment methods as a means of improving student learning (Christensen Hughes & Mighty, 2010b). A research strand, called the scholarship of

teaching and learning, has also emerged that provides a recognized venue for faculty members to publish about their experiences with and the impacts of new instructional methods. But where does the push to change stem from?

Over the past number of decades, the higher education literature has been publishing increasingly more theoretical and empirical work about the need for a paradigm shift in the overall purpose of post-secondary institutions, which includes changing the instructional methods to achieve a new purpose. The shift involves moving away from a didactic, teaching-centred paradigm to a more active, learning-centred paradigm, based on on-going findings about the nature of learning (Barr & Tagg, 1995; Halpern & Hakel, 2003; Ramsden, 1992; Smith, Johnson, & Johnson, 1981; Weimer, 2003), but calls for a paradigmatic shift can be traced back to the turn of the 20th century (Christensen Hughes & Mighty, 2010a). Barr and Tagg's comprehensive overview of the proposed shift from the dominant Instruction Paradigm to a new Learning Paradigm notes changes that are needed in all aspects of education, including teaching methods, conceptions of teaching and learning, roles of teachers and students, and criteria for success, in order to make this paradigmatic change (see Appendix A for a summary table). Within the envisioned Learning Paradigm, learning itself gets recast from being a teacher-delivered accumulation of knowledge to being a learner-centred process of creating holistic, interconnected frameworks. More recent authors speak about learning within this type of paradigm as being transformative, enabling students "to become self-directed as well as to examine critically their assumptions and views of themselves, their subjects, their contexts, and the world in general" (Christensen Hughes & Mighty, 2010b, p.4). Learning, then, involves a change in what and how one thinks.

In relation to instructional methods, Barr and Tagg (1995) indicate that "the Learning Paradigm fixes the ends, the learning results, allowing the means to vary" (p.21). As a result, students would experience and engage in a variety of instructional methods to achieve learning outcomes, thereby increasing their opportunity to become the flexible and adaptable learners needed in today's society (Entwistle, 2009). At the level of an individual course, didactic lectures and comprehension-based assessments would be replaced in this learning-centred paradigm by more facilitative and process-based methods such as discussion-based teaching, holistic portfolio assessments, and annotated problem-solving. With these types of

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changes, students would need to take more responsibility for their learning and instructors would need to let go of being "the sage on the stage."

More recently, Weimer (2002) identifies five key aspects of instructional practice that she feels need to be changed in making the move to more learner-centred instruction, based on the findings of empirical studies and her own experience: the balance of power (share with students), the role of the teacher (less directive), the responsibility for learning (to the students), the function of content (cover less but more deeply), and the purposes and processes of evaluation (students to do more assessing) (pp.50-53). Other literature focuses more on promoting deep approaches to learning as a means of making learning rather than teaching the point of instruction, and represents a specific perspective on learning-centred instruction (Entwistle, 2010; Halpern & Hakel, 2003; Millis, 2010). In the higher education literature, researchers such as Kember and Kwan (2000) and Hubball and Burt (2004) use the term "learning-centred" in relation to instructional methods and environments that fit with Barr and Tagg's (1995) Learning Paradigm whereas others use terms such as "student-centred", "student-focused", and "learner-centred" (Felder & Brent, 1996; Trigwell, 2010; Weimer, 2002). The practices encompassed by all of these terms put the focus on students' *learning* in the end rather than on faculty members' teaching; therefore, to acknowledge the breadth of the Learning Paradigm criteria, the descriptor "learning-centred" is adopted in this dissertation.

Overall, students who find themselves in courses that implement learning-centred methods are faced with a very different experience from those gleaned from more traditionally taught courses. However, this paradigm shift is not yet widespread. Weimer (2003) notes that "while everyone is in favor of learning, at the classroom level not much has changed. Instruction is by and large still about teacher performance" (p.50). Hence, making a shift to learning-centred methods is still typically undertaken by individual faculty members in their individual courses instead of by whole departments at the level of an entire curriculum. A change in one course makes it more likely to be a new, innovative experience for students and, therefore, potentially prone to student resistance even after the course has been offered this way over a number of terms.

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The lag in the paradigm shift is certainly evident in North American higher education institutions. For example, current practices in Canadian university classrooms do not show a significant move towards the active engagement of students in their learning as is evidenced by results from the National Survey of Student Engagement (NSSE). In the NSSE, Ontario universities, and particularly the University of Waterloo (UW), have scored below composite scores of comparable public institutions (Indiana University Center for Postsecondary Research, 2011a, 2011b). For example, in 2011, 75% of first-year students at UW never or sometimes asked questions in class or contributed to class discussions. In fourth year, the number was still 60%. As well, 71% of first-year students had never or sometimes worked with other students on projects during class; the percentage for fourth-year respondents was 75%. The mean differences for these items were all statistically significant ($p<.001$) when UW was compared with the overall NSSE results for all North American public institutions that participated in the survey (Indiana University Center for Postsecondary Research, 2011c), which are very similar results to those reported in 2006 (Indiana University Center for Postsecondary Research, 2006). These types of data strongly suggest that the majority of faculty members at UW do not currently use learning-centred instructional methods. The situation is deemed to be similar in other North American institutions given recent articles such as Zundel and Deane's (2010) call to transform undergraduate education in *University Affairs* and Christensen Hughes and Mighty's (2010a) call to action to change normative instructional practices. The fact that this very recent literature still refers to learning-centred ways of engaging in instruction as "pedagogical innovations" indicates that a paradigmatic change is not yet widespread.

As long as learning-centred methods are not part of the dominant educational paradigm in higher education, they will be new and innovative for many students and will represent a change in the teaching and learning process that challenges the status quo and requires changes in how students engage in the educational process and in how they conceive of what the process should or should not entail. Engaging with innovative methods is precisely what the learning-centred paradigm promotes when expanding the possibilities for the means of instruction and striving for more flexible and independent learning. However, the change being promoted will not necessarily be easy to implement. As a result, the move to adopt more learning-centred instructional methods is the change management situation being

studied in this empirical research, with a focus on innovation and possible barriers underlying students' resistant responses to change at the level of an individual course.

1.2 Innovation and Change at the Individual Course Level

From the diffusion of innovation literature, an innovation is simply something that is "perceived as new by an individual or other unit of adoption" (Rogers, 2003, p.12). This definition fits with previous work within higher education where an instructional innovation is "an instructional idea, technique, content, or process which is new to the adopting individual or group" and is viewed as a relative term since what is new to one person may not be new to another (Abedor & Sachs, 1978, p.3). For the purposes of this research, an innovative instructional method is a teaching or assessment method that is novel to students within the context of a particular course, be it a method they have never experienced before or one that they did not expect to encounter in that particular type of course. Students expect to encounter new content and new instructors throughout their entire educational careers, which at times can result in resistance (e.g., students in science courses can resist redefining misconceptions of basic scientific laws – see Wieman & Perkins, 2005). However, a change in instructional methods to something that is outside the norm – such as a change to learning-centred methods – is often not expected and seems almost guaranteed to result in at least initial resistance that will need to be overcome if the innovation is to be adequately assessed by faculty members and students for its instructional value.

1.2.1 Attributes of a Course

To help contemplate the research context of an individual course further, the attributes of post-secondary courses are identified as follows:

- They have an instructor and students who enter each course with past educational experiences
- They comprise content, teaching methods, and assessment methods
- They exist in a physical or virtual environment that includes on-going exchanges between the instructor and the students as well as student-to-student

- They are required or elective (or possibly both simultaneously for different student populations) and are at a particular level of difficulty (first-year through to graduate level) that places them within a larger degree program
- They exist within discipline-based academic departments that have norms regarding the typical behaviors and roles for students and instructors in learning and teaching content, skills, and attitudes
- They result in learning outcomes for the students both during the course and by the end of the term that affect both the students' and instructors' educational experiences for other courses

Students experience courses in continually changing contexts as they move from term to term in the process of completing their degrees, making the students and their learning environment both dynamic and individually oriented. Figure 1.1 provides an input-output visual model.

Figure 1.1: Post-Secondary Course Context: A Dynamic Input-Output Model
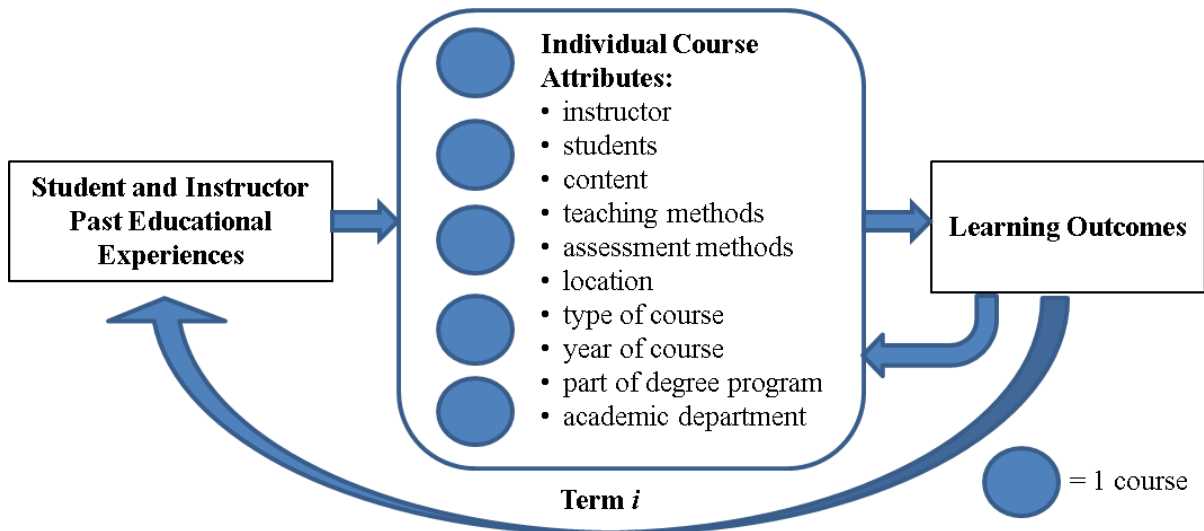
1.2.2 Lack of Preparation for Change

Instructors and students are key players in the context of a course and are the ones seeking new ways to interact when innovative instructional methods are used. For instructors, the changes being called for within the higher education literature typically require a change in their teaching practices; however, Weimer (2010) indicates that faculty members are often ill-prepared to implement significant changes to their teaching practices. They may read or

hear about an innovative instructional method and be eager to try it in an effort to help their students' learning, but they may not be aware of the possible repercussions of adopting such a method or know how to anticipate or manage the pushback that will inevitably come, at least from some of their students (Akerlind & Trevitt, 1999; Albers, 2009; Keeney-Kennicutt et al., 2008). Literature that promotes such instructional changes also often downplays the potential impact of student resistance to such changes (Blumberg, 2008; Doyle, 2008; Weimer, 2002). As a secondary issue, educational developers from teaching centres typically advocate the use of learning-centred methods and are on the front lines of trying to assist faculty members when resistance occurs, and yet these developers' preparation to provide assistance around student resistance is limited due to a lack of empirically based guidance from the research literature.

In my own role as an educational developer, I work with faculty members who want to move beyond the most commonly used instructional methods of didactic lectures, punctuated by midterm and final exams, to more learning-centred methods that engage the students more deeply, involve them in in-class activities, and require them to rely less on the professor and more on themselves and their peers. These methods deviate from how teaching is normally approached in their department or discipline, thereby representing types of innovations. Following are a few examples based on past clients:

- One professor of a large, mandatory, introductory business course requires his students, who come from departments across campus, to engage in a number of activities, such as work in teams both in and out of lectures, discuss and solve authentic problems, and do reflective writing in an e-portfolio. During the term, he spends a minimal amount of time lecturing, and assessment of student learning happens primarily via projects and reflections on individual and group learning.
- Another professor who teaches a required second-year course in engineering seeks active engagement in her math-based lectures by posing multiple questions that ask students to solve problems along with her instead of having her simply present the answers on the board.
- Yet another professor in the humanities who teaches a large second-year elective course aims to involve students in thought-provoking discussions and reflective

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writing about the course materials in order to teach critical thinking skills along with course concepts.

For all these instructors, the approaches to teaching and assessments of student learning that they employ in their courses sound feasible and fit with strategies being promoted in the higher education research literature. How could the students not be excited about engaging actively in their learning and thinking deeply not only about what they are learning but also about how they are learning? In all of these cases, however, many of the students were not excited, nor were they intrigued. The faculty members explained their rationale for why they had included these methods in their courses, and they provided supports to help the students learn how to use the methods. But the results were not positive. Many students resisted the different learning environments in which they found themselves, and their resistance often lasted throughout the whole course and was explicitly voiced on the end-of-term course evaluations. The faculty members were left feeling stunned, hurt, and unappreciated for their efforts to promote student learning. More tangibly, their salaries and chances at promotion and tenure were jeopardized by the negative student feedback on course evaluations.

1.2.3 Student Resistance to Change

The research literature comments on this phenomenon of student resistance as well and gives some insights into the student perspective when innovative methods are used. Lowman (1995) points out, "Students are in no ways passive pawns in the classroom game, doing just as instructed and keeping their emotions to themselves" (p.58). They can, and will, react, particularly when they feel dissatisfied. Making a change to more learning-centred methods is well-documented as being met with student resistance (Akerlind & Trevitt, 1999; Albers, 2009; Allen at al., 2001; Felder & Brent, 1996; Hockings, 2005; Keeney-Kennicutt et al., 2008; Modell, 1996; Reimann, 2011; Woods, 2003). For example, Felder and Brent indicate that "when confronted with the need to take more responsibility for their own learning, students may grouse that they are paying tuition—to be taught, not to teach themselves… course-end ratings may initially drop. It is tempting for professors to give up in the face of all that, and many unfortunately do" (p.43). Hockings (2005) corroborates this finding, indicating that students' traditional attitudes and expectations constantly gnawed at the resolve of the instructor she studied to stick with new learning-centred strategies (p.317).

That students can and do resist is not in question; why they resist, however, is not fully understood, and without this understanding, little can be done purposefully to mitigate the resistance or to identify times within a program when students may be most receptive to new instructional methods. In keeping with the input-output model presented previously in Figure 1.1, it would seem critical to attempt to understand students' experiences and perceptions both before they enter a course as well as during the course. As Ramsden (1992) points out, "students respond to the situation *they* perceive and it's not necessarily the same situation that we [instructors] have defined" (p.63, italics his).

Students also do not enter courses as *tabula rasa*. As they progress through their degree programs, they experience an increasing number of courses which affect their cumulative experience within the educational system. Over the duration of a degree, it appears that students develop increasingly stronger perceived norms about what to expect in courses (e.g., Albers, 2009; Doyle, 2008; Messineo et al., 2007; Reimann, 2011; Windschitl, 2002), particularly if they do not experience much variation in course formats (Kember, 2001). Their **year of study** and the **instructional variety** they experience, then, may be critical factors, but they are not often explicitly studied in the current literature on students' responses to innovative instructional methods. As well, students pursue their degrees within an **academic discipline**. Researchers indicate that the structure of knowledge and approaches to teaching and learning differ according to academic discipline and may thereby affect the variety of instructional methods that students experience as part of their discipline (Lindblom-Ylänne, Trigwell, Nevgi, & Ashwin, 2006; Nelson Laird, Shoup, Kuh, & Schwarz, 2008; Neumann, Parry, & Becher, 2002; Taylor, 2010), but the academic discipline of the students was also typically not explicitly considered in the literature located for this research.

Finally, given that the key actors within a course are the **students** and the **instructor**, the intersection between their experiences and perceptions also seems noteworthy. The very limited research that includes both student and instructor data strongly suggest that when resistance occurs the students and the instructor are not perceiving the innovative instructional situations similarly, resulting in a misalignment (Albers, 2009; Keeney-Kennicutt et al., 2008; Thorn, 2003).

To understand the barriers underlying students' responses to instructional innovations, then, the effects of the larger context of their post-secondary educational experience seem vital to consider. To ensure the validity of these responses to innovation, the need to hear directly from the students is also critical.

1.3 Outline of the Dissertation

This dissertation is divided into eight chapters. Chapter 1 introduces the research problem under study, including the research questions, methodology, and tentative findings, and provides some contextual background to instructional innovations in higher education. Chapter 2 includes a review of three main research areas: change management theory and models, resistance to change in organizations, and barriers to change in the higher education context. Specific gaps in the research literature are also highlighted. Based on this literature review, Chapter 3 provides a preliminary conceptual framework and diagram used to guide the research, and outlines the four research propositions that informed the data collection and analysis. Chapter 4 describes the qualitative research methodologies employed and provides context about the course used as the case study. Next, Chapters 5 and 6 address the research propositions and focus on the findings from this exploratory study, with Chapter 5 focusing on describing the key themes that emerged and Chapter 6 conveying the results of various comparative analyses. Chapter 7 provides a revised analytic diagram and discusses the implications of the findings in relation to the overarching research questions and a possible linkage to an existing theoretical model. In Chapter 8, possible theoretical and practical contributions are explained along with limitations of the study and ideas for future research.

Chapter 2: Literature Review

Given the focus of this research on change within higher education, the literature review begins by providing a brief overview of organizational change management theories and models to provide an underlying theoretical foundation for the research. To increase the relevance of this literature, possible linkages are made to the higher education teaching and learning context. Then, the literature on resistance to change in organizations is reviewed to further the theoretical foundation. From there, literature from higher education that identifies possible barriers to adopting innovative instruction that relies on learning-centred methods is categorized and explored. The section ends by identifying gaps in the research literature in order to demonstrate the need for this research.

2.1 Organizational Change Management Models

Given that organizational change management theories and models link most closely to business organizations, this section begins by exploring connections between business and higher education institutions. From there, a brief overview of change models that have been applied in higher education is provided before teleological change models are explored in more detail.

2.1.1 Making the Connection to Higher Education

Organizational change management models originally stemmed from research on business organizations; however, they can also be applicable in the higher education setting, even at the level of a course. At the macro level, higher education occurs within educational institutions, which are organizations much like businesses within industry. And these educational organizations exist within a shared larger societal and political framework, so they experience some similar issues and concerns with businesses (e.g., getting enough market share to be profitable, lobbying governments for policies and financial support, etc.). At a more micro level, they both have individuals within these organizations who are part of the change process. Managers oversee employees in business and instructors oversee students within the context of a course. The employees and students are also typically divided into smaller units: departments and work teams in business and programs and

courses in higher education. However, there are also critical differences between the two types of organizations that need to be kept in mind when trying to apply organizational change models in the context of higher education. For example, instructors and students work within different structures (e.g., courses) and hold different types of roles and functions than managers and employees in a business because the nature and purpose of the organizations are quite different.

Kezar (2001) recognizes such differences and has attempted to interpret six types of organizational change models within the context of higher education. The models that she discusses are: evolutionary, teleological, life cycle, dialectical, social cognition, and cultural. In <u>evolutionary</u> models, change can only be managed, not planned, and involves slow mutations of systems that are driven by and dependent on the external environment (pp.28-32). <u>Teleological</u> models are based on change being planned by leaders within the organization, rather than being a reaction to outside pressures. The leader is the central figure, broad internal consultation is a prime method used to make a change, and much focus is put on individual factors that inhibit change; however, the methods can be somewhat formulaic (pp.32-36). <u>Life cycle</u> models overlap somewhat with evolutionary ones, but they focus more on the development of individuals through training as they continue to adapt to natural development changes that occur within organizations (pp.36-40). Within <u>dialogical</u> models, the focus is the conflicts that occur in organizations due to power differentials; change occurs naturally as a result of these conflicts (pp.40-44). <u>Social cognition</u> models assert that each individual constructs their own sense of reality; therefore, change is a very individual process and does not always work because individuals have underlying mental models or schemas that may not enable them to understand a change as it was intended. Leaders, then, need to be able to communicate about a change from various perspectives and help individuals engage in learning needed to change their ways of thinking (pp.44-49). In <u>cultural</u> models, the focus is on context, symbols, and shared sets of beliefs and meaning within an organization, and change is often a slow process that stems from altering underlying values and beliefs (pp.49-53). Kezar also discusses the benefits of combining models to view various perspectives about or approaches to change. To her, "the assumptions we make about change are also assumptions about the nature of reality and people [and] each model helps us to understand different aspects of change" (p.25). She

connects the various models to research done within higher education, but she does not mention change at the level of a course.

Ideas from cultural and social cognition change models inform this research (e.g., beliefs about instruction identified as one possible barrier to change and focus placed on individual perceptions). However, the type of change occurring in learning-centred courses is an example of planned change – the instructors are still ahead of an evolutionary paradigm shift and have consciously chosen to use a method or approach in their course that falls outside the dominant, teaching-centred educational paradigm. For these reasons, teleological change models appear to be more applicable than deterministic ones such as evolutionary or life cycle models and, therefore, are examined in more detail.

2.1.2 Lewin's Teleological Models of Change

Lewin's work from the first half of the 20th century on the model of force field analysis is of particular relevance to this research as it provides a simple yet flexible model of the change process and identifies that different factors exist and play different roles in making a planned change. In this model, shown in Figure 2.1, there are driving forces that push towards a change and restraining forces that oppose the change, and both strive to exist in a quasi-stationary equilibrium (Lewin, 1948/1999, p.279-280).

Figure 2.1: Lewin's Force Field Analysis Model

Driving Forces   Restraining Forces

Quasi-stationary
equilibrium
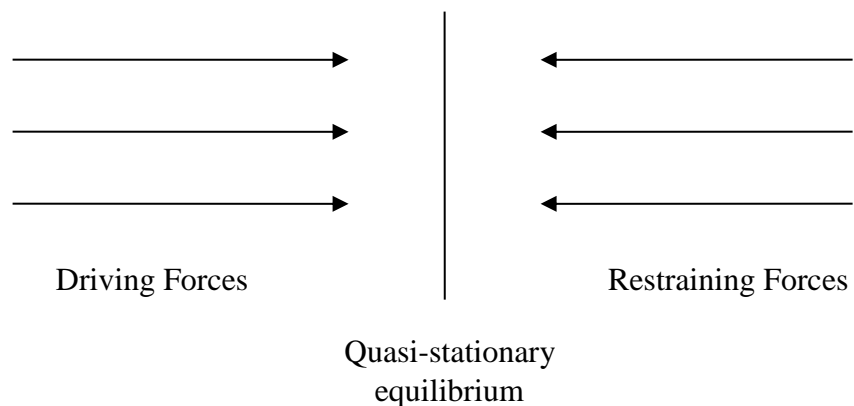
In response to social change experiments done regarding the consumption of various foods, Lewin (1948/1999) came to the following conclusions:

Any planned social change will have to consider a multitude of factors characteristic for the particular case. The change may require a more or less unique combination of educational and organizational measures; it may depend upon quite different treatments or ideology, expectation, and organization. Still, certain general formal principles always have to be considered. (p.279)

Two of these principles involve how change can occur – 1) by increasing forces in the desired direction, or 2) by decreasing the opposing forces – in either case to reach a new equilibrium (p.280). The amount of tension that can result from these two approaches is quite different; there is high tension at the new equilibrium point when driving forces are increased and low tension when opposing forces are decreased (p.280). Due to these results, Lewin recommends that decreasing opposing forces is "preferable to the high pressure method" (p.281).

Applying the Force Field Analysis Model in Higher Education

In applying this model to the research, the first step is to identify the new desired equilibrium and the change(s) required to achieve this. In this case, the new equilibrium has the students and instructor using the innovative instructional method(s). To reach this new equilibrium, students may need to change current behaviors and beliefs about instruction and their own skills, as is suggested in the literature on moving to innovative instructional methods as well as the general literature on adopting innovations (Akerlind & Trevitt, 1999; Albers, 2009; Bruner, 1996; Elen & Lowyck, 2000; Keeney-Kennicutt et al., 2008; Rogers, 2003; Windschitl, 2002). The next consideration involves the various restraining forces – the factors underlying student resistance to the new methods or their barriers to change. These barriers need to be identified so that ways to decrease these forces can be developed and the desired planned change can occur. This area represents the main focus of the research and a preliminary framework to guide this exploration is discussed in the next chapter. However, it takes more than just reducing restraining forces to make a change.

Three-Step Change Model

Lewin (1948/1999) identifies three key stages in making a change: *unfreezing*, *moving*, and *refreezing* (p.282). Each stage is important to the change process, but the unfreezing

stage can be particularly challenging. According to Lewin, "The idea of 'social habit' seems to imply that, in spite of the application of a force, the level of the social process will not change because of some type of 'inner resistance' to change. To overcome the inner resistance, an additional force seems to be required, a force sufficient to 'break the habit,' to 'unfreeze' the custom" (p.281). Lewin's work also includes the effects of group norms and how they can hold back individuals from making changes (e.g., not wanting to depart too far from group standards) (pp.281-282).

Applying the Three-Step Change Model

In the research explored in this dissertation, the unfreezing stage is the primary area of focus. Before students will engage with a new instructional method, they may have barriers to change that will impede their willingness to engage with the new method. These barriers may be pre-existing in that they stem from students' past educational experiences, or they may be in-situ, arising from the context of the innovative course. Both types of barriers to change are of interest in this research because a comprehensive understanding of what needs to be unfrozen needs to be developed before techniques and strategies for unfreezing can be investigated and recommended. Without an unfreezing, the possibility of change will not arise and students may not be willing to engage with the new method so that it can be adequately assessed. The moving stage would be what the faculty member hopes will be reached after the unfreezing and before the end of the course, and would be typified by students adopting the new method and using it as intended. However, unfreezing may also need to happen during this stage as new barriers to change may be encountered during the move to new ways of learning, which could reinforce the pre-existing barriers or create new in-situ ones. The refreezing stage would be reached by the end of the course if students engaged with the new method; they would have expanded their beliefs about what instruction can include as well as increased their academic skill set.

The idea of "social habit" also seems applicable in the higher education context given that students have been part of an educational system for many years by the time they reach university, and their experiences are likely to result in the development of norms or customs around how education "should" happen. Time spent in the educational system, then, may result in differing responses to innovative methods, and is investigated as part of both the

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first and second research questions. Students also experience courses in groups, which may or may not impact how they respond to innovations and may lead to barriers that need to be overcome. Barriers to change, then, need to be identified so that they can be reduced and change can occur. The barriers that students identify, however, may be different from those identified by faculty members. Additionally, even if the same barriers are identified, faculty members and students may perceive a different level of importance of a barrier or include different dimensions in defining the barrier. These potential misalignments suggest the role of the third research question in helping to better understand the change environment when instructional innovations are included in a course.

Given the focus on restraining forces, the resistance to change literature within the context of business organizations is reviewed next before turning to various specific barriers to instructional change identified within the higher education context, including the initial pre-existing barriers that may exist before a course begins and the in-situ barriers that can develop over a semester-long course.

2.2 Resistance to Change in Business Organizations

Resistance to change has long been studied within the context of business organizations. Coch and French (1948) and Lewin (1948/1999) ran various experiments more than 50 years ago to learn about why people may resist changes in behavioral practices. Lewin had much interest in the effect of groups on decision-making regarding the implementation of a change. Coch and French focused on the effects of groups as well in trying to understand resistance, but they also found that the difficulty of the new task and avoidance of working too hard or too fast represented reasons why workers may resist a change.

More contemporary studies on resistance to change in organizations have identified increasingly more possible barriers to change for employees within their work environments. Erwin and Garman (2010) compiled a fairly comprehensive review of empirical studies published between 1998 and 2009. They reviewed eighteen articles out of a possible 123 found by searching three online databases. The eighteen articles reviewed were published in peer-reviewed journals, included results from a research study or studies that followed recognized methodologies, and were not about contexts too specialized to have generalizable

results. Sixteen of the articles relied on self-report survey data, and one main conclusion of the authors was that the research was more divergent than convergent, lacking clear and consistent operational definitions for resistance to change as well as many of the antecedent variables.

2.2.1 Defining Organizational Resistance to Change

In the literature reviewed, *resistance to change* is identified as having three states or dimensions – behavioral, cognitive, and affective – which should be considered in an integrated manner. This tripartite view stems from Piderit's (2000) more theoretically oriented article in which she suggests that each dimension is a continuum from positive to negative, with the possibility of ambivalence arising when competing beliefs, emotions, or behavioral intentions are experienced in the same dimension or across dimensions (p.787). From her perspective, resistance is not necessarily negative, as it can entail positive intentions behind negative responses (e.g., saving an organization from an ill-conceived change). Oreg (2003, 2006) adopts the same tripartite view of resistance to change, but focuses on resistance solely as a negative attitude, and he demonstrates how different antecedents result in different types of resistance which then relate to different work-related outcomes.

Definitions for *resistance to change* in organizations include:

- "a tridimensional (negative) attitude towards change, which includes affective, behavioral, and cognitive components" (Oreg, 2006, p.76)
- "commitment to the current state" (Armenakis, Harris, & Feild, 1999, p.99)
- "a form of dissent to a change process (or series of practices) that the individual considers unpleasant, disagreeable or inconvenient on the basis of personal or group evaluations. This dissent may manifest itself in a range of individual or collective actions and take the form of non-violent, indifferent, passive or active behaviors" (Giangreco & Peccei, 2005, pp.1816-1817)

However, the articles reviewed focused on more than *resistance to change*, including the constructs of *openness to change* (Wanberg & Banas, 2000), *readiness for change* (Armenakis, Harris, & Mossholder, 1993; Armenakis et al., 1999; Holt, Armenakis, Feild, &

Harris, 2007), and *coping with change* (Judge, Thoresen, Pucik, & Welbourne, 1999). With openness to change, a high level of openness is deemed critical in creating readiness for change (Wanberg & Banas, 2000), where readiness is "the *cognitive* precursor to the *behaviors* of either resistance to, or support for, a change effort" (Armenakis et al., 1993, pp.681-682, italics theirs). Given these definitions, it would seem reasonable to conclude that a lack of openness, a lack of readiness, or an inability to cope are likely to result in resistance to change.

Overall, the organizational resistance to change literature does appear to be exploring the concept of resistance despite the lack of agreed-upon definitions and construct labels. Additionally, there does appear to be some consistency regarding the structure of antecedents and outcomes regardless of the label put on the central construct (e.g., resistance, openness, or readiness) as well as the focus on change participants' thoughts and actions.

Barriers to Organizational Change

Given the heavy reliance on surveys for data collection in the studies reviewed, numerous survey scales were used, adapted, and created to try to measure both resistance and the various possible antecedents to resistance as well as outcomes identified. Table 2.1 captures the myriad empirically supported barriers (or antecedents) to change, which have been categorized as either *dispositional* or *contextual*. Dispositional barriers, such as psychological resilience and locus of control, tend to be more stable, but self-esteem was identified in the associated research study as being malleable. Contextual barriers, such as threat to job security and perceived input to the change process, were put into the subcategories of: *anticipated outcomes*, *the change process*, and *change conditions*. Some studies focused only on one main type of resistance (dispositional or contextual), but most studied constructs from both, following Lewinian theory that behavior is a function of an individual and his or her environment (Lewin, 1951, p.25). The barriers to change cited are of possible relevance to the current research.

Beyond indicating that the reviewed articles needed to focus on using more universal definitions for key concepts and variables, including *resistance to change*, Erwin and Garman (2010) noted other limitations to the studies such as the fact that the researchers examined resistance at only one point in time rather than at different points in the change

process, they did not provide actionable steps for practitioners, and they did not tend to use diverse research methodologies.

Table 2.1: Overview of Possible Barriers to Change in Industry

Factors	Variables/Constructs/Subscales	Author(s) & Year
DISPOSITIONAL BARRIERS		
Routine seeking	Preference for low levels of stimulation and novelty Reluctance to give up old habits	Oreg (2006)
Emotional reaction	Lack of psychological resilience Reluctance to lose control	Oreg (2006)
Short-term focus	Intolerance to adjustment period	Oreg (2006)
Cognitive rigidity	Ease and frequency of changing mind	Oreg (2006)
Positive self-concept	Locus of control Generalized self-efficacy Self-esteem Positive affectivity	Judge et al. (1999)
Risk tolerance	Openness to experience Tolerance for ambiguity Risk aversion	Judge et al. (1999)
Resilience	Self-esteem Optimism Perceived control	Wanberg & Banas (2000)
CONTEXTUAL BARRIERS		
Anticipated Outcomes		
Power and prestige	Amount of influence	Oreg (2006)
Job security	Threat to job security	Oreg (2006)
Intrinsic rewards	Amount of challenge Amount of autonomy Amount of personal interest	Oreg (2006)
Personal impact/valence	Impact on job and clients	Wanberg & Banas (2000)
	Impact on status, relationships, and future career	Holt et al. (2007)
Perceived benefits/threats	Level of job responsibility Authority Status Career opportunities Job security Remuneration Social integration at work	Giangreco & Peccei (2005)

Table 2.1 (continued)

Factors	Variables/Constructs/Subscales	Author(s) & Year
CONTEXTUAL BARRIERS		
Change Process		
Trust in management	Manager's ability to lead change	Oreg (2006)
Information	Quality and timeliness of information	Oreg (2006), Wanberg & Banas (2000)
Social influence against change	Extent to which colleagues, subordinates, and supervisors support or oppose change	Oreg (2006)
	Extent others will listen to concerns	Wanberg & Banas (2000)
Participation	Perceived input to change process	Giangreco & Peccei (2005), Wanberg & Banas (2000)
Change Conditions		
Change-specific self-efficacy	Confidence can handle change	Holt et al. (2007), Wanberg & Banas (2000)
Management support	Perception that senior leaders support change	Holt et al. (2007)
Appropriateness	Extent change is needed and will benefit organization	Holt et al. (2007)
Attitudes about change	Attitudes about change in principle Attitudes about process	Giangreco & Peccei (2005)

Applying Organizational Resistance Factors in Higher Education

While the previous section of this chapter indicated that some parallels exist between business and higher education, differences were also noted. In this section, the potential applicability of the organizational resistance to change literature is considered in relation to higher education, despite the different contexts.

In the case of resistance to change, *dispositional barriers* would seem likely to apply as antecedents to students' responses as well as to employees'; however, the articles reviewed for Section 2.3 do not focus on dispositional variables, perhaps because these variables are typically stable and therefore beyond influence, particularly in the limited timeframe of a 12-week, one-semester course. Some elements of the motivation barrier outlined in Section 2.3 do overlap (e.g., control, self-efficacy) but are viewed in the higher education literature as being more contextual in nature and, therefore, somewhat malleable.

The *contextual barriers* identified in Erwin and Garman's (2010) review are, naturally, related to the business environment (e.g., job security, remuneration, status, management support), although some of these *anticipated outcomes* antecedents may be adaptable to the

higher education context. For example, Oreg's (2006) intrinsic rewards of challenge, autonomy, and personal interest could relate to instructional methods within a course equally well as to work tasks within a job. The factor of benefits or personal valence would also seem transferable, although the more specific variables would change (e.g., remuneration may become marks in the educational context). All elements of the *change process* subcategory could reasonably transfer to the educational context since the instructor functions as a change agent and provides information and potentially the opportunity for students to participate in implementing the new instructional method. The social influence of other students in a course could also reasonably affect why students respond to a new instructional method in a certain way, representing another potential change process barrier. Elements from the *change conditions* subcategory may also apply to the higher education context (e.g., self-efficacy, appropriateness of the change, and attitudes about change), although the factor about management support may be superfluous in the situation of change at the level of an individual course.

Overall, the organizational resistance to change literature highlights the need to think broadly about the various reasons why people resist change and consider research methodologies beyond surveys to uncover the complexities of these reasons. The various elements of contextual barriers to change also merit consideration since instructors could possibly affect such barriers. However, while a number of the barriers from the organizational literature could potentially be adapted to the higher education context, a different set of literature exists that can provide limited yet empirical evidence from the higher education context about the antecedents, or underlying factors, behind students' responses to innovative instructional methods. This literature from higher education is reviewed in the next section and focuses on potential contextual barriers to change. This same literature base also serves as the primary theoretical background for the initial conceptual framework that is described in Chapter 3.

2.3 Resistance to Change in Higher Education: Possible Barriers to Adopting Innovative Instructional Methods

A review of relevant research literature in higher education did not reveal any one resource that provided a comprehensive, empirically based model or framework to help explore or explain the barriers underlying students' resistance to innovative instructional methods. A few general frameworks of the teaching-learning context were located but were typically unwieldy and not developed to reflect innovation or change management situations in education, so they were not considered useful as a basis for the research (Dunkin & Biddle, 1974; Entwistle, 1987, 2009; Ramsden, 1992). One model was found regarding the implementation of an instructional innovation (instructional technologies). However, it put limited focus on the role of students in the implementation of the innovative method, capturing more of a systems-level perspective, and there was no evidence of it being empirically tested (Hung & Koh, 2004). This model also did not include clear definitions of its four main dimensions of school structures, classroom dynamics, teacher beliefs, and student behaviors, and did not explicitly identify students' beliefs as part of the change situation.

More recent studies located that discuss the phenomenon of student resistance in relation to innovative methods appear somewhat limited in their design and/or analysis (Albers, 2009; Pepper, 2010; Reimann, 2011) or are still under development (Tolman & Sorensen, 2012). They have resulted in only tentative frameworks and no compelling visual models to capture the situation for further investigation. In Albers' study, she analyzed one set of essay assignments from the 15 students in her upper-level social science seminar course to determine what was facilitating and hindering her students' learning. The frequency of responses in the coding themes was very low (n=1 to n=6), so she re-analyzed the data according to a sociological framework which focused solely on the impact of students' normative role expectations in her innovative course. Pepper's study involved a larger pool of respondents, including students from multiple courses over a three-year period that used problem-based learning (PBL). However, the data reported in this study focused on students' enjoyment (or not) of PBL, stemming from two open-ended questions that students completed at the end of a PBL task. She identified eight themes which she placed into a

continuum of responses, but she did not attempt to link this continuum or her themes to the existing research literature. Reimann interviewed a self-selected sample of 13 students from one course about their perceptions regarding what influenced their decision to select (or not) the "seen exam question" (a type of take-home exam) versus a traditional exam. Some of the interviews occurred many months after the exam period, making their accuracy questionable. Reimann coded her data into six main themes, but the sample interview excerpts included do not clarify the discreteness of the themes (e.g., how do "Strategic Considerations" and "Opportunities versus Risks" differ when they both included comments about negative effects on grades?). The thematic analysis is not as clear as it might be. Tolman and Sorensen's work perhaps holds the most promise because of its more comprehensive nature. It suggests that external forces (environmental and negative class experiences) and internal forces (cognitive development and readiness to change) affect student resistance, but their heavy reliance on a variety of scaled instruments to assess students' approaches to learning and readiness to change appears too complex and time-intensive to apply usefully in courses in a variety of disciplines and within the constraint of a 12-week term.

Additionally, it appears to be much more common to focus on the instructor experience regarding the move to instructional innovations (Hockings, 2005; Michael, 2007; Thorn, 2003) versus the student experience, perhaps because it can be challenging to get instructors to try innovative methods without the encouragement of others' experiences and/or because the instructor experience is easier to study than that of the students due to instructor subjects being fewer in number and less transitory than a class of students.

Given the lack of a single comprehensive empirical source, various articles were reviewed in an effort to generate a preliminary list of potential contextual barriers to change that could serve as an initial codex framework for analyzing the research data collected. In this section, reasons cited in the higher education literature to explain or predict students' resistant responses to new instructional methods are outlined, with a particular focus on barriers regarding the move to a learning-centred paradigm of instruction and barriers that instructors may be able to influence. The first three barriers discussed are ones that students would bring into any course experience, making them potential **pre-existing barriers**, while the rest are predicted to arise from the specific innovative course experience and are being

labeled potential **in-situ barriers**. The chapter ends with an assessment of the gaps in the research literature, which helps to position the contributions of the research conducted.

2.3.1 Experience with Methods

One possible pre-existing barrier to change is linked to students' overall past educational experiences. Post-secondary students have been part of the educational system for many years by the time they reach university. However, even if they have experienced various instructional methods in elementary and secondary school, it would seem reasonable that their experiences at university would likely override these earlier experiences as they try to determine how education happens in the different context of a post-secondary institution.

In our current post-secondary institutions, it is common that students' learning experiences are primarily with the dominant, teaching-centred instructional methods (Akerlind & Trevitt, 1999; Albers, 2009; Bassano, 1986; Candy, 1991; Christensen Hughes & Mighty, 2010b; Hockings, 2005; Messineo et al., 2007; Michael, 2007; Modell, 1996; Reimann, 2011; Thorn, 2003; Windschitl, 2002). This type of instructional experience limits the possibility of gaining *familiarity with innovative methods* as a means of increasing their instructional variety. Over time, as students experience more courses that use the same methods, the possibility for variety decreases and their preferences and expectations for those same methods can strengthen for future courses. For example, Messineo et al. (2007) surveyed more than 1,000 students in fourteen courses across five academic departments from humanities, social science, and math, and they sought to compare attitudes about large classes held by inexperienced students (those in their first semester) versus experienced students (those remaining). Their results revealed that experienced students were more likely to prefer passive teaching methods such as lectures and were less likely to prefer a mix of activities in class, including group work and ungraded work (p.130). The inexperienced students, in comparison, were significantly more likely to expect to work in discussion groups and engage in group projects in large classes (p.129). The researchers did not explicitly ask the students what instructional methods they had had before to know if active learning methods were a change for them; rather, the focus was on their current preferences and expectations. However, their key focus was on the students' amount of experience in the

post-secondary environment, making *year of study* another possible noteworthy pre-existing barrier.

The effects of ***academic discipline*** may also add to resistance that stems from past experiences with instructional methods. Students' experiences are gained from courses that exist within discipline-based programs. Researchers have found that norms for instructional practices vary by discipline (Lindblom-Ylänne et al., 2006; Nelson Laird et al., 2008; Neumann et al., 2002; Taylor, 2010). These norms would also affect the variety of methods that students experience and come to expect. However, the literature reviewed in preparation for this research study typically did not identify academic discipline as a possible source of resistance other than in relation to negative student responses to writing assignments being used in a science course (Keeney-Kennicutt et al., 2008). Kember (2001) provides another exception but only reported that "marked effects by discipline were not found" in interviews with 53 part-time students about their experiences related to teaching and learning (p.208). The lack of focus on students' academic discipline is perhaps because much of the literature on student responses to innovative instructional methods focuses on single-course case studies or courses taught in one department, although authors who collected data from courses across the disciplines typically did not appear to analyze their data by discipline (Kaufman & Schunn, 2011; Messineo et al., 2007; Pepper, 2010).

Students' past experiences with instructional methods may also affect how they respond to new methods in that their previous experiences can result in various ***preferences*** regarding instruction. In Alessio's (2004) study on students' responses to problem-based learning (PBL) in senior undergraduate and graduate exercise physiology courses, she found that the majority of feedback on PBL was negative, with a student preference for directive or didactic learning representing one of only three categories of responses. The author projected, though, that this preference may be "because that [didactic learning] was the main teaching method they had experienced prior to the present class" (p.31). Preferences, then, may be a function of familiar experience. Felder and Brent (1996), Kember (2001), and Messineo et al. (2007) concur. Windschitl (2002) focuses more on students' dissatisfaction with working with their peers – another method that is commonly used in learning-centred instruction but which not all students enjoy. Preferences for traditional methods and/or dissatisfaction with

innovative methods appear to stem from past experience and may also represent barriers to change.

Various facets of students' past educational experiences may provide pre-existing barriers to change to innovative instructional methods. These variables, though, seem under-studied in the literature reviewed for this study.

2.3.2 Incoming Instructional Conceptions

Students' conceptions about teaching and learning can also be potential pre-existing barriers to change (Akerlind & Trevitt, 1999; Albers, 2009; Bassano, 1986; Bruner, 1996; Doyle, 2008; Elen & Lowyck, 2000; Felder & Brent, 1996; Hockings, 2005; Kearney & Plax, 1992; Keeney-Kennicutt et al., 2008; Messineo et al., 2007; Michael, 2007; Thorn, 2003; Windschitl, 2002). As with the past experiences that students bring into new courses, students also come with ideas and expectations about teaching and learning (instructional conceptions) that are manifested as beliefs about *instructors' roles and responsibilities*, *students' roles and responsibilities*, and *acceptable course formats* (e.g., accepted and expected teaching and assessment methods). Having traditional roles and responsibilities challenged is part of Weimer's (2002) thinking about making the move to learning-centred teaching. When the instructional conceptions focus on behaviors and expectations, they represent what could be called "instructional norms" given that Michela and Burke (2000) indicate that norms include "both what people typically do and shared understandings about what people are supposed to do" (p.229).

This focus on instructional norms is reinforced by studies such as Albers' (2009) in which her sociological analysis of students' responses to more self-directed learning helped to uncover why at least a third of them were dissatisfied with her course: she challenged the traditional roles of didactic teacher and passive student recipient. As one of her students wrote, "Although I respect and appreciate the open debates and the ability for your students to speak their mind, I also think that there is time in a classroom for students to talk and a time in a classroom where a teacher should take control" (p.275). Similarly, Felder and Brent (1996) and Weimer (2002) comment on student complaints when instructors do not provide all the teaching. Elen and Lowyck (2000) suggest that students' underlying beliefs about instruction, which they label as instructional knowledge or conceptions, are "barely

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considered in the design of instruction. But, such knowledge determines the kind of interpretations students will make during instruction and, therefore, the effectiveness of instructional interventions. Furthermore, instructional knowledge also affects students' feedback on and reactions to particular designs" (p.438).

Students' beliefs about what should be happening in their courses, then, may contribute to their resistance to innovative instructional methods if the methods do not fit into their beliefs about course norms, including if the methods require them to engage in behaviors that do not fit with their beliefs about the roles of students and instructors. For example, in a meta-analysis, Lowyck, Elen, and Clarebout (2004) outlined a study that involved trying to get students to engage in an innovative instructional approach and noted that "learners clearly did not accommodate but became even less calibrated to the designed environment" (p.436). In other words, they were resisting.

Instructional conceptions, such as the belief that faculty members who do not lecture are not fulfilling their teaching role and responsibility, may be difficult to uncover, much like the inner layers of organizational culture models (Schein, 2004). Akerlind and Trevitt (1999), Lowyck, Elen, and Clarebout (2004), and Windschitl (2002) attest to how difficult this task can be. Bassano (1986), in focusing on the importance of uncovering students' past educational experiences and assumptions about learning when making a change in the classroom as a means of helping to ward off resistance, created questions to ask students. However, her questions seem superficial (e.g., What did you do in your previous language classes? What did you like best? What didn't you like? How did you relate to the teacher?) (p.15), not going below surface behaviors to uncover underlying beliefs or assumptions about what students feel "should" happen in a course.

A more rigorous study comes from Elen and Lowyck (2000), who studied 219 novice students' instructional conceptions, or beliefs, through qualitative surveys. They claimed that while students can articulate their conceptions, the conceptions identified in their study were not a good match for learning-centred instructional methods, and they suggested that students' beliefs can be a source of resistance to innovative methods (p. 427). However, their protocols for uncovering these beliefs seemed questionable as have been those used in other studies (e.g., Kember, 2001). They asked about the qualities of good and poor instruction to

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identify the students' conceptions of instruction, but this only focused on what faculty members should do rather than focusing on the process of education, which would include methods that should be used and a sense of what students should be doing for a course as well. They also asked about students' responses to hypothetical, innovative learning environments (self-study and computer-based instruction versus lectures), but the data were not conclusive. The hypothetical nature of the scenarios used in this part of their study may have limited students' abilities to ascertain their responses to and the impacts of new, unknown instructional situations.

The literature in this area, then, suggests that students' conceptions about instruction can be barriers to change, but no clear ways have yet been created to accurately identify these conceptions for a comprehensive understanding, particularly in relation to the use of teaching innovations. It is also unclear whether students may hold different conceptions based on the broader educational context, such as the type of course (required or elective), the academic program of the students, or their level in their program (first year through graduate level).

2.3.3 Incoming Skills for Learning

One other possible pre-existing barrier to change stems from what students already know how to do – the *skills and behaviors that assist with their learning* which they bring to each course that they take and hone over time (e.g., how to listen to a lecture, take notes, complete assignments, and study for exams). In some areas, they may also know how to engage in labs, field trips, or design studios, but not all students necessarily engage in these varied types of experiences. When faculty members introduce a new instructional method, it would seem reasonable to conclude that students may simply lack the skills or behaviors needed to work with this new method. Research supports this supposition, indicating that students do lack knowledge of how to engage with and learn from teaching and/or assessment methods that are not from the dominant, teaching-centred paradigm and that this lack of experience can result in resistance throughout a course (Albers, 2009; Allen et al., 2001; Doyle, 2008; Handelsman, Briggs, Sullivan, & Towler, 2005; Keeley, Shemberg, Cowell, & Zinnbauer, 1995; Keeney-Kennicutt et al., 2008; Michael, 2007; Modell, 1996; Thorn, 2003; Windschitl, 2002).

For example, in her dissertation, Thorn (2003) did case studies on seven faculty members and their experiences with implementing active learning methods in science courses. She was interested in how their experiences affected their beliefs about teaching and learning, what obstacles and supports they encountered, and how they responded to problematic classroom situations. Cross-case analyses led to various conclusions, including that five of the seven faculty members experienced and struggled with student resistance (p.357). The faculty members in her cases came to realize that students could not just be told to be active learners; in general, they did not have much experience with active learning instructional strategies and needed support to change their ways of learning and their existing beliefs about the nature of learning (p.364-365). However, it appears that Thorn identified these reasons primarily from her faculty participant interviews rather than from their students directly, although she did administer a brief survey to the students.

Other authors support the idea that student resistance to innovative methods can be overcome by providing support and assistance to help students learn how to work with the new methods, which suggests that they also see students' lack of skills and abilities as learners as a reason for their resistance and, therefore, a barrier to change (e.g., Felder & Brent, 1996; Hockings, 2005; Kaufman & Schunn, 2011; Kember, 2001; Woods, 2003). Rarely did any of the literature reviewed provide details about the specific skills or behaviors that the students would need to change to work with the new methods, with the limited studies by Keeney-Kennicutt et al. (2008) and Kaufman and Schunn (2011) being exceptions.

2.3.4 Environmental Constraints

Within the course itself, in-situ barriers to change may arise. In the literature reviewed, none of the studies that focused on students' perceptions included possible barriers involving elements of the course's context, but two studies that focused on professors' perceptions did include such factors. Both Hockings (2005) and Michael (2007) identified *class size* and *classroom design* as possible reasons why students do not all engage with learning-centred instructional methods.

In Hockings' (2005) case study, she found that the large class size limited student activity and participation and encouraged the instructor whom she studied to revert to didactic lectures because he felt he could not reasonably connect with students individually.

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She also identified classroom scheduling systems as another barrier because "classrooms were allocated according to the number of students registered on a module with little regard for our requests for classrooms with movable furniture for active group work. For one cohort a fixed-seating lecture theatre was allocated because it was the only room available to accommodate the large numbers" (p.319). Michael (2007) found similar issues expressed at his faculty member focus groups. All four focus groups indicated that the classroom designs were not conducive to active learning (although later discussion seemed to reverse this perception) and two groups identified class size as a barrier to this type of learning – both large classes and small ones.

While these possible barriers were identified only by faculty members, it would seem reasonable that students may also perceive contextual attributes of a course as possible barriers since they are in the same course context as their instructors. However, this linkage has yet to be demonstrated with student data.

2.3.5 Perceived Risks

When a new instructional method is introduced, students may not know how to engage with it, which can put various facets of their course experience in jeopardy. First, they may perceive that their *learning* will be negatively affected. Numerous studies indicate that innovative methods such as learning-centred methods will result in better student learning, which is often defined as "deep learning" (Ramsden, 1992; Halpern & Hakel, 2003; Millis, 2010; Trigwell, Prosser, & Waterhouse, 1999; Weimer, 2002). But do students actually value this type of learning experience? The vast majority of students tend to hold conceptions about learning that are more quantitative than qualitative, particularly in the early years of their studies (Devlin, 2002; Kember 2001). For many students, then, "better" learning involves learning more (Akerlind & Trevitt, 1999, Keeney-Kennicutt et al., 2008; Lewis & Hayward, 2003), and methods that jeopardize this conception may feel too risky.

There may also be risks associated with *grades*. Benvenuto (2002) suggests that students can resist because their grades may be negatively affected when they are put into a new learning environment. Lewis and Hayward (2003) found that the likelihood of getting a good grade had the highest importance for students when selecting a learning activity; therefore, if grades were to be negatively affected, the risk could be assumed to be perceived

as high by students. Reimann (2011) supports this assumption with her finding that students in her study were "particularly cautious about not taking any risks which had the potential of affecting their assessment results" (p.275). Performance goal orientation, which is part of achievement goal orientation theory, may help to explain this type of risk. Students with performance goals seek to get the best grades (or other performance indicators such as praise) in relation to others versus those with mastery goals who seek to learn and understand material regardless of what they need to do to reach those goals (Pintrich, 2000; Svinicki, 2004). Svinicki suggests that students with performance goals want to avoid risks such as those that could be associated with novel instructional methods because they can lead to failure and poor grades. The possible negative effect on students' grades, then, can represent too high of a risk, at least for some students, and result in resistance.

A different type of risk is an ***emotional*** one that can arise during the course. Innovative instructional methods may result in students feeling increased stress about engaging with the method. Weimer (2002) indicates that the loss of a familiar learning environment can result in student fear and anxiety; Woods (1994) equates this loss with feelings of grief. Mallinger (1998) found that the students in his organizational behavior course in Germany really struggled with his learning-centred methods: "I realized that their resistance centered around being uncertain about taking responsibility in the classroom, a role with which they were not familiar…my students would be more likely to accept change when their underlying emotional concerns had been addressed" (p.58). Other authors also indicated that students may feel stress or discomfort that can decrease their willingness to engage, but this type of risk was either not thoroughly explored or appeared in the Discussion section of the articles reviewed rather than as part of the studies' Findings (e.g., Alessio, 2004; Keeney-Kennicutt et al., 2008; Kember, 2001; Pepper, 2010).

Students' perceptions about the various possible risks associated with innovative instructional methods, then, may represent other barriers to change, although these barriers would likely be in-situ rather than pre-existing since they focus more on responses to innovative methods within a specific course.

2.3.6 Perceived Workload

Students' views on the workload associated with a course may also be a barrier to engagement. One facet of this potential factor may be the ***amount of time*** students assume the method will require to use or complete. A study by Lewis and Hayward (2003) supports this idea. These researchers studied 68 students in an upper-year organizational communication course who had to choose two assignments from a list of 10 – many of which could be considered innovative – that would comprise 50% of their grade (the other half was from a comprehensive final exam). Through survey questions, they found that the perceived costs involved in completing an assignment were a major factor in the students' decision-making about which assignments to tackle. These costs included the assumed amount of effort involved and time required to complete each assignment. The assumption was made in the study that less time and effort spent were the most desired by students.

Innovative instructional methods, though, may not offer a savings in time. Weimer (2002) indicates that learning-centred methods of instruction are typically more work for students since they have to do more to demonstrate their learning than just attend lectures, take notes, and complete tests and assignments. The students interviewed in Reimann's (2011) study were aware of the time commitment, specifically identifying the desire to reduce their workload and time spent on one course as a key reason for not engaging with an innovative assessment method. Alessio's (2004) student surveys also revealed the amount of time that the innovative method took was far greater than traditional lectures, making time spent one of the major negative drawbacks of the method.

The perceived ***difficulty*** of the course may also influence students' views of the workload. If students perceive that an innovative instructional method is difficult to use, this could be another possible in-situ reason to resist (Lewis & Hayward, 2003; Lowyck et al., 2004; Reimann, 2011). Not knowing what the ***expected outcome*** should look like (e.g., style of written product required) may also lead to perceptions of difficulty or at least an increased workload (Keeney-Kennicutt et al., 2008).

A more hidden element of workload may be the ***clarity*** of the faculty member's explanation of how to work with the innovative method. Lewis and Hayward (2003) and Windschitl (2002) indicate that students look for clear instructions about how to engage with

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and succeed at an innovative method. In the Lewis and Hayward study, clarity of
instructions and grading criteria were the two most important course attributes to the students
regarding what instructors could do. As well, how difficult each assignment would be was
the second most important consideration for students when selecting an assignment – the
desire to reduce difficulty was present in this course. While their survey was completed in
the last week of the term, one could assert that students would be aware of these same
variables throughout the course and that if they had concerns about whether the innovative
method would be clearly explained, if they were unclear about how they would be assessed,
or if they thought the work might be too difficult, these could be barriers to using the new
method. Researchers who recommend that students need clear support and instructions may
also be indirectly suggesting the potential role of clarity in resistance (e.g., Albers, 2009;
Allen et al., 2001; Elen & Lowyck, 2000; Keeney-Kennicutt et al., 2008; Kember, 2001;
Pepper, 2010; Reimann, 2011; Thorn, 2003).

Another example study moves beyond just clarity of explanations and includes
instructor skill with the new method, which may also contribute to students' perceptions of
the workload required for a course. Allen et al. (2001) did a longitudinal study of the
implementation of various instructional technologies in a veterinary immunology course.
They analyzed course evaluation scores over a five-year period and noted statistically
significant decreases and then increases over the years of the study. In the course evaluation
responses analyzed in their study, the mean scores for clarity of requirements and
responsibilities (2.7/5), explanations (2.9/5), and overall teaching effectiveness (2.9/5) were
at their lowest as more of the course was put online, with all of the drops in scores being
statistically significant when compared with scores over the years of the study (p.110-111).
The instructor was noted as experiencing logistical and technical issues in the early stages of
implementing the revised version of the course, suggesting a lack of skill with the innovative
instructional methods being used. Keeney-Kennicutt et al. (2008) also commented on the
instructor's lack of experience in using the innovative method, which led to some false
assumptions being made about what the students needed as support for their learning,
including having models of the desired end products (essays and feedback on essays). The
instructor's level of skill, then, may also contribute to the difficulty of workload required to
engage with an innovative method from the students' perspective.

Overall, if the innovative method is unclear, seems difficult or time-consuming to the students, or they are unsure how to engage with it or what the intended outcome should be, they may perceive the workload as being high and be less open to trying and using it. The instructor's skill with the method may exacerbate the problems, particularly when an instructor is first learning to teach with the new method. However, these types of in-situ barriers would likely only become apparent as the course progressed. Workload, then, may have various facets to it, any of which could be in-situ barriers to using an innovative method throughout a course.

2.3.7 Influence of Others

As was outlined in Section 1.2, a course has an instructor and students. It would seem reasonable that when students enter a course they may be influenced by the *instructor* and their *classmates* in how they respond to that particular course. For example, when students enter a university course, they typically have no previous connection with the course instructor given the number of faculty members in many departments, although this is not always the case. When students perceive little to no connection with the professor, they may be more likely to resist; various research studies provide support for this line of thinking.

For example, in Allen et al.'s (2001) study, one key area that saw the lowest overall mean score was the item about the instructor's interest in student learning. The researchers assert that one reason for this drop was that the instructor was so focused on making the new technology in the course work that he appeared less interested in the students (p.117). The low course evaluation scores represent one form of student resistance, although without any qualitative probing into the rationales behind the ratings, the connection to the lack of relationship between the instructor and students is more assertion than fact.

Kearney and Plax (1992) studied student resistance to professors' requests of their students, compiling a list of 19 different resistance techniques that students use, such as dropping the class, disrupting the class, rallying others in class to resist, and seeking revenge (pp.91-92). They also conducted experimental studies on whether professors who used immediacy techniques (e.g., nonverbal behaviors such as eye contact, gestures, and smiles to convey warmth and friendliness) when asking students to engage in a learning task received different types of resistance than professors who did not use these techniques. Drawing on

attribution theory, they concluded that students blamed themselves for any resistance with an immediate professor whereas with a nonimmediate professor they blamed the professor for the resistance strategies that they chose. From the students' perspective, nonimmediate professors behaved inappropriately or inconsistently with their expectations of what a professor should do. As well, the researchers concluded that students chose different forms of resistance depending on the presence or absence of immediacy behaviors (e.g., for non-immediate teachers they would choose strategies directed more at the teacher such as giving advice to the teacher on how to improve or complaining to administrators). The researchers also indicated that students who had immediate professors were more likely to want to comply with these professors' requests.

While the studies reviewed did not focus on students' perceptions of their connection to the course professor at different points in a course, it would seem reasonable that students would have impressions of the instructor right from the first class that could impact their willingness to engage with a new instructional method. They may also have had past courses with this same instructor, which could impact their willingness to engage with a new method. During the course, students have more opportunity to connect with the professor and build trust, but this does not always occur and may serve to augment student resistance. A lack of connection with the instructor – both at the beginning of a course and throughout it – could be another in-situ barrier to change.

As well, the influence of classmates may also affect students' willingness to engage with an innovative method. Students may be influenced by other students on campus (e.g., peer group, program cohort), but the effect of those in the same class is the focus of the literature reviewed. Lewis and Hayward (2003) provide indirect evidence of this possible influence in their study. One factor that they identified which influenced students' decisions about which assessment methods to choose in their course was "social influence". This factor included items on what other students in the course said about the various assessment activities and how many others were doing each activity as well as items about what the professor and teaching assistant said about the activities. If students can be influenced by their classmates and if they perceive that their classmates will or do resist an innovative instructional method, it seems plausible that they will be more likely to follow suit; their classmates' resistance,

then, becomes another possible in-situ barrier to change that could be experienced at the beginning of term (as expected future resistance) as well as during the term (as a perception of the actual level of adoption during the course).

2.3.8 Context-Specific Motivation

Motivation can be seen to permeate all phases of the learning process (Svinicki, 2004) and is critical for researchers and educators who are focused on new instructional interventions to consider (Pintrich, 2003). However, motivation theories and research within higher education "can appear to be fragmented and diffuse, especially to those from outside the motivational research community", which can make it challenging to identify the most appropriate theoretical frameworks to apply (Pintrich, 2003, p.667). Given the focus in this research on specific, change-oriented learning situations, it would seem most helpful to consider the possible effects of context-specific motivational constructs rather than ones presented as dispositional traits. The higher education literature located typically did not tend to explicitly connect to motivational constructs and yet there could be possible connections, particularly to *self-efficacy*, *autonomy*, and *interest*, all of which are considered context-specific constructs.

Self-efficacy, based on the work of Bandura, is defined as "personal judgments of one's capabilities to organize and execute courses of action to attain designated goals" (Zimmerman, 2000, p.83). Bandura (1977) indicated that efficacy expectations can influence not only people's choice of behaviors (e.g., ones which they do not perceive as threatening) but also their coping efforts (e.g., how much effort they will expend and how long they will persist when they encounter obstacles) (pp.194-195). The focus is on individual performance capabilities that are context-sensitive, rather than on personal qualities or one's capabilities in relation to those of others. Self-efficacy judgments are also future-oriented, being assessed before the individual engages in the activity under study. Zimmerman outlines various studies that demonstrate that self-efficacious students are more likely to engage in difficult and challenging tasks, persist longer at learning tasks, and have less anxiety about learning.

The possible barrier to change described in Section 2.3.3 indicated that students often do not have the skills needed to use innovative instructional methods; therefore, if they do not have the skills required, they have to learn them and may have some trepidation about being

able to do so. Weimer (2002) supports this idea, identifying students' lack of confidence in their skills within a new learning environment as a key reason for student resistance. Summerlee and Christensen Hughes (2010) push this idea further, indirectly suggesting that instructors may be able to promote both self-efficacy and empowerment beliefs in their students by reducing barriers related to a sense of powerlessness and using empowerment-inducing strategies (p.252). These strategies include four sources of information about self-efficacy expectations, which stem from the work of Bandura (1977, 1986) and are adapted to the organizational environment by Conger and Kanungo (1988): enactive attainment (e.g., achieving success at mastering a task); vicarious experience (e.g., seeing others master the task without negative consequences); verbal persuasion (e.g., receiving positive encouragement about succeeding with a behavior); and emotional arousal state (e.g., minimizing tension to increase perceived competence) (Summerlee & Christensen Hughes, p.252).

In the case of engaging with innovative instructional methods that students may find threatening or are unsure how to master, it would seem reasonable to predict that students' level of self-efficacy may represent yet another possible in-situ barrier to change regarding innovative instructional methods, particularly at the outset of the course since the focus of this theory is on future action.

Students' motivation can also be affected by the level of control or autonomy they perceive that they have over a specific learning situation. Self-determination theory (SDT) provides one theoretical framework to help explain the role of autonomy in learning. SDT comprises four mini-theories: basic needs theory, cognitive evaluation theory, organismic integration theory, and causality orientations theory (Ryan & Deci, 2002). The basic needs are for autonomy, competence, and relatedness, where autonomy "refers to being the perceived origin or source of one's own behavior" (Ryan & Deci, p.8). Autonomy is measured through students' reports of internal locus, feeling free, and perceived choice over actions (Reeve, Ryan, & Deci, 2008, p.230). Organismic integration theory provides guidance to instructors about how to be more autonomy-supportive versus controlling, including specific behaviors to support student autonomy and internalize motivation.

Reimann (2011) identified autonomy as one key factor in why students chose to engage (or not) with the innovative assessment method in her study. Some students were very motivated by having more control over their learning whereas others did not want to be any more autonomous than was necessary. Lewis and Hayward (2003) focused their study on choice-based learning, which involved giving students a choice in course assignments (they chose two of ten activities for 50% of their grade with the other 50% coming from a final exam). Overall, the students liked having a choice (M=6.34, SD=.77, on a 7-point scale), and qualitative thematic analyses showed that having more control over the course was the greatest advantage (63% of students made comments in this category). However, not all students perceived that having a choice positively affected their learning. The authors identified four key factors in how students decided which assignments to choose, and learned that the more students focused on costs (effort, difficulty, and time needed), the more they reported lower learning outcomes versus those who focused on how much they would learn and could apply the assignment to their future career. The authors did not ask students to rate or comment on how choice-based learning affected their motivation in general or their feelings of autonomy, which seem like major oversights in this study. Autonomy, then, may be another possible in-situ barrier in the case of innovative instructional methods, although it is unclear whether the presence or absence of autonomy would be more motivating, how best to support autonomy from the students' perspective, and whether all students would respond similarly.

Students can also feel motivated in a course due to the content and how interesting the professor makes it. Krapp (2002) provides an overview of a re-energized area of literature on the construct of interest in relation to motivation. He indicates that interest can be identified as either personal (individual) or contextual (situational). Individual interest is identified as more of a stable personality trait, while situational interest fits better with the literature reviewed, being defined as "a psychological state that is characterized by focused attention and an affective reaction that tends to be positive" (Hidi & Ainley, 2008). Interest is linked in the motivation literature to both self-efficacy and autonomy, and is likened to intrinsic motivation as outlined in self-determination theory; it is also shown to positively affect learning (Hidi & Ainley; Krapp). Handelsman et al. (2005) attempted to measure students' engagement in a course, and through a factor analysis and regression analyses, they identified

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emotional engagement in a course as one key factor in students' overall engagement. This factor included items such as the relevance and applicability of the course and how interesting the students found the course to be. One of many findings was that students' emotional engagement was the main positive predictor of absolute engagement in a course. However, the authors did not indicate whether the courses studied were required or elective, so while this difference might affect engagement in a course, this study cannot provide any evidence about such an effect. The courses studied also did not appear to include any innovative methods, so it is unclear if the findings would hold for an innovative course. Overall, though, students' interest in a course may also represent another in-situ barrier that could appear at any point during the term. It could also be revealing to consider the type of course being studied and the presence of instructional innovations to help better understand this type of student motivation.

The many reasons outlined in Section 2.3 could all be factors that help to explain students' reasons to resist innovative instructional methods at the outset of a course as well as during a course, thereby representing possible barriers to change. Some of these barriers resemble Rogers' (2003) adoption of innovation attributes (e.g., perceived risks as a lack of relative advantage, difficulty as complexity). Other possible factors may also exist which have not yet surfaced due to the lack of a comprehensive framework or model. This research area is rich and fertile with unanswered questions. The next section synthesizes major gaps in the literature to demonstrate the need for the research undertaken for the dissertation.

2.4 Gaps from the Research Literature

From the higher education literature on students' responses to learning-centred instructional environments, there appears to be a reasonable body of knowledge that suggests that barriers exist when students encounter innovations in teaching. However, the body of knowledge does not suggest that these are well-understood phenomena – descriptively, prescriptively or normatively. From the literature review, four main gaps appear to be present.

First, no comprehensive, empirically based models were found that systematically sought to uncover and explore why students may resist an instructional innovation in a course, or which barriers to change may be most salient to address. Of the studies

located, most focused on only a limited number of possible reasons for resistance to innovative methods rather than acknowledging the potential complexity of this emerging research area. The studies' authors typically did not probe the thinking behind the barriers identified, give attention to the changes that students might need to make to engage with the new methods, nor consider the possible effects of time, experience within the educational system, and/or academic discipline. As well, the empirical backing in some studies was not strong. Overall, the area of student resistance to innovative instructional methods seems ill-defined.

Second, the research suggests that perceptions are potentially a large part of the barriers to innovation, but the studies that clearly compared instructor and student perceptions of a course that included an innovative instructional method were extremely limited. Alessio's (2004), Albers' (2009), Keeney-Kennicutt et al.'s (2008), and Thorn's (2003) studies were exceptions, but none sought to compare the two sets of perceptions directly. Alessio did not present her perceptions of the learning situation as actual data but rather as anecdotal comments. Albers kept a log about her experiences with the course, but she did not share much from it because her focus was primarily on the students' feedback. Keeney-Kennicutt et al. did more in-depth exploration and analyses of their instructor's reflective practice logs over several terms, but their focus was more on trying to understand why the instructor persisted with the innovative method rather than comparing her perceptions of the course experience with those of the students. Thorn is also an exception, having collected both instructor interviews and student surveys for seven courses, but the focus of her research was primarily on the instructors' experiences, not the students'. Most of the studies reviewed only collected data from either instructors or students; therefore, how the perceptions of each type of participant group compare and how well they intersect remain to be seen. Virtanen and Lindblom-Ylänne (2010) indicate that such comparisons are crucial to help maximize student learning. Faculty members may believe that they know why their students respond as they do to instructional innovations and may make accommodations based on their own ideas. However, if the faculty members are not seeing their courses in the same way as their students, they will not likely be able to respond in ways that will decrease or eliminate the students' resistance because they may be trying to resolve the wrong issue(s).

Third, the various literature sources reviewed did not seek to determine how new the innovative methods really were for the students. Typically, the assumption appeared to be that the method under review was new, but the students were usually not explicitly asked (or that data were simply not reported). Studies involving first-year courses (Keeney-Kennicutt et al., 2008) or first-year students (Messineo et al., 2007) would appear to be exceptions since students' university experience would typically be limited in those situations, but it is unclear whether the students were asked if the methods experienced were new to them. Alessio's (2004) study is also an exception in that students were explicitly asked if they had experience with problem-based learning (they did not), and yet many other authors claimed that the instructional methods in their studies were innovative. Perhaps they were innovative to the instructors themselves or even to the academic department, but students have experiences in other courses in other departments. As a result, given that the majority of the results reported in the literature reviewed may or may not represent the perceptions of students who are experiencing a course format that is unfamiliar to them, the relevance of these results may be questionable.

Finally, change management theories and models – including teleological and cultural – have not been widely applied in higher education, and were not found to be applied to changes at the level of an individual course. Authors who do draw on this research tend to focus on the institutional level. For example, Hannan and Silver (2000) describe case studies of changes made in five higher education institutions in the United Kingdom, and Berg and Ostergren (1979), Guskin (1996), Kezar (2001), Lueddeke (1999), and Ramaley (2002) use these theories and models to provide strategies for academic leaders to make changes at the institutional level. But changes at the level of a course have not been viewed through these theoretical lenses, even though much innovation in higher education actually occurs at the micro level of an individual course. The example instructional innovations studied in this dissertation – learning-centred approaches – are still new enough that they have not been widely adopted at the curricular or institutional level at most higher education institutions, making individual courses the site of change. Since change management models provide approaches and strategies for change agents (e.g., reducing resisting forces to make a change), they represent constructive frameworks to use in this study and may provide new insights not yet found by studying the issue from more of a

learning perspective. The organizational resistance to change literature is also absent in the higher education literature on innovative instructional methods, but might be able to help illuminate research frameworks and findings from the higher education context.

As an entry point to addressing these four gaps, an initial conceptual framework is proposed in Chapter 3 based on the literature review results, and it is used to develop a preliminary diagram to guide the exploration of possible student barriers to change that faculty members may need to address when trying to implement innovative instructional methods in their courses.

Chapter 3: Preliminary Conceptual Framework and Propositions

In the previous chapter, various possible barriers were outlined – both pre-existing and in-situ – about why students may resist innovative instructional methods during a course, from the outset through to the end. These possible barriers to change include:

Pre-Existing Barriers	**In-Situ Barriers**
• Experience with Methods	• Environmental Constraints
• Incoming Instructional Conceptions	• Perceived Risks
• Incoming Skills for Learning	• Perceived Workload
	• Influence of Others
	• Context-Specific Motivation

These barriers are used to develop a preliminary framework from which a visual representation is created to help guide the research design and data analyses.

3.1 Preliminary Conceptual Framework and Visual Representation

Table 3.1 synthesizes the possible barriers underlying student resistance as outlined in Section 2.3, thereby providing an initial conceptual framework to underpin the research study. It highlights sources that identify the possible existence of the proposed variables, and stems primarily from studies that focused on why students respond as they do to learning-centred instructional methods in higher education, methods which are deemed to be innovative because they are not commonly used. The literature sources included in the table were identified as being rigorous empirical studies or seminal articles found within the field. Factors and variables identified in the literature on resistance to change in business organizations were not included in the table at this point given the different context of the research studies; however, they may be used in revisions to this conceptual framework if the data analyses provided in Chapters 5 and 6 uncover possible variables not accounted for in Table 3.1 but which fit with those from Table 2.1 in Chapter 2.

The approach of providing a preliminary conceptual framework based on extant research literature is consistent with that of case study methodology and modified grounded theory, which are further explained as part of the research methodology outlined in the next chapter.

Table 3.1: Preliminary Conceptual Framework

Possible Barriers to Change	Proposed Variables to Describe Barriers	Literature Sources
PRE-EXISTING BARRIERS		
Experience with Methods	Year of study	Messineo et al. (2007)
	Familiarity with innovative instructional method(s)	Doyle (2008), Felder & Brent (1996), Kember (2001), Michael (2007), Reimann (2011), Thorn (2003), Windschitl (2002)
	Academic discipline	Keeney-Kennicutt et al. (2008)
	Preferences regarding past instructional methods	Alessio (2004), Felder & Brent (1996), Kember (2001), Messineo et al. (2007), Windschitl (2002)
Incoming Instructional Conceptions	Beliefs about: Students' roles and responsibilities Instructors' roles and responsibilities Acceptable course formats	Albers (2009), Bruner (1996), Doyle (2008), Elen & Lowyck (2000), Felder & Brent (1996), Hockings (2005), Kearney & Plax (1992), Keeney-Kennicutt et al. (2008), Kember (2001), Mallinger (1998), Messineo et al. (2007), Michael (2007), Thorn (2003), Weimer (2002), Windschitl (2002)
Incoming Skills for Learning	Perceived need to develop new skills to engage with a teaching or assessment method (e.g., public speaking skills for a discussion; writing and synthesis skills for an e-portfolio)	Albers (2009), Allen et al. (2001), Doyle (2008), Felder & Brent (1996), Handelsman et al. (2005), Kaufman & Schunn (2011), Keeney-Kennicutt et al. (2008), Kember (2001), Michael (2007), Thorn (2003), Windschitl (2002), Woods (2003)
IN-SITU BARRIERS		
Environmental Constraints	Classroom design	Hockings (2005), Michael (2007)
	Class size	Hockings (2005), Michael (2007)
Perceived Risks	Perceived effect on learning	Keeney-Kennicutt et al. (2008), Lewis & Hayward (2003)
	Perceived effect on grades	Albers (2009), Alessio (2004), Allen et al. (2001), Doyle (2008), Felder & Brent (1996), Handelsman et al. (2005), Kaufman & Schunn (2011), Keeney-Kennicutt et al. (2008), Lewis & Hayward (2003), Marsh & Penn (1988), Pepper (2010), Reimann (2011), Svinicki (2004), Windschitl (2002)
	Perceived emotional risk (fear, stress, anxiety)	Alessio (2004), Felder & Brent (1996), Keeney-Kennicutt et al. (2008), Kember (2001), Mallinger (1998), Pepper (2010), Weimer (2002), Woods (1994)

Table 3.1 (continued)

Possible Barriers to Change	Proposed Variables to Describe Barriers	Literature Sources
Perceived Workload	Perceived time to use the method	Albers (2009), Alessio (2004), Elen & Lowyck (2000), Hockings (2005), Keeney-Kennicutt et al. (2008), Lewis & Hayward (2003), Marsh & Penn (1988), Michael (2007), Reimann (2011), Weimer (2002)
	Difficulty of method	Lewis & Hayward (2003), Lowyck et al. (2004), Reimann (2011)
	Perceived clarity of instructor's explanations and instructions	Albers (2009), Allen et al. (2001), Doyle (2008), Elen & Lowyck (2000), Felder & Brent (1996), Keeney-Kennicutt et al. (2008), Kember (2001), Lewis & Hayward (2003), Marsh & Penn (1988), Pepper (2010), Reimann (2011), Thorn (2003), Windschitl (2002)
	Observability of expected outcome(s)	Keeney-Kennicutt et al. (2008)
	Perceived instructor skill with new method	Allen et al. (2001), Keeney-Kennicutt et al. (2008), Michael (2007), Pepper (2010)
Influence of Others	Perceived connection with instructor	Allen et al. (2001), Elen & Lowyck (2000), Handelsman et al. (2005), Kearney & Plax (1992), Pepper (2010)
	Perceived willingness of classmates to adopt new method	Felder & Brent (1996), Lewis & Hayward (2003), Windschitl (2002)
Context-Specific Motivation	Self-efficacy	Handelsman et al. (2005), Weimer (2002)
	Autonomy over learning	Lewis & Hayward (2003), Messineo et al. (2007), Reimann (2011), Weimer (2002)
	Level of interest in course	Handelsman et al. (2005), Lewis & Hayward (2003)

This framework was used as a starting point to guide the research design and served as an initial codex for the qualitative data analyses, becoming further refined throughout the various data analyses described in Chapters 5 and 6.

3.1.1 Preliminary Visual Representation

The possible barriers to change and proposed variables may be more easily represented and understood as a cause-and-effect diagram, also known as an Ishikawa or fishbone diagram. While this type of visual representation was developed to capture and analyze problems in manufacturing, it can be used in any situation where causal-type relationships

are under analysis (Ishikawa, 1982, p.26). Ishikawa indicates that such a diagram is created by first identifying the characteristic (effect) one wants to improve and then generating the possible factors that are thought to cause the effect (or perhaps, more accurately, are thought to correlate with the effect). The factors become bones or branches off the fish, and the diagram can become increasingly complex as more possible factors and sub-factors are identified, which are shown as twigs off the branches.

The factors and sub-factors are identified by continuing to ask "why" one element may cause another, which makes this mode of diagram creation a good fit when qualitative research methods are employed because such depth of understanding is commonly the intent of such methodologies (Miles & Huberman, 1994). If a diagram is too "thin", the understanding of the issue is "still too shallow" – a diagram with only five or six causes "cannot be considered a good diagram" (Ishikawa, 1982, p.26). However, a "good" diagram is in the eye of the beholder in that Ishikawa suggests "The person using the diagram will find out which is best. It will be the one that is easiest to use and the one that will serve as a guide to action" (p.157). One drawback of such diagrams is that there is no clear way to represent relationships between or amongst factors that are on different twigs on one branch or across different branches, but as a preliminary visual representation, where the existence of the factors and sub-factors is primarily under investigation, a fishbone diagram can provide a relatively clean view of the various possible antecedents to students' resistance regarding innovative instructional methods.

Defining Resistance and Engagement

In the instructional situation under study, the effect to be improved is students' resistance to innovative teaching and/or assessment methods, where "improvement" involves a reduction in resistance. Kearney and Plax (1992) define *resistance* within educational settings as "either constructive or destructive oppositional behavior" (p.86). And yet findings from their studies indicate that most student resistance is passive (responses involving avoidance, withdrawal, and covert actions), which suggests that students who do not engage in a course are resisting. *Engagement* in the educational context is defined as "involvement" and includes both behavioral and emotional aspects (Handelsman et al., 2005, Reeve, 2002), which is similar to Oreg's (2006) multidimensional definition of resistance in an

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organizational context. According to Reeve (2002), engaged behaviors in a learning context include attention, effort, participation, and persistence, while emotions include interest (versus boredom), enjoyment/happiness, enthusiasm, and (lack of) anxiety or anger (p.194). Engagement, then, can be seen as the opposite of resistance and would represent a positive, desired effect in learning situations analogous to a decrease in resistance – an assertion that becomes critical in the next chapter on research methodology. Given these definitions, by striving to increase engagement, resistance would necessarily need to decrease.

Creating the Fishbone Diagram

With resistance being the effect to improve, various possible factors need to be identified that may connect to and help explain the resistance. Table 3.1 lists the proposed factors (the possible barriers to change), along with possible sub-factors (the proposed variables), based on the higher education research literature. Figure 3.1 displays the main factors diagrammatically to provide a concise overview. The factors along the top of the fishbone diagram are the proposed pre-existing barriers to change that students bring into each course at the beginning of the term which can result in resistance, while the factors along the bottom are the proposed in-situ barriers that could arise over the course of the term.

Figure 3.1: Proposed Main Factors of Student Barriers to Change

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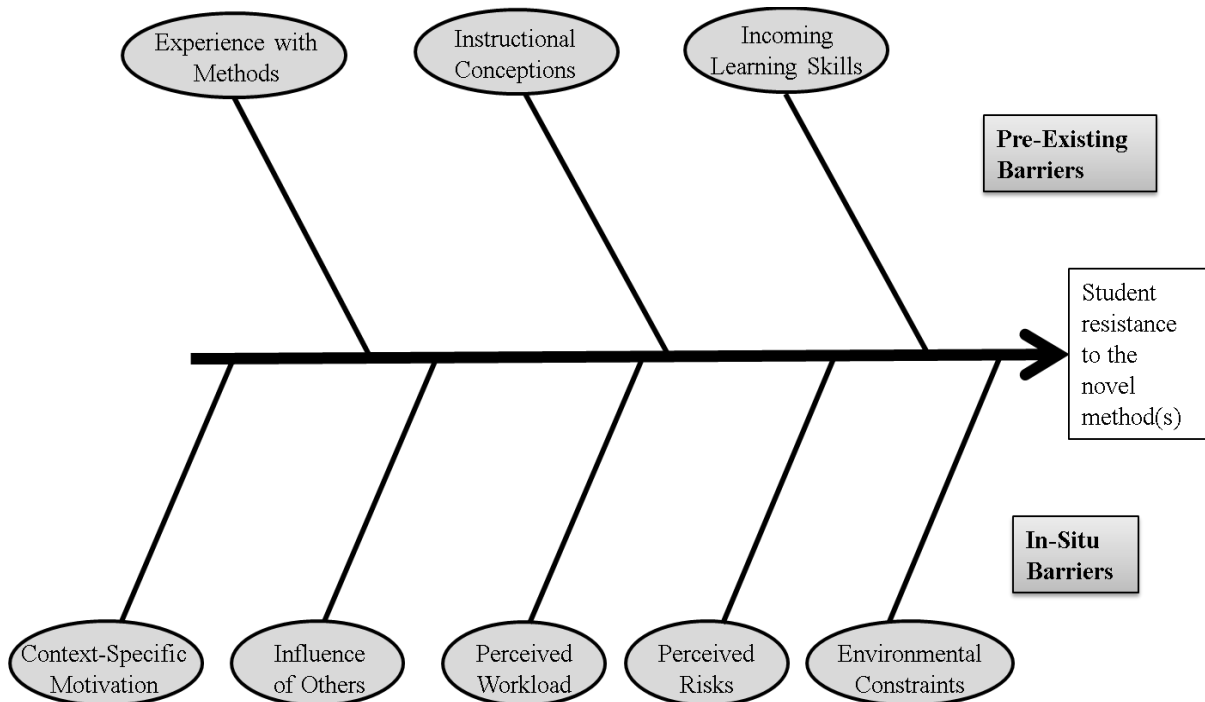
The main focus in the research is on identifying barriers to making a change because, according to Lewin's change theory as outlined in Section 2.1.2, less tension results when resisting forces are decreased rather than when driving forces are increased. No attempt is made at this point to represent the specific effects of time (e.g., which barrier is most salient when or an individual student's decision-making process about resistance) since the existence and accuracy of the actual barriers have yet to be determined. Each proposed factor is described next, being synthesized from Section 2.3. Following this description, the composite fishbone diagram is displayed visually in Figure 3.2.

- **Students' past experiences** in higher education may lead to resistance. Students experience various courses and instructional methods every term, but the dominant methods are typically teaching-centred. The longer they have been in the post-secondary system experiencing the same instructional methods, the more likely resistance will occur when they are faced with an innovative course that uses unfamiliar, learning-centred instructional methods. The academic discipline of the students also affects their educational experiences. Different norms for instructional practices have been shown to exist yet may not mesh well with the requirements of an innovative instructional method. As well, students' preferences regarding instructional methods, which are based on their previous experiences, may affect their response to an innovative method: if they have come to prefer traditional methods or dislike an innovative method, this may lead to resistance when they are faced with a novel method.
- Students also enter courses with **conceptions (or beliefs) about instructional practices** which include their beliefs about what instructors and students should do and be responsible for and what styles of teaching and assessment methods are acceptable in a post-secondary course. When the format and requirements of an innovative course do not fit with their beliefs – as would be the case when learning-centred methods are used with students who hold teaching-centred beliefs – resistance may occur.
- The **skills** that students bring into each new course may also become reasons for resistance if they do not have the appropriate skills needed to engage with and learn

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from the innovative teaching or assessment methods. The need to develop new skills may lead to resistance.

- Courses themselves may have **environmental constraints** that may contribute to students' resistance, but this type of barrier would not be known until the students are actually in the course, making it an in-situ barrier. The number of students in a course may affect resistance, with students who have larger classes potentially being more resistant to learning-centred methods perhaps because it can be more difficult to facilitate such methods as the number of students increases. The classroom design also may not effectively support the implementation of learning-centred, interactive teaching methods, possibly negatively affecting students' responses to the methods.

- Students may also assess novel instructional methods based on the **perceived risks** that may be associated with their engagement with these methods. If the methods are perceived to negatively affect the students' learning or grades, the students may consider these risks to be reasons to resist engaging with the methods. As well, if trying to use the new method causes stress or anxiety in students, such negative emotions may also be a factor behind their resistance.

- Another factor that may become apparent as the course unfolds is the **perceived workload** involved for the students to engage with the methods. Learning-centred methods are not designed to save students from the work of learning; they may even increase the amount of work involved. As a result, if the students feel the innovative methods are time-consuming to use, their perceived workload would increase and they may resist. If they believe the methods are difficult to use, this could also increase the time needed to use the method, which may lead to resistance. If faculty members do not help to clarify the new method by providing clear instructions, this may increase students' workload and lead to resistance. Faculty members' skill and experience with an innovative method may exacerbate the situation; if they do not yet understand what may confuse students, have difficulties implementing the method, or are unable to provide observable examples of model work, then they may be contributing to the students' perceptions of increased workload regarding the method, which may lead to resistance.

- **Others involved in the course** may also affect students' resistance. When instructors do not connect with their students, which may be hard when they are implementing a method that is new to the students, the students may resist engaging with the course. The responses of their peers to a new method may also affect how students respond; if others in the class resist participating with the method, they may also resist.

- Finally, **context-specific motivation** may affect whether students resist innovative instructional methods or not. If students do not feel confident about using the new method (self-efficacious), this may lead to resistance. Also, when students do not feel autonomous in a course, feel too autonomous, or do not find the course interesting, they may also resist.

Figure 3.2: Preliminary Diagram of Possible Student Barriers to Change
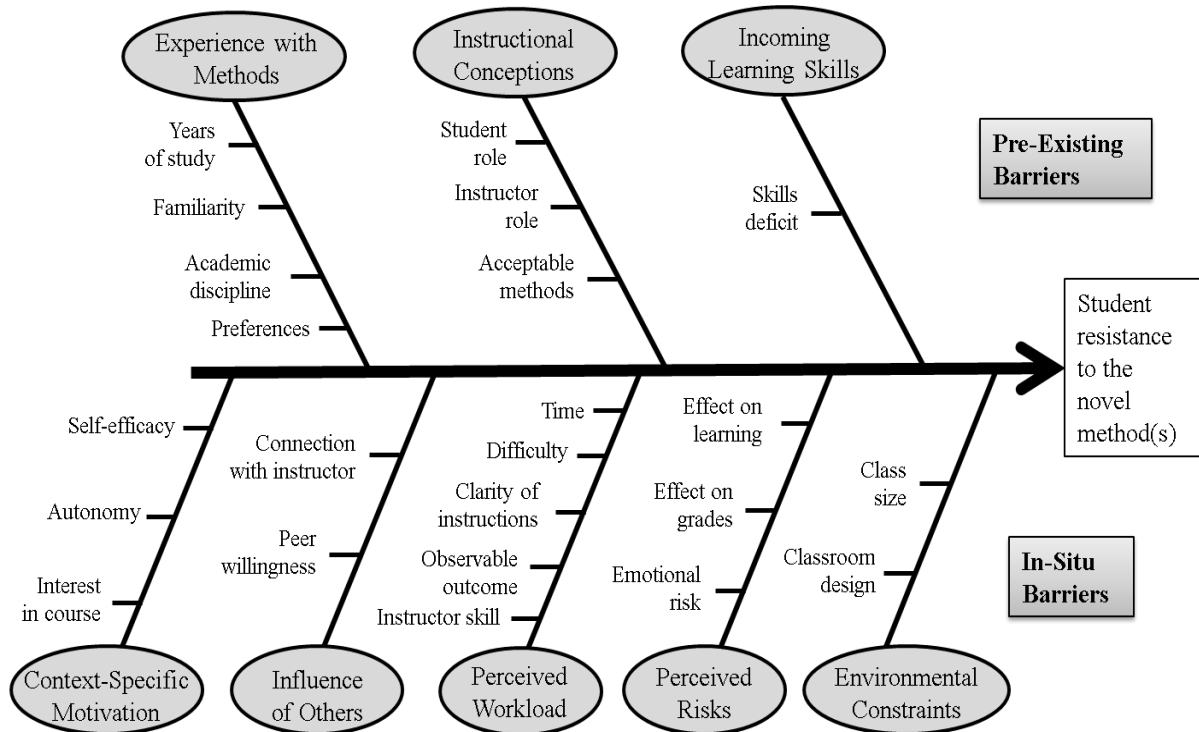
In the next section, preliminary research propositions are outlined that stem from the literature review and the gaps identified in Section 2.4.

3.2 Preliminary Research Propositions

The preliminary conceptual framework, visual representation, and literature review allow for and were used in the development of initial research propositions to help guide the research design and subsequent analyses. However, given that the barriers to change outlined are not yet well-established in the literature and no comprehensive theoretical model exists, the four preliminary research propositions articulated below primarily support an exploratory study and are, as a result, reasonably broad.

While there is an identified gap regarding empirical evidence from students to support the existence of a comprehensive framework of barriers, the literature reviewed suggests the existence of various possible barriers that identify why students may resist innovative instructional methods that are learning-centred. It would seem logical, then, to first speculate that:

> ***P1: The barriers underlying students' responses to innovative instructional methods that are outlined in the preliminary conceptual framework can be linked to empirical evidence <u>from students</u>.***

The dynamic course context model in Chapter 1 (see Figure 1.1) highlights the critical role of time in relation to the post-secondary student experience. For each course, students enter with the accumulation of their past educational experiences, which may be sources of resistance to innovative instructional methods. As the innovative course progresses, however, new barriers to change may arise in response to the context of that specific course and may represent further sources of student resistance. As a result, it is proposed that:

> ***P2: Students have both pre-existing and in-situ barriers to change which influence their potential resistance to innovative instructional methods.***

Time also seems important in conjunction with the variety of instructional methods that students experience throughout the years of their post-secondary studies. In both Chapters 1 and 2, literature was cited that claimed the longer that students experience the same types of instructional methods, the more they may come to expect those methods. Chapters 1 and 2 also indicated that instructional methods can vary across academic disciplines, thereby affecting the amount of instructional variety that students tend to experience. These past

experiences create beliefs or norms about what should occur in a course, but when students encounter an instructional method outside of the norm, they may be unwilling to engage and resistance may occur. As a result, it is proposed that:

> *P3: Senior students who have experienced less instructional variety will be less willing to engage with innovative instructional methods than either junior students who have less educational experience or students who have experienced more instructional variety.*

Finally, faculty members and students have their own perceptions about innovative instructional methods, but the limited literature that includes both parties' perceptions suggests that different concerns or reasons to resist are identified by the two groups as being important. Faculty members need to be aware of students' underlying barriers to resist so that they can attempt to address these barriers rather than offer to help with concerns that they assume are the most salient. It is suggested that faculty members and students do not automatically share the same understanding of the change situation just because they are involved in the same innovative course. They may identify different barriers to change, or even when they identify the same barrier, they may not perceive the same level of importance or define the barrier in exactly the same way. As a result, it is proposed that:

> *P4: When student resistance is present in an innovative course, students and faculty members do not have a shared understanding of the barriers underlying the resistance.*

Chapter 4: Research Methodology

In this chapter, the methodology is explained for the research undertaken to investigate the questions outlined in Chapter 1 and the preliminary propositions provided in the previous chapter. Information described in this chapter covers the selection of the research methodologies, the research setting, and the various data collection and analysis methods employed.

4.1 Selection of Research Methodologies

Given that the research focuses on why students may resist instructional innovations at the level of an individual course, case study research methodology was identified as being the most appropriate approach. According to Yin (2009), the case study approach is "the preferred strategy when 'how' and 'why' questions are being posed, when the investigator has little control over events, and when the focus is on a contemporary phenomenon within some real-life context" (p.2). Case study research may be used for exploratory through to explanatory purposes, but should always start from a preliminary theory that drives decisions about what data to collect and how to analyze the data (Yin, pp.35-36). Creswell's (2007) definition provides further insights; he indicates that case study research involves a qualitative approach to a bounded system over time through detailed data collection involving multiple sources of information (p.73).

This research focused on one course that included innovative instructional methods, which was held during one term at the University of Waterloo. The course was bounded by time and space, and the issue under investigation was both contemporary in nature and focused on exploring students' reasons for resisting novel, learning-centred instructional methods. Preliminary propositions were identified in Chapter 3, in keeping with an exploratory case study. As well, primarily qualitative data were collected via questionnaires, interviews, course evaluation instruments, course materials, and classroom observations, and the data stemmed from both students and the course instructor.

Qualitative research methods, which are typically used in case study research, are also encouraged for exploring resistance to change issues. Erwin and Garman (2010) used

survey-based research articles in their review of resistance to organizational change, but argued that "findings derived from diverse research methodologies (e.g., qualitative studies, case studies, action research, and clinical inquiry) would provide a greater range of perspectives, and perhaps a more actionable knowledge base…that would be helpful in understanding the messy reality of the practitioner's world" (pp.50-53). Classroom-based research is nothing if not messy. Students and instructors interact over time in a very dynamic context where numerous overt and covert variables may affect those interactions. Case study research allows for use of multiple methods of both data collection and analysis, which can help to reveal the subtleties of complex contexts like a classroom.

The case study approach may involve single or multiple cases and can have a holistic or embedded design (Yin, 2009). In this research, one course was the overall unit of analysis and the overarching case; however, an embedded design was employed in that two sections of the same course were studied simultaneously, and within these sections, individual students were purposefully interviewed to serve as individual cases within the larger case study. While multiple cases allow for greater understanding of the issue(s) under study and increased confidence in the findings, single case studies can be used when they are longitudinal in which the same case is studied at two or more different points in time to capture a change (Yin, p.49). For this research, data were collected from one main case primarily at two distinct times – beginning and end of term – in order to discover if reasons for student resistance differed over the course of an academic term. The multiple student interviews done at the end of term were designed to help verify the existence of the themes that arose from the questionnaires as well as to capture a richer understanding of students who were least and most willing to engage with the innovative instructional methods used in the course. Single case studies are not uncommon in higher education research (see for example, Hockings' (2003) dissertation).

The data collection and data coding methodologies used were based on a modified grounded theory approach, which is the same as grounded theory in its intent to develop theory rather than test theory but differs in a significant way by acknowledging and accepting the need to start with articulated theoretical lenses and empirical conceptual frameworks (Corbin & Strauss, 2008; Lingard, Schryer, Garwood, & Spafford, 2003; Parkhe, 1993; Perry

& Jensen, 2001). Corbin and Strauss indicate that existing literature and "a previously identified theoretical framework can provide insight, direction, and a useful list of initial concepts" (p.40), which can influence both data collection and data coding (pp.37-38). However, they also caution that "a researcher should remain open to new ideas and concepts and be willing to let go if he or she discovers that certain 'imported' concepts do not fit the data" (p.40). Starting with a preliminary framework also fits with Yin's (2009) recommendations regarding case study methodology. The conceptual framework developed in Chapter 3 represents the main theoretical starting point for this research. How the modified grounded theory approach is implemented in this research is discussed in the sections that relate to data collection and data coding.

Assessments of qualitative data collection and analysis differ from those used for quantitative studies, although some sources on qualitative research methods use terminology from quantitative studies (e.g., validity and reliability) (Creswell, 2007; Miles & Huberman, 1994; Yin, 2009). In general, criteria for assessing qualitative research "focus on how well the researchers have provided evidence that their descriptions and analysis represent the reality of the situations and persons studied" (Lodico, Spaulding & Voegtle, 2006, p.273). In the following sections, the data collection and analyses procedures are described clearly and in detail to demonstrate reliability. Further validity and reliability practices used in this research are identified throughout the rest of the chapter.

4.2 Research Setting

The course selected for the research case study was a second-year Economics course in the Faculty of Arts on the subject of entrepreneurship. Using criterion-based purposeful sampling (Patton, 2002), this course was selected because it met the following criteria:

- Included a number of potentially innovative teaching and assessment methods that were examples of learning-centred methods and differed from the lecture and exam methods usually used in the Economics department
- Typically had large enrolments of undergraduate students in each of two sections (approximately 100-150) to provide a heterogeneous pool of participants which would enable exploration of diverse perspectives

- Attracted students from various years, second through fourth, and from all six Faculties to allow responses from various subgroupings of students to be analyzed and compared
- Had an experienced faculty member who had taught the course in a similar manner for several semesters (he has taught the course more than 60 times) and experienced reasonable success as assessed by end of term course evaluation results, yet expected some pushback from at least some students each term

The course included four instructional methods that were considered to be different from the usual lecture-and-exam methods used in the Economics department:

1. Lectures included interactive discussion components in classes of 50 and 100 students
2. Students worked extensively in groups, with 80% of the course grade coming from group assignments
3. The groups selected from a menu of 11 assignments to earn up to 100 of the 200 possible points for their grade
4. Attendance was randomly checked five times during the term and only if all group members were present would they earn a bonus point

All of these methods suggested that the faculty member's role would be less directive, requiring the students to take more responsibility for and be more involved in their learning than would normally be needed to attend lectures and write exams. As well, the methods linked to specific learning skills transferable beyond the course to entrepreneurship. The methods focused on students and their learning and, as such, were deemed to qualify as learning-centred instructional methods.

The smaller section met from 8:30 to 9:20 a.m. and the larger section met from 9:30 – 10:20 a.m. three times a week in the same classroom during the Winter 2009 term. The classroom was a typical theatre-style lecture hall with tiered seating in a u-shape with two aisles, seats affixed to the floor, and long tables also attached to the floor. The aisles split the seating into three groupings of about 25%, 50%, and 25%. The room was equipped with technologies to support PowerPoint presentations (data projector, screen, sound system), but also had multiple white boards at the front of the room not covered by the projector screen.

4.2.1 Participants

The research participants included the faculty member who taught both sections of the course and the students in each section of the course. Once the study received ethics clearance, the faculty member was recruited from an email sent to all faculty members in the Faculty of Arts and the Faculty of Engineering at the University of Waterloo and was selected based on the criteria outlined in the previous section (see Appendix B for the recruitment email). All of the students in the two course sections were invited to participate in the study and were recruited in their classroom. The recruitment letters that prefaced each student questionnaire, the text from the in-class recruitment announcement, and the interview recruitment email all appear in Appendix C.

Overall 83% of students present in class when the questionnaires were distributed consented to participate by completing the instrument. For the follow-up interviews, 72% of students contacted consented to be interviewed (one did not show up at the scheduled interview time). Of the 172 students who participated in the in-class questionnaires, the breakdown by year of study and Faculty are provided in Tables 4.1 and 4.2 below.

Table 4.1: Participants' Year of Study

Year of Study	Total Participants	% of Total
2nd	70	41%
3rd	35	20%
4th	37	22%
Unknown	30	17%
Totals	**172**	**100%**

Table 4.2: Participants' Faculty of Study

Faculty of Study	Total Participants	% of Total
Applied Health Sciences	2	1%
Arts (includes Accounting)	85	49%
Engineering	5	3%
Environment	6	3%
Math	18	11%
Science	24	14%
Undeclared/Unknown	32	19%
Totals	**172**	**100%**

Although the majority of students were from the Arts Faculty, the variety of majors represented was extensive, including Economics, History, Legal Studies, Liberal Studies, Political Science, Psychology, Anthropology, French, Fine Arts, Speech Communication, Sociology, and Social Development Studies, suggesting possible variety in commonly used instructional methods even within this one Faculty. There was also a mix of students who took the course because it was required versus those who took it as an elective; however, data about this difference are incomplete because that question was only included on the first questionnaire and not all students completed both questionnaires.

4.3 Data Collection Methods

Data were collected at different points throughout the term via different methods, providing the opportunity for data source and methods triangulation as well as prolonged engagement in the field as means of establishing validity. Recording equipment was used and transcriptions produced for all interviews, and field notes were kept for all observations, which provided means of demonstrating reliability in data collection.

The data collection methods outlined in Table 4.3 are identified according to the time of term in which the data were collected. Each type of data collection method is further explained in the following subsections, and the specific instruments developed and used can be found in Appendices D through F. More detailed explanations of the data collection procedures and instrument development appear in Appendix G. Where applicable, concepts from the preliminary conceptual framework, developed and discussed in Chapter 3, were used in designing the data collection instruments, which is in keeping with a modified grounded theory approach.

Table 4.3: Data Collection Schedule

Start of Term	During Term	End of Term
Instructor interview (I-A)	Instructor interview (I-B)	Instructor interview (I-C)
Document collection (past course evaluations, course outline, assignments)	Classroom observations	Document collection (current term's course evaluations)
Student questionnaires (Q-START)		Student questionnaires (Q-END)
		Student interviews

4.3.1 Instructor Interviews and Document Collection

The instructor for the course, hereafter known as "Bill Jones", was interviewed in a semi-structured format three times during the term. The first interview (I-A) occurred before the term started to collect contextual information about the course and past students' responses to the novel instructional methods. The second interview (I-B) happened one month into the term, and the third (I-C) occurred shortly after the lectures were over. The purpose of the last two interviews was to capture the instructor's perceptions of the course and of the students' responses to it so that his perceptions could be compared to the students' reported responses. Each interview was approximately 60 minutes long and was electronically recorded to ensure accuracy. The interviews were transcribed and again checked for accuracy, resulting in 47 pages of textual material for analysis. The interview protocols appear in Appendix D. The purpose for each question or grouping of questions asked is explored further in Appendix G.

As well, the instructor provided access to the online course outline and assignment descriptions as further contextual background. Standard University of Waterloo Faculty of Arts end-of-term course evaluations from past and current terms were also provided as another source of data about students' responses to the course.

4.3.2 Classroom Observations

Each class section met three times per week for 12 weeks. I observed nearly all of the classes (n=58) as a non-participant observer, recording field notes in a standard notebook. I typically sat near the back of the classroom so that I could unobtrusively observe as many students as possible; however, the students were informed about why I was present in their classroom. Periodically the course instructor acknowledged my presence in front of the class, but overall my presence appeared to be unremarkable and the instructor indicated that there was no noticeable difference between the interaction types or level in the classes that term compared to previous terms.

The purpose of the observations was to collect background information about the classroom context and witness first-hand the faculty member-student interactions involving the innovative methods to help deepen my understanding of the interview and questionnaire responses. In particular, observation notes regularly included the following information:

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- Number of attendees (counted weekly)

- Instructor discussion of the innovative methods

- Questions raised by students regarding any of the innovative methods

- Details about in-class discussions since interactive lectures were one of the innovative methods (e.g., frequency, duration, type of questions posed, number of student respondents)

- Observer reflections about the classes and possible resistant behaviors and attitudes that influenced subsequent data collection questions

These observational areas are based on elements of engagement and resistance as outlined by Handelsman et al. (2005), Kearney and Plax (1992), and Reeve (2002).

4.3.3 Student Questionnaires

Two primarily open-ended questionnaires were distributed in each class section. To identify possible pre-existing barriers to change, one questionnaire (Q-START) was distributed in the first class before the instructor introduced the course; the second questionnaire (Q-END) occurred in the second last week of classes on the day of the last random attendance check and after course evaluations had been completed as a retrospective capture of students' perceptions of the course and reasons for engaging or not with the innovative methods.

Questionnaire Design

For Q-START at the start of term, students were asked for demographic information (name, program, year of study, required or elective course, grade point average, and number of courses taken), past experience with various teaching and assessment methods, a rating of past satisfaction with lecture-and-exam courses versus other types of instructional methods, types of instructional methods expected in this course, a rating of willingness to engage with teaching and assessment methods not expected, and reasons that would encourage and discourage their engagement with such methods. At the end of term, Q-END asked for a rating of their satisfaction with the course and reasons for their rating, ratings of how new and not expected each of the four novel methods were and how willing they had been to engage with each at the start and the end of term, reasons that encouraged and discouraged their engagement, and their predicted grade in addition to the class average. Both

instruments appear in Appendix E. Explanations of the rationales for the questions posed appear in Appendix G.

Key Questionnaire Design Considerations

Key terminology used on the questionnaires warrants further explanation to clarify the underlying intent in the choices made. First, on Q-START, students were asked for reasons about engaging with "teaching methods" and "assessment methods" they did not expect. On the instrument, students indicated whether they had experienced various specific instructional methods – which they selected from two listings of methods categorized as either teaching or assessment methods – before being asked for their reasons to engage or not. Beyond being used to capture the students' instructional variety, the lists were intended to give the students examples of types of "teaching methods" and "assessment methods" to help clarify what was meant by each term. However, no specific examples of instructional methods were identified in the open-ended questions about reasons to engage or not because students may have had quite different conceptions of a specific method without having had a common experience with it in the course.

Second, on both questionnaires, students were asked via open-ended questions for reasons that would discourage as well as encourage them from engaging with the various instructional methods. This balanced perspective regarding encouragement and discouragement was adopted to avoid biasing the research setting. I did not want to emphasize my focus on resistance to change because I did not want to bias the data collected or risk negatively affecting the students' perceptions of the course, which could have skewed their end-of-term course evaluation responses and thereby affected the course instructor. Identifying reasons for encouragement also allowed for analyses about the uniqueness of the discouragement reasons. Additionally, while these questions focused on opposite ends of an "encouragement" continuum, some students recorded "nothing" as their response which suggests that they did not feel bound by a dichotomous choice.

Third, in avoiding an emphasis on "resistance", the questionnaire wording instead focused on students' "willingness to engage" with the different methods. As was outlined in Chapter 3, "engagement" is viewed as the opposite of resistance and was also chosen to minimize biasing the data collection and the research setting. If students are engaged with a

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method, they are not resisting it; rather, they are participating in it (behavioral element) and also showing enthusiasm for it (affective element). Viewing engagement as involving both a behavioral and an affective dimension is consistent with the higher education and motivation literature (Handelsman et al., 2005; Reeve, 2002). However, students may participate in an instructional method simply because it is required (and often graded), demonstrating what Kearney and Plax (1992) call "reluctant compliance" which they identify as a form of resistance. To maximize structured and sustained learning, students need to have a positive attitude and want to participate; in other words, they need to be open to trying the new method. The term "willingness" was added to "engagement" for the rated questions on both instruments to convey this idea of an open attitude. Fishbein and Ajzen (2010) suggest that "willingness" can be used synonymously with "intention" and "readiness to engage" in explanations of their theory of reasoned action wherein intention is the most important predictor of actual behavior (pp.42-43).

The few rating scales used on the questionnaires were not designed to support statistical analyses; rather, they were meant to facilitate analytic sorting of respondents according to positive or negative perceptions about the course and its various elements. As a result, for most scaled questions, no "neutral" or "undecided" response option was provided, but students were informed that they could decline answering any question. Other closed-ended questions requested categorical data (e.g., year, major), again with the intent of enabling analytic sorting.

Questionnaire Response Rates

Given that the questionnaires were completed in class, the response rates were quite high as are shown in Table 4.4. A total of 172 students completed at least one questionnaire, with 57 students completing both of them. The open-ended responses from both questionnaires resulted in 66 pages of textual data for content analysis.

Table 4.4: Questionnaire Response Rates

Start of Term (Q-START)			End of Term (Q-END)		
Class Time	**Respondents**	**%**	**Class Time**	**Respondents**	**%**
8:30 a.m.	32/49	65%	8:30 a.m.	37/44	84%
9:30 a.m.	81/99	82%	9:30 a.m.	79/82	96%
Total = 113/148 = 76%			Total = 116/126 = 92%		

4.3.4 Student Interviews

Stratified purposeful sampling (Patton, 2002) was used to identify participants for the individual interviews. Drawing from those who consented to participate in a follow-up interview, the students were recruited from the overall sample of students in both sections of the course, and were selected to broadly represent both positive (n=6) and negative cases (n=11), based on their questionnaire responses. An effort was also made to balance students from different years and programs of study as well as across the two course sections to allow for data to be collected from a maximal variety of student backgrounds and experience levels to assist with responding to the second research question. In total, 25 students were contacted to participate in an interview; 16 students were interviewed face-to-face and one completed the interview questions by email.

The main purpose of the interviews was to check for literal replication of the questionnaire thematic findings (Yin, 2009) and to see if any new or disconfirming data emerged. The interviews were electronically recorded and transcribed, yielding 203 pages of textual material for analysis.

Interview Protocol Design

Each interview took approximately 45 minutes and followed the semi-structured interview guide found in Appendix F. The planned interview questions changed throughout the academic term due to the initial coding of the questionnaire data and the observational data from the classes in order to probe further into areas of possible interest. Numerous questions were asked about the students' responses to the innovative instructional methods used in the course, including: what was new, what they were most and least willing to engage with and why, where their responses stemmed from, how their thinking about the methods changed if at all, how well the methods would work in courses in their own discipline, and the effects of the methods on their attitudes and behaviors regarding the course. They were also asked more general questions about their openness to changes in instructional methods, whether new teaching or new assessment methods were more unsettling to them and why, the level of responsibility the course required of them, and their definitions of educational terms such as "learning" and "lectures". Further descriptions of the rationales for each set of questions appear in Appendix G.

4.4 Data Analysis Methods

Extensive textual data were available for analyses, which also enabled the use of the validity practice of providing rich, thick descriptions in the Findings chapters. Case study data analysis methods are not firmly dictated by the research literature (Yin, 2009); therefore, various approaches to qualitative data analysis were employed, based on the research questions and preliminary propositions. For all thematic coding analyses, a modified grounded theory approach was employed, as was outlined in Section 4.1. Comparative data analyses used frequency counts and measures of proportions in addition to thematic comparisons. Further explanations of these approaches appear in Chapters 5 and 6 when they assist in understanding the findings presented, but the general procedures for data analysis employed in this research are outlined in this section. Appendices G and H outline the details of the specific techniques used in the data analyses for further examination, and Appendix G includes examples of data coding where relevant.

4.4.1 Iterative Data Coding and Analysis

The data coding was completed in multiple iterations; each level of coding resulted in a stronger analytical understanding of the data. As part of the modified grounded theory approach used in this research, the preliminary conceptual framework that was developed in Chapter 3 served as the initial theoretical framework to assist with data coding.

All responses to the open-ended questions were coded using line-by-line coding, with discrete ideas within each response being the unit of analysis (Charmaz, 2004). For example, "Lose marks and time" (B75) was divided into two ideas: "lose marks" and "lose time". The first idea was coded as *Effect on Grades* and the second as *Time*. Each discrete idea was categorized under only one code, but complete responses were listed under each applicable code to keep the responses intact. When a response included more than one discrete idea, underlining was used to identify the relevant idea within each code to assist with coding clarity (this underlining was removed in the sample quotations used in the dissertation to enhance overall readability). The coding was checked multiple times for accuracy. All questionnaire responses were retained in the data coding despite the degree of questionnaire completeness due to the exploratory nature of the research.

The questionnaire data were coded first, beginning immediately after Q-START was completed. The data were initially coded without reference to the preliminary conceptual framework in order to let *in vivo* codes emerge directly from the data. The codes were cross-checked for discreteness of categories, and then were checked against the variables identified in the conceptual framework. Some code labels were changed to match those in the conceptual framework and acknowledge the presence of a code's construct within the extant literature. The same coding labels were appropriate to use in coding the responses regarding what would Encourage as well as Discourage engagement with the instructional methods, although the specific properties of each code differed between what encouraged and discouraged. This practice of using the same codes (but with different properties) for positive and negative responses parallels the approach that Reimann (2011) used in her study.

Focused coding was then undertaken to work on clustering similar codes into larger themes or clusters (Charmaz, 2004; Miles & Huberman, 1994). These refined codes and themes were then used to code the end of term questionnaire (Q-END) responses as well as the student interviews, which enabled the codes to be further checked for accuracy, completeness, and literal replication (Miles & Huberman, 1994; Yin, 2009). The open-ended comments on the course evaluations were also coded according to this same barrier codex as was established for the student questionnaire and interview data. The instructor interview transcripts and observational data were coded selectively, since much of the information in them was used to illuminate the context of the case study; however, the reasons that Professor Jones identified regarding student resistance were coded using the same barrier codex as outlined above.

Each round of coding typically led to further refinements to the barrier codex. To provide a measure of reliability to the coding, all codes were checked for plausibility by the research supervisor and were accepted. The code and theme definitions are explored in Chapter 5. Examples of data coding appear in Chapters 5 and 6 and in Appendix G.

4.4.2 Data Reduction

The next major step in the analysis was to perform content analysis by counting the frequencies of the various codes from the questionnaire data as a means of explicitly identifying their prevalence and allowing for emerging patterns to be explored (Creswell,

2008; Leedy & Ormrod, 2005; Miles & Huberman, 1994). With frequencies counted, tabular analyses were done to further reduce the data and look for emerging patterns. Miles and Huberman argue that "data reduction is a form of analysis that sharpens, sorts, focuses, discards, and organizes data in such a way that 'final' conclusions can be drawn and verified", and they advocate for the use of matrices, graphs, charts, and visual models as means for displaying these data reductions and checking for patterns and relationships (p.11). These tabular analyses facilitated comparisons between reasons cited for encouraging versus discouraging engagement, reasons given at the beginning versus the end of term, and reasons given for each instructional method studied.

The data were then further reduced by pulling out coded comments from subgroupings of students so that comparative analyses could be done. These data reduction and comparative techniques are more fully explained in Chapter 6 and more detailed descriptions are provided in Appendix H. Interview and observational data were included in these analyses where they provided further explication. These comparative analyses were done to investigate the research propositions outlined in Chapter 3; the findings appear in Chapter 6.

4.4.3 Memo-Writing

Memo-writing, another technique used in grounded theory, was employed throughout the data collection and analysis processes to capture my questions and surprises and to explore possible connections between and amongst the emerging codes and themes as well as theories from the existing research literature (Charmaz, 2004, 2006). Concurrent with the creation of increasingly developed memos, draft fishbone diagrams were designed in an effort to capture the essence of the findings and represent them as a tentative proposed theoretical framework (Miles & Huberman, 1994), with the intention of being able to replace the initial fishbone visual diagram (see Figure 3.2) as findings from the case study emerged and my understanding of the barriers increased.

4.4.4 Re-Connecting to Existing Theory

Based on the thinking that emerged from the memos and ongoing reviews of the existing research literature, the main themes were then categorized via theoretical coding (Charmaz, 2006), resulting in overarching themes. These overarching themes were integrative and

assisted in linking the empirically supported codes to an existing theoretical framework. The utility of this theoretical framework will need to be tested in subsequent research, but the practices of modified grounded theory facilitated the creation of a testable model (see Figure 7.3 in Chapter 7).

Chapter 5: Research Findings – Themes Defined

The focus of this chapter is to describe and define the key themes that arose from analyses of the research data collected from students in the two sections of the case study course regarding what would discourage them from engaging with an instructional method that was new to them or that they did not expect. These themes help to respond to the first research question asked: what are students' barriers to change for a course that uses innovative instructional methods? The chapter concludes with a synthesis of the thematic findings, shown as a revised conceptual framework and fishbone diagram, which are further analyzed and refined in the next chapter.

Where possible, the themes identified in this study have been connected to the factors, or barriers, included in the preliminary conceptual framework and Ishikawa diagram discussed in Chapter 3. Factors, such as **Experience with Methods**, are now labeled as "themes" and sub-factors (or variables), like *Preferences*, have become "codes", which is consistent with qualitative research terminology (Corbin & Strauss, 2008; Miles & Huberman, 1994). To help situate the findings, the relevant bone from the preliminary comprehensive fishbone diagram in Figure 5.1 appears at the start of each thematic description.

Figure 5.1: Preliminary Comprehensive Fishbone Diagram
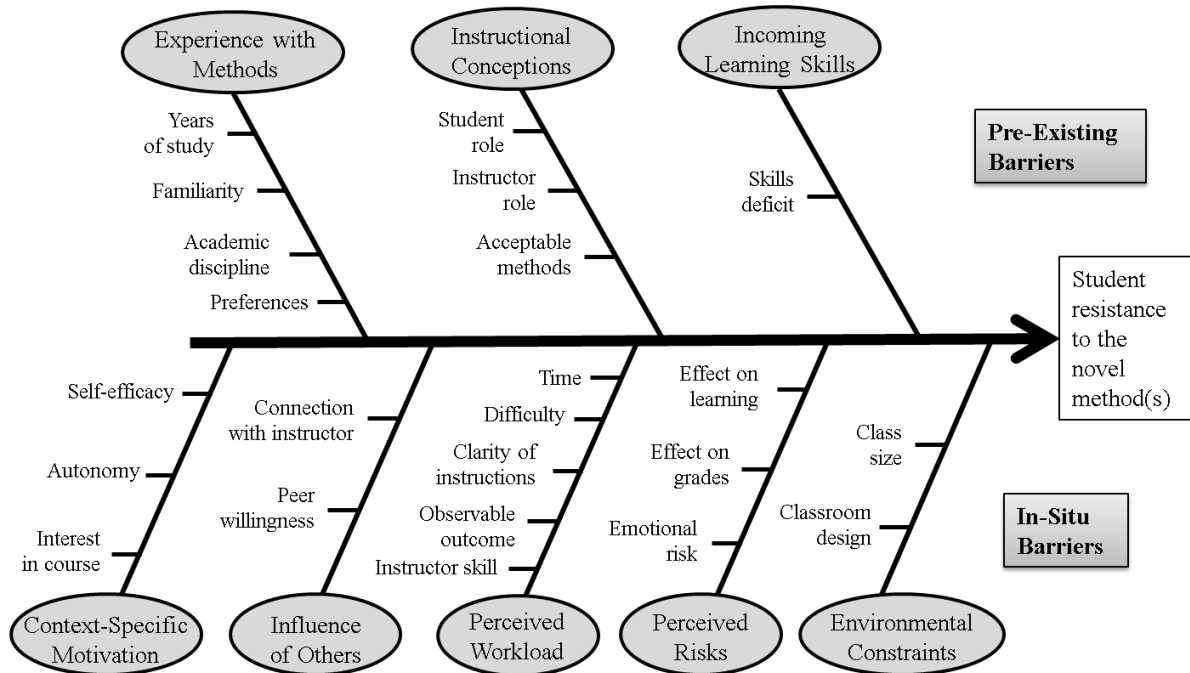
Themes are defined by explaining the codes that comprise the theme and the properties of each code. These properties include coding labels and various sample illustrative quotations from the student questionnaire and interview data. The quotations include each respondent's identifier code, with A signifying the 8:30 class section, B signifying the 9:30 section, and the digit being their unique identification number. Given the focus on discrete ideas as the coding unit of analysis, some quotations may appear within more than one code when a response included more than one unique idea. The analytic focus is kept primarily on responses regarding the possible barriers that may discourage students from engaging with various novel instructional methods since the focus of the research is on resistance to change; however, comments about what would encourage engagement are briefly discussed in each section to provide a richer understanding of the data. Both Encourage and Discourage responses were coded using the same themes and codes; the properties varied to reflect the positive and negative foci of the responses. The students were also asked for the rationale behind the reasons that they stated: when these were provided, they appear in the quotation after a "why?" prompt.

No attempt is made in this chapter to systematically analyze any differences within or across themes according to time of term, type of method, year of student, or academic program of student. Such comparative analyses are provided in the next chapter. At this point, a holistic picture of the various themes is needed to provide a foundational understanding for the more complex research results found in the following chapter and to begin to address the first research proposition stated in Chapter 3:

> *P1: The barriers underlying students' responses to innovative instructional methods that are outlined in the preliminary conceptual framework can be linked to empirical evidence <u>from students</u>.*

Overall eight main themes were identified from the student questionnaire and interview data. One predicted theme was not supported, one new theme was identified, and a number of the codes within the themes were revised to better reflect the results from the data analyses. Properties for the codes are also identified to bring further depth and understanding to each thematic area. A summary of the key findings from this chapter appears in Section 5.10.

5.1 Experience with Methods

Experience with
Methods

Years
of study

Familiarity

Academic
discipline
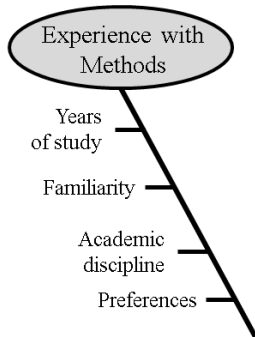
Preferences

This theme about **Experience with Methods** includes codes about students' *Preferences* regarding various instructional methods and their *Familiarity* with the novel method(s) based on their experiences in past courses. The other two proposed codes – *Years of Study* and *Academic Discipline* – did not fit into this theme and are discussed further at the end of this section.

Preferences

The *Preferences* code comprises a few different properties. Some students indicated that they prefer conventional instructional methods – lectures and exams – so would be discouraged if these methods were not used in a course:

"I learn best from lectures and textbook" (B1)

"Because I find most common methods are fine" (A21)

"Lectures, etc, worked just fine in the past" (A15)

"I don't like interacting in class. I prefer straight lectures where I don't have to participate if I don't want to" (B18)

Others indicated that they would be discouraged if conventional methods were used, even though they were asked what would discourage them from engaging with a method they did not expect and lectures were listed as the most commonly expected method on Q-START:

"What would discourage me was if there was no class participation allowed – why? It is always more interesting to get everyone involved in the discussion instead of just the prof talking" (A5)

"Only the prof teaching – why? No class involvement" (B68)

"More tests and exams – why? This is because all my classes have been like this, and there must be another form of memory and knowledge testing" (A6)

"Assessment method that only contains written exams" (B20)

Yet other students mentioned specific methods that were or could be used in the course, identifying instructional methods beyond lectures and exams that would discourage them from engaging:

"I dislike group work and hope that this won't be the case in class" (A1)

"I'm open to most things but will likely, at first, be unimpressed if required to do something I do not enjoy, such as writing an essay" (B36)

"I am not willing to expect any surprises as I dislike presenting" (B56)

"Long projects – why? Because [they] promote a mechanical way of rendering information" (B4)

"I have not had many good group work experiences" (A46)

"Previous experience. University students do not seem to understand the consequences of not doing work or participating in a group" (B94)

Other students did not identify any specific instructional methods yet they did express general dissatisfaction with new methods they have experienced in the past:

"Some teaching methods used in the past have been childish and condescending" (A1)

"Possibility of poor outcomes – why? New ways of doing something are not always good" (B59)

"In past courses unexpected teaching methods weren't as effective in teaching material" (B66)

Familiarity

The other main code identified for this theme of **Experience with Methods** is *Familiarity* with the innovative method(s). A few students indicated that they would be discouraged from engaging with an instructional method if they had not had any previous experience with it; only one made such a comment on the end of term questionnaire:

"If I had no experience with the method whatsoever – why? I would be less familiar and comfortable using this method" (A26)

"Because I'm not very familiar with the other methods of instruction" (B8)

"I've never taken a course where the outline was structured like this" (B15)

The interview data provided a little more evidence regarding the lack of familiarity with an innovative method as a possible barrier to change, some of which connected back to high school experiences and some of which linked to a desire to maintain familiar methods:

"I don't like group work that much because I haven't had much experience with it in university but in high school there were a lot of bad experiences with it so I sort of really don't like it now" (B1)

"I've been tested since high school in the same general way (tests and assignments) and having them marked based on a set of right and wrong answers I guess. And to go from that to more subjective things like a…class that I took in second year, it was really hard and I did really poorly in the class" (B49)

"…if we were to break extremely from standard university views. We spent the last two years honing certain skills and then if someone says, 'OK, now we are doing things the entirely opposite way,' then it won't be conducive…I just think it wouldn't be fair if all of a sudden all fourth year courses were done in this entirely left field manner" (B10)

The properties used to categorize the encouragement comments were the opposite of the properties just described about discouragement, although some of the few comments made about familiarity with novel methods at the end of term indicated that despite not having experience with a new method it can be perceived as an opportunity.

Years of Study and Academic Discipline

The codes of *Years of Study* and *Academic Discipline* did not fit for any of the comments within the theme of **Experience with Methods**. Academic discipline did appear within the **Instructional Conceptions** theme discussed in the next section but not in relation to the students themselves but rather to the academic discipline of the course experienced. These two codes may function more as latent variables, with students not being explicitly aware of their effects and therefore not identifying them as reasons for not engaging with an instructional method. Despite not having student responses within two of the anticipated

codes, there appears to be sufficient data to substantiate the theme of **Experience with Methods**, although the *Familiarity* code did not include many comments.

5.2 Instructional Conceptions
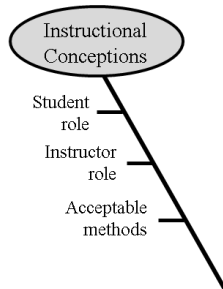
The **Instructional Conceptions** theme initially included codes regarding beliefs about the *Roles* deemed to be appropriate for students and instructors as well as beliefs about what would constitute *Acceptable Methods* within the context of a course. The data suggest a slightly different organization of these codes.

Roles of Students and Instructors

Comments about expected *Roles* were relatively uncommon in the data collected from the questionnaires about what discourages students from engaging with novel instructional methods. One student indicated, "If we (the students) were to engage [in interactive lectures] too much it would be as if we were teaching and not the person we hired" (B11). This response suggests a teaching-centred belief in which instructors are responsible for teaching a course, not the students – both have set roles within the classroom and a change to this dynamic could represent a breach of expected roles that would not fit with everyone's conceptions of instruction. The only area in which student roles received much comment on the questionnaires was as a reason to encourage engagement. Students indicated that they regularly attend class as part of being a student, so the random attendance checks fit with their normal behaviors.

Acceptable Methods

More student comments from the questionnaires fit with and support the code about beliefs regarding *Acceptable Methods* within a course. Some of the comments identified as being part of this code question the appropriateness of the innovative methods in a post-secondary course:

> "This is university – it should be my own work and I should not have to rely on other students" (B17) [response about group work]

"I don't feel it is right. Attendance should not be mandatory (especially if it affects group members). I'm paying to be here. If I don't want to come that's my choice" (B114)

"If the methods were childish – why? I'm in university and not high school" (A1)

Other responses focus more on the acceptability of the methods in relation to the disciplinary content of the course:

"For business courses, testing the ability of students to understand the textbook materials is not a fair evaluation for any business courses – case studies and group projects are much better" (B20)

More comments about acceptable methods had been anticipated given the responses on Q-START about why they expected certain instructional methods in this course (e.g., "Lectures and exams because there is no need for interaction in Econ" (B69) or "I expect to experience primarily lectures and exams because in every university course I have been enrolled in this has been the standard" (B60)), but again not many questionnaire responses regarding what would discourage engagement with a method fit into this code. However, the interview data provided further evidence for the *Acceptable Methods* code.

Interviewees were asked if the novel methods used in this Economics course would work in courses in their discipline. In some cases, they did believe that at least some of the methods would work, but for many, at least one of the methods was deemed unlikely to work so would not be acceptable given how they perceive that instruction currently happens in their own disciplines. They indicated that these methods were not typically used in their discipline – falling outside the instructional norms – and their comments suggested that the methods would not be acceptable in such courses due to a variety of possible barriers, thereby expanding the evidence and properties for the beliefs about *Acceptable Methods* code.

Some students indicated that they believe the type of content in courses within their discipline would not allow for discussions such as those that were used in the Economics interactive lectures and so could be a barrier to engagement:

"in a lot of my science courses it's them lecturing to us. I don't think a lot of interaction would really be beneficial. For the most part we don't have a lot of opinions on the information" (B66)

"The students don't have the knowledge yet and there is not much the professors can ask [in lectures] because there is a correct answer. Whereas, for Mr. Jones, the people in the class can still explain their answer. But in science when you are wrong, you are wrong" (B1)

"the material that is being taught wouldn't spark any conversation or discussion in class too much. It's more like you have to learn it to discuss it. It's not everyday things that you can answer questions about. So you are learning new theory but you can't discuss it too much…you don't really have an opinion about math theory" (A37)

"…let's say any math courses. I think you can't participate a lot because it's not thinking creatively or thinking out of the box. It's either plus or minus. And accounting and finance it's more specific type of subjects. So if there is something applicable to the real world then we do participate. But, otherwise, if it's just theory, I think it's better not to participate but just focus on what the professor says" (B59)

Others indicated that in their discipline the content is the primary focus of a course. The key is for students to know all of the content presented because they will be tested on it, so being able to select from a menu of assignments or sharing the work with group members would not be perceived favourably:

"Picking your own assignments I don't think would work very well [in science]…I mean what are you going to put on the test? How are you going to test people on things that some people did and other people didn't do?" (A34)

"in physiological psychology or one of the more biological kinds of psychology courses … it's tough to cover such a wide spread of material that may be within a whole psychology textbook just by letting students choose their own assignments…everyone needs to know the whole textbook by the exam" (B35)

"The group work wouldn't allow for every student to know the concepts. We divided it up, as I said, in Econ and some of the sections I still am not really strong with and

that wouldn't be good to do that in engineering. Miss some of those key concepts in statics and something is going to break, so that wouldn't work" (B49)

"I don't think the ability to choose your own assignment would work in a Stats course because every topic needs to be covered in a certain Stats course. So, you kind of really have to touch on everything and you can't really skip doing work for a particular subject by choosing a different assignment" (B76)

Yet others suggested that extensive group work would not be acceptable in their discipline because of the need to do individual work, which provides evidence for beliefs about expected roles of students in relation to an instructional method:

"So for like social sciences classes it [group work] doesn't work at all because there is no point in compromising because you're trying to make your own idea…we have different points of view...So I don't have a problem working in a team environment it's just that for everyone's voice to be heard and have different ideas to grow, you can't. It doesn't work that way" (A1)

"we don't work together with the whole assignment with one person…it's also policy 71 [on academic integrity], isn't it?" (A37)

"if you need to learn something specific, I'd rather rely on individual work because this way you learn much more compared to group work" (B59)

Other students suggested that interactivity would not work in their discipline because of how they perceive their instructors approach the classroom time and, again, put a great focus on course content. In certain disciplines, instructors commonly use teaching-centred, didactic lectures in which they adopt the role of being in charge of the class and the students play the role of listeners:

"There is no extra time to talk about things. It just wouldn't happen. We would end up behind class. If they could somehow schedule in a few minutes for each [Economics] lecture as overflow time, basically, so that they could end up speaking with the students" (A46)

"you are going at such a fast pace that I don't think they would even have time to introduce something that would involve class participation [in math]" (A37)

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"in a lot of my science courses it's them lecturing to us…I don't think I've ever had a science class that's been very interactive" (B66)

"I've noticed they will spend like a minute or 30 seconds on your question and move on. They are so focused [in Economics] on making sure they get all the dry material out to the students" (B52)

Yet other students' responses suggested that they believe learning should occur in classrooms, with the teacher in charge and the students as passive recipients, all of which again represent teaching-centred approaches to instruction and suggest barriers to engagement based on the roles of instructors and/or students when using specific instructional methods. These comments, however, did not appear to be in relation to courses in specific disciplines:

"I think I learned more outside of the class than I did in the class. The teaching style is kind of reminiscent of other teachers that I've had, but that wasn't necessarily positive" (A1)

"I was one of the more passive observers. But I don't mind observing a more active approach to it" (B10)

"I wasn't willing to engage in them [the interactive lectures] at all and I prefer that he didn't do it, because we come to lectures to learn from someone who has had experience with this, not the rest of the class" (B1)

Summary

When data sources are combined, there appears to be evidence to support the **Instructional Conceptions** theme. The data, however, suggest a slightly different structure to the codes. Given that student and instructor roles are part of an instructional method and students' comments about instructor and student roles were always given in relation to specific instructional methods, those initial codes became properties of the *Acceptable Methods* code. The interview data also suggest that the conceptions may be context-specific more in relation to the discipline of the course being experienced than to the discipline of each student.

5.3 Incoming Skills for Learning
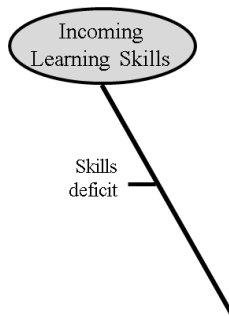
While this theme is commonly cited by faculty members as a reason for resistance, in this case study, the **Incoming Skills** theme only had one comment assigned to it: "New assessment methods require new assignment strategies" (A14). It is possible that one of the comments currently coded as a lack of self-efficacy in the **Motivation** theme, which indicates a lack of student skill with essay writing, may also be interpreted as a lack of incoming skills, but the addition of this comment marginally only increases the frequency of such comments. Another possibility is that the methods which students dislike or are unfamiliar to them, which were coded as part of the **Experience with Methods** theme, are identified as barriers because students lack skill with them. However, students did not explicitly express this connection. They also did not connect a lack of skill with a negative effect on their grades (**Perceived Risks** theme). Finally, comments currently in the theme of **Perceived Workload** that indicate students would be discouraged from engaging with a method if it took too much time to use, was hard, or was unclear may also suggest that these same students lack knowledge of and skill with the instructional method, but the time and effort needed to work with the method were what they identified as being the issues that would discourage them, not a possible lack of current skill level. As a result, this theme does not appear to have sufficient data to be identified as an independent theme from the students' perspective, although it may well be subsumed within other themes.

5.4 Environmental Constraints
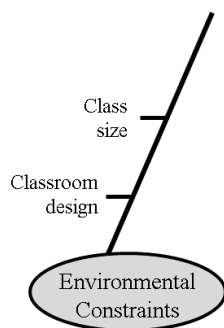
Environmental Constraints are contextual features of a course. The preliminary conceptual framework suggested that this theme would include class size and classroom design as codes; however, the codes that better fit the data from this study were *Class Size* and scheduled *Class Time*. All but one of the comments in this **Environmental Constraints** theme was about what discouraged the students.

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Class size

The code about **Class Size** included comments such as the following:

"Big class, I sit in the front so a bit awkward when thinking about all the people sitting behind me" (A1)

"As the semester drags on my motivation decreases and I get tired of participating…I'm not one to participate when there is a large class" (A37)

"The only thing was it was such a large class, it was kind of uncomfortable to have all the attention on you" (B52)

"The fact that the class is so large. Lots of people are already contributing good ideas" (B68)

"We had seven [in our group]…That was probably a problem too. Because I didn't know it was going to be that many people, and seven, I thought that's going to be a lot of people to coordinate meetings with" (A37)

Some students seemed to be concerned about speaking in front of a large group, while others indicated that with so many students someone else could participate. During the interviews, one student suggested that students perhaps avoided participating because "100 people are there and they just want to get the class finished and they don't want to put up their hands and drive the class long" (B52). Interestingly, comments about **Class Size** came from both class sections, even though the average attendance at the 8:30 class was 46 versus 92 in the 9:30 class. A few students commented on the challenges of large group sizes as well, which were a function of the overall class sizes.

Classroom Design

The design of the classroom space did not receive any comment on the questionnaires, although two students mentioned the **Classroom Design** briefly during the interviews ("…when I did go to classes I just didn't feel like interacting too much. But I think that was because of the setting of the class as well, like how it was more of a lecture hall" (A37)).

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Class Time

The scheduled ***Class Time*** for both classes was also cited as reasons to discourage engagement with both the interactive lectures and the random attendance checks:

> "To be honest, having class at 8:30 a.m. probably had a bit of an effect. Sometimes, I don't necessarily feel like answering questions or discussing even though I know the answer/have an opinion (which I guess is a laziness factor). No fault of the professor." (A2)

> "8:30 in the morning, sometimes too tired to discuss" (A48)

> "Morning class! Usually not even up this early, so speaking in front of hundreds of other students without a clear head was not on the agenda" (B14)

> "Had to run to school through the snow at 8 a.m.!" (A33)

> "8:30 a.m. and random attendance bad idea" (A53)

> "The class is too early" (B79)

Summary

This theme seems to have sufficient evidence from the research data, with the codes of ***Class Size*** and ***Class Time*** capturing the essence of the students' comments. The very limited comments about the ***Classroom Design*** seem insufficient to maintain this reason as a code.

5.5 Perceived Risks
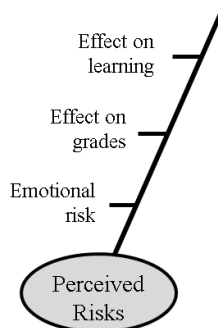
The **Perceived Risks** associated with engaging in novel instructional methods was quite a prominent theme overall. It involves what participation in the course may cost the students in relation to the outcomes and includes three main codes: ***Effect on Grades***, ***Effect on Learning***, and ***Emotional Risk***.

Effect on Grades

Numerous comments were categorized into the code for ***Effect on Grades***. This code was multidimensional, but key properties appeared to emerge. One general issue that discouraged students was the possibility of a negative effect on their grades:

> "The difficulty of the new teaching methods – why? I don't want to experience something that will affect the grade I will get on an assignment" (B52)

> "Possibility of bad marks – why? The new method may be in an area I am weak in and it could lower my final mark" (A31)

> "If it was too hard and it negatively impacted my mark" (B50)

> "I approach different grading styles with great caution because of the unknown bringing increased chances of poor performance" (B53)

Connected to this point about the possible negative impact on grades, a few students explicitly indicated that marks are important to them and losing them is viewed negatively:

> "If it was a more difficult assessment – why? Result in lower grade which I couldn't afford to have happen…Because grades are everything in Waterloo" (B80)

> "Grades are very important to me" (B70)

Two main reasons behind why marks may be important were expressed during the interviews – staying in school and being admitting to graduate school:

> "marks kind of dictate our near futures. If the marks are too low then you get removed from programs, or if the marks are too, too low it has that severe impact on what courses you will take next term. If you fail the course you have to retake it, and that's wasted time and wasted money. So, while it is important to actually learn what you are doing, marks are the thing that really has the significance in the grand scheme of things" (B10)

> "Many of us want to go to grad school after and no matter how enjoyable a course is, if I don't have the good mark on my transcript at the end of the term, it's quite unsettling" (A3)

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More students provided this same reason about effect on grades when asked what would encourage them to engage, although they commented on the possibility of increasing their grades rather than losing them.

Another property of this code that a couple of students indicated was that they would be discouraged if they did not receive incentives for engaging with the method. By the end of term, only a few students felt that the bonus marks given for the random attendance checks were not enough of an incentive to encourage them to attend class. Bonus mark incentives, though, were a common reason cited by students which would encourage their engagement in this part of the course.

Still within this code of ***Effect on Grades***, some students commented that a possible lack of fairness with grading would discourage them. This unfairness appears to stem from two main sources – group work and marking schemes not being applied appropriately – and is presumed to result in a lower grade:

"If my mark depended too much on the work of others (i.e., group work mark shared) – why? If you are matched with a bad group you could receive a mark unrepresentative of your individual abilities: I am earning my degree here and the effort of others shouldn't be on my transcript" (A3)

"If the assessment depends heavily on group's performance rather than my own – why? Not the fairest way to assess" (A14)

"If team members don't show up, you don't get the bonus point" (A28)

"Take attendance as a team. No matter how well I did, if my teammates don't go to class, I get nothing" (B87)

"If the marking is unfair" (A29)

"If peers had too much input in my marks – why? Students could have bias and lack experience in marking – could receive an unfair mark" (B13)

"Less guidelines for markers – why? Students who deserve an A+ only get an A" (B42)

The encouragement comments for this code were typically the opposite of the discourage comments, but also included responses about methods being a way to achieve marks, being

motivated to do well because of the 80% allocation of the mark for group work, and being able to focus on their strengths, which was interpreted as enabling them to achieve a good mark. A few also indicated they would be encouraged to try something new if it was ungraded, resulting in a neutral effect on their grades.

Effect on Learning

The next code that emerged and that fit within this theme is about the ***Effect on Learning*** of a novel instructional method. In this code, students indicated that it would discourage them if they did not learn much from the instructional method, however they conceive of 'learning':

> "Inability to absorb course content through such methods – why? Ineffective teaching methods prove frustrating" (A20)

> "If a teaching method is new but we don't learn much out of the course that would feel like a waste of time" (B8)

> "If I found it ineffective – why? If it doesn't work it doesn't work and should not be embraced" (B10)

> "If I wasn't learning very much – why? I paid a lot of money to learn things" (A22)

As well, some students indicated that they would be discouraged if the method lacked legitimacy by not supporting the purpose of the course:

> "If it was used solely for the sake of using it – why? Some teachers seem to want to try to use these methods when they don't necessarily fit with the course. As a result, the professors try to make them fit, which often defeats the purpose and makes it frustrating and unnecessary" (A2)

> "If I found it did not relate to the course – why? Hinder my learning" (B13)

> "Vague expectations and little relevance to course material – why? Bigger chance for failure and lower opportunity to learn" (B53)

The encouragement comments in this code were the opposite of the discouragement ones, but also included comments about being encouraged if a method enabled them to work on their weaknesses or facilitated learning that would be useful in their future careers. In the

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interviews, two students were clear that they had no plans to work as entrepreneurs, or even in business, which could be interpreted as limiting their learning in the course, but they focused on how the lack of relevance negatively affected their interest in the course rather than their learning.

Emotional Risk

Students' ***Emotional Risk*** as learners was the focus of the third major code within the **Perceived Risks** theme. This code generally involved comments about students risking their comfort levels. Some students were concerned about feeling uncomfortable in front of others:

> "If I was forced to do something or say something – why? Forced to do or say something = that's embarrassing" (A3)

> "My slang (Singaporean slang is different from Canadians') and classmates making fun – why? I would feel demoralized" (A17)

> "I think the biggest discouragement is fear of public speaking" (A28)

> "Being the focus of attention can be intimidating" (B93)

Others expressed feelings of stress or anxiety:

> "If the entire mark were obtained from one assignment – why? It's very stressful when you only have one chance to do well" (B64)

> "Uncertainty is stressful" (B59)

> "Self-evaluation and peer evaluation: Because we had to talk about it in a group, it was kind of awkward and I didn't want to hurt anyone's feelings by taking marks away from them" (A3)

Yet others indicated that they were afraid of answering a question incorrectly even though many questions in class were focused on eliciting students' opinions:

> "Also get shy to answer questions that I could have a wrong answer for" (A33)

> "Fear of not knowing/being wrong" (B33)

> "Not knowing if my answers were right or of interest" (B64)

"I didn't [engage in interactive lectures] – a little intimidated. It's funny because I usually had the right answer too" (B90)

This final property may fit with a lack of *Self-Efficacy*, currently in the **Context-Specific Motivation** theme, but the emphasis in the students' comments is on the emotion associated with a lack of confidence so they were kept with the **Emotional Risk** theme. Encouragement codes included feeling less stress, little discomfort, and having no fear about wrong answers.

Summary

Overall, the many comments about the possible effects on grades, learning, and emotions associated with learning seem to provide sufficient evidence for the establishment of this **Perceived Risks** theme.

5.6 Perceived Workload
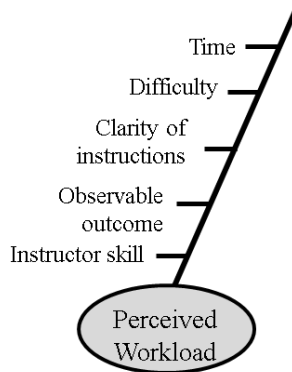
The theme of **Perceived Workload** includes codes about the *Difficulty* of the novel instructional method, the *Clarity* of the method, and the *Time* involved in learning and using the method. These codes represent various elements of course workload that can affect the ease with which students can complete the course work. Numerous comments were made on the questionnaires that provided evidence for this theme.

Difficulty

The *Difficulty* code includes comments about how hard the instructional method is to learn or to use as well as comments about how complicated a method might be:

"If this new method was harder – why? I would prefer to engage with the easiest teaching method possible" (B67)

"If it was really, really difficult, so difficult it was frustrating" (A8)

"If it's too 'out there' and too complex/dull/inefficient – why? Standard techniques usually work well so too much of a change is unfair and taking us out of our element and if I feel it risks my doing well in the course" (B10)

"If it was too hard and it negatively impacted my mark" (B50)

Clarity

The *Clarity* code involves two types of responses about what discourages engagement – those about the method being unclear in some way and those about not being given support about how to use the method:

"If the new teaching method does not present the information clearly, in turn, makes it harder to understand" (B22)

"No outline/breakdown of how I am being assessed" (A23)

"Lack of guidance/explanation – why? Not understanding is discouraging" (A7)

Lack of *Clarity* regarding a method may make it more *Difficult* to use, which helps to link these two codes within the same theme of **Perceived Workload**. If the instructor lacks skill with the method, this could also decrease the clarity, but only a couple of students suggested explicitly that the *Instructor's Skill* with the method might be the source of the confusion (e.g., "Prof struggles to teach that way" (A23)), providing very limited empirical support for such a code. It may be that general student comments about a lack of rubrics or instructions were meant to reflect a lack of instructor skill, but students did not make this explicit connection to the instructor. It could also be that a lack of guidance may encompass a lack of information about the desired *Outcome* or product of learning, but again students did not explicitly make that connection in the questionnaire responses. One student mentioned his desire for model assignments during the interview, but he also provided a possible reason from the professor's approach to the course that may help explain why others did not express a desire for examples:

"I know Professor Jones's whole driving force in this course was that this was supposed to be like the business world and expectations aren't laid out for you very clearly so you need to take ambiguity and figure out what is going on through it…In this course we were provided with no exemplars, no examples of what was going on. I don't know if that was fear of plagiarism, but I would have definitely liked to have seen some examples of projects that were 90% and then we would have had a bar to leap over." (B35)

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Time

      Time was another major code that emerged from the questionnaire responses. This code included comments about the amount of time involved in learning and using the instructional method and whether the time that is spent is productive and convenient.

      Students typically have multiple courses each term and, as a result, are conscious of how much time each course requires as it affects their overall workload. One element of this code on time involves methods that are perceived as taking too much time:

      "Time consuming teaching methods – why? My time is limited" (B4)

      "A method with a large number of essays would discourage me – why? Since it would require a large amount of time" (A16)

      "Group work is less efficient than individual work" (A14)

      "If it required lots of out of class additional time – why? I'm in 4B and my 4th year courses have a higher priority if homework overlaps" (B63)

This final quotation suggests that the type of course – required or elective – may also affect how students view the amount of time needed to work on it:

      "If assessment required extreme amounts of out of class work (studying or assignments) – why? This is only an elective for me" (B63)

      "If it uses too much of my time – why? If the other method involves a lot of work hours that takes away from my core course study time" (A4)

Another property of the code about time involves students expecting the time spent on a course to be useful:

      "If a teaching method is new but we don't learn much out of the course that would feel like a waste of time" (B8)

      "Something that is unnecessarily time consuming and that I feel would add no value to the course – why? Would be a burden and waste of time" (B36)

      "Lots of work, little reward – why? Not worth my time over other classes" (B42)

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Finally, other students found it hard to find the time to work on the course due to competing commitments or scheduling challenges, making the time needed an inconvenience:

"It's hard to coordinate meeting times in large groups and hard to find a time when people are not busy with work for different courses" (B64)

"I had a lot of work in other classes and was not always able to make it to class" (A10)

Summary

This theme on **Perceived Workload** appears to be multi-faceted, with *Difficulty*, *Clarity*, and *Time* needed to engage with instructional methods being the key elements identified by the students as possible reasons to discourage their engagement. Responses about what encouraged engagement were typically the opposite of these discourage codes: students are encouraged when they are given instructions and examples, the method is easy to understand, the method makes learning faster, and they are given time to adapt to the new method. They also commented that being able to select their own assignments was convenient for their schedules. The theme of **Perceived Workload** appears to be supported by the case study data, although only one comment was categorized into the code of *Observable Outcomes*, and only two comments were made about the *Instructor's Skill* with the novel methods, both of which seem insufficient to warrant their inclusion in the revised conceptual framework.

5.7 Influence of Others

Connection with instructor

Peer willingness

Influence of Others
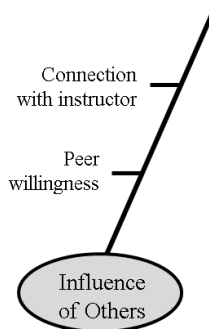
This theme involves two main codes: influence of the *Course Instructor* and influence of *Course Peers* (other students in the same course). These codes were broadened from the original framework and renamed so that they could more logically encompass the properties that arose from the data. This approach is consistent with the modified grounded theory methodology.

Course Instructor

In this study, very few comments were provided explicitly about the *Course Instructor*, particularly as reasons to discourage engagement. For those that were given, the main reason

involved questioning the professor's ability to connect with the students – a concept also known as immediacy in the research literature (Kearney & Plax, 1992):

"Rude instructor – why? Enjoy positive/fun/social people" (B12)

"I think a lot depends on prof personality and their ability to get the class going" (A28)

"At the beginning, I wasn't sure how Professor Jones would react to people's comments" (A19)

Many more comments about what encouraged engagement provide support for this property about immediacy and seem noteworthy to include in order to further explain this code:

"If the prof is excited about it and shows enthusiasm – why? Because this means that he believes in it and thinks it will work" (A19)

"Professor's encouragement – why? Because it would encourage me to speak" (A17)

"Engaging interactive professor – why? When a professor is lackadaisical in his teaching methods it creates the impression he doesn't care and drains my enthusiasm" (A20)

"He made you feel like your opinion mattered" (A19)

"He learned my name and then just started asking me things" (A33)

"Professor made it clear that all answers are acceptable. Jones eliminated the worry of 'sounding stupid'" (B93)

From the interviews, numerous students provided further examples of how the professor displayed immediacy behaviors. The effect was positive, as one student explained:

S: I guess we talked about the family business in the course. It wasn't on the assessment, but I was really interested and actually met with him after. I wouldn't have done this in any other course.

I: You wouldn't have gone to meet with the prof?

S: No, he's the first prof I've kind of met and we just had a sit down rather than just go to ask a question. The professor is a big time positive on this.

I: Do you think having that experience might make you feel that you can go and talk to other profs now?

S: Yeah, for sure. Especially him being so open and interested in what you have to say. (A57)

Observational data further support the immediacy behaviors – both verbal and nonverbal – employed by the course instructor. He shared many personal stories during the term about his own business experiences (both positive and negative), and he moved throughout the classroom, particularly when facilitating discussion. He walked closer to students to draw them into conversations, and he smiled and made eye contact as means of encouraging students to participate. If these immediacy behaviors had been absent, it is possible that more discouragement comments related to this code may have appeared, particularly at the end of term.

Course Peers

Many more comments were given that fit into the code about the influence of *Course Peers*. This code includes comments about how other students' negative responses could or did affect the respondent's willingness to engage with the methods:

"If my classmates were not willing to participate – why? Because I would feel like an outsider if I were willing to participate and no one else was" (A19)

"If not everyone was on board – why? Hard to engage with it alone" (B47)

"Not enough other students spoke up and contributed. Only about five ever seemed to respond" (B82)

"When the interest of other group members dropped, so did mine" (A57)

"Classmates making fun – why? Then I could feel demoralized" (A17)

"…other people are discouraging to me because I'm like what are they going to think about it? Maybe it's not going to be as good quality as they are expecting. Are you going to judge me on what I've written?" (A1)

The *Course Peers* code also includes comments about how students perform in groups, most of which stem from the end of term questionnaires (Q-END). Some comments

involved issues regarding dysfunctional group behaviors, such as not all group members contributing equally:

"Getting group members who don't work well with groups, puts more work on certain individuals and ruins the group aspect of the course" (A28)

"Other members who don't work as hard" (B2)

"Lack of commitment from other members" (B14)

"Fear that someone wouldn't pull their weight resulting in tension or a lower grade" (B51)

"Some of my team members do not contribute" (B79)

Other comments about particular dysfunctional group behaviors were about conflict – or efforts to avoid conflict – within the groups:

"Team work is a lot more difficult; needs extensive time management, conflict resolution, etc" (A42)

"Drama (conflict) with some people, they like it too much" (B33)

"Group had to compromise on which topics to choose" (A38)

"Had to find assignments everyone in group liked" (A53)

Summary

The encouragement comments within the ***Course Peers*** code were the opposite of discouragement comments, but also included a set of comments about feeling responsible to other group members. Overall, the theme about the **Influence of Others** – which includes both the ***Course Instructor*** and ***Course Peers*** – appears to be supported by the research data on what discouraged students from engaging with novel instructional methods.

5.8 Context-Specific Motivation
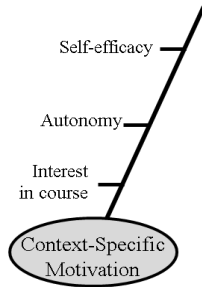
The **Context-Specific Motivation** theme includes code labels that were adopted from the motivation research literature since this theoretical area is relatively well-established. The main codes for this theme are *Interest*, *Autonomy*, and *Self-Efficacy*.

Interest

In this research, the *Interest* code includes properties about students' motivation regarding both the instructional methods and the course material. Some students did not want to engage with an instructional method that they found boring whereas others had troubles engaging because the course content was not of interest to them:

> "Methods that are dull and do not involve in class interactions – why? It sucks out the learning interest and makes students not wanting to go to class" (B20)

> "Less interaction and boring lectures – why? Boring lectures make the class monotonous" (B37)

> "Lack of interest in subject matter" (B84)

From the interviews, a couple of students indicated that the material was not interesting because they had learned it in previous courses:

> I: Is there anything you can think of why you lost your interest…?

> S: …Probably, I would say 50% of the material that he taught was already covered. He just twisted it in the sense of more towards the entrepreneurial way to tell us that it was important and you have to think about them. But the material and some of the theory that was behind it I already knew, so I didn't want to talk about it again. That was one of the major reasons as well… (A37)

A few students also indicated that they were simply apathetic about the course, using the term "lazy" to indicate a general lack of interest.

Autonomy

For *Autonomy*, a few students indicated that a lack of control discouraged them from engaging with various elements of the course:

"I also don't like to give up that much control" (B66) [comment on group work]

"Attendance in lectures in university is irritating, as it usually makes no allowance for sickness/other concerns and is generally just a tool for a bad prof to get people to come to class" (B18)

"If I was forced to do something or say something – why? Forced to do or say something = that's embarrassing" (A3)

"And then just knowing that much of your mark is dependent on other people. I hate that feeling. [I: And why is that?] Just because you're not sure you can get stuck with someone who is not a hard worker or who doesn't really care about their work. Lack of control, I guess is what it comes down to" (B78)

A few students gave reasons that they claimed encouraged their engagement, and yet these reasons really involved a lack of autonomy so were interpreted as reasons to discourage:

"Most of the course work was group work, so I didn't really have a choice" (A28)

"Did I have a choice?" (B24)

"No choice – why? Regardless of the method, I have to do the work so I may as well accept it" (B10)

Self-Efficacy

With the *Self-Efficacy* code, discouragement appeared to stem from a lack of confidence to engage with aspects of the course, either from a possible lack of confidence in skill or a lack of background knowledge regarding the course content:

"Essays would discourage me – why? I am not a very good writer and I don't learn anything from essays" (B30)

"Didn't feel like it [participating in lectures], felt like I didn't have enough info/experience to participate" (A23)

"Don't know some of the topics that were discussed" (A38)

"Students are students for a reason, because they do not know things and want to learn" (B1)

"I think if I look back I could have participated with the lecture but at the time I just wasn't very familiar with the materials covered. At the time of the lecture I was mainly listening and learning and trying to figure out the topic. That plays a big part, for me, in whether or not to participate in a lecture. Because to raise up your hand and make comments you would have to know what you are talking about" (B76)

Summary

Comments within the **Motivation** theme were not nearly so prevalent for the discouragement questions as they were for the encouragement questions. The properties used for the encouragement responses were the opposite of those used to categorize the discouragement responses: the students found the course content and/or the instructional methods interesting, they enjoyed having some control over the course, and they were confident about their abilities to work with the method. Beyond these characteristics of motivation, many students also commented on how they appreciate being able to focus on their interests when selecting assignments and how they enjoy engaging with instructional methods that are fun and pique their curiosity. Overall, data from the research study appear to provide evidence for the theme of **Motivation**.

5.9 Risk Tolerance

The theme about students' general **Tolerance for Risk** in the educational context was not part of the preliminary conceptual framework. From the higher education literature reviewed, it appears that risk is conceptualized primarily in relation to perceptions of potential outcomes from risky situations: the risk of learning less, losing grades, and/or feeling anxious about a learning situation. However, a number of students, particularly at the beginning of the term, provided reasons about what would discourage (and encourage) their engagement with new instructional methods which appear to constitute a new theme: they

commented on their attitudes about risk in the context of experiencing novel instructional methods that often were not explicitly tied to their perceptions of specific outcomes regarding that risk.

While risk tolerance is more typically portrayed as a dispositional factor in the resistance to change literature (e.g., see Judge et al., 1999, from Section 2.2) and therefore beyond an instructor's ability to influence, other researchers suggest that attitudes about risk and ambiguity are more contextually based and therefore potentially malleable (Durrheim & Foster, 1997; Ghosh & Ray, 1992). Codes used in this theme include students' attitudes about *Openness to Change* and *Tolerance for Ambiguity*, both of which were low or negative when given in relation to what would discourage their engagement. This new theme is considered to be a pre-existing barrier since it was more prevalent at the start of term and appears to be connected to a general educational context rather than a specific course.

Openness to Change

Many students indicated that they had an *Openness to Change* in instructional methods, stating that they like new or different instructional methods, they want to experience new methods (only in relation to teaching methods), or are at least willing to try something new. Some, but not all, comments for this last property included qualifier statements that linked to possible negative outcomes:

> "I'm open to change but don't want to risk lowering my marks because of it" (B10)

> "As long as discussed prior and actually tests material, then I am open" (A23)

> "I don't mind unconventional teaching methods, but only to an extent" (B46)

On Q-START, a few students revealed a lack of openness to change as a barrier that discouraged them from wanting to engage with innovative methods:

> "Don't like change or sudden things" (B19)

> "Sometimes I am slow to change" (B33)

> "Being resistant to change and used to traditional marking schemes – why? Because I am slow to change sometimes" (B34)

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On Q-END, a number of students indicated that "nothing" would either encourage or discourage them. These responses were reverse-coded: those who indicated that "nothing" encouraged them were actually counted as being negative responses. These comments were not accompanied by any further explanation, which makes their meaning potentially ambiguous, although placing them in the *Openness to Change* code seems plausible.

Tolerance for Ambiguity

Other students made comments that fell more into the code about a lack of *Tolerance for Ambiguity*. In this case, it was the uncertainty or lack of specificity that discouraged them from wanting to engage with an innovative instructional method:

"Uncertainty about new stuff" (A32)

"My overall goal is a) to learn and b) to get a good grade, so I would prefer knowing what's ahead and hopefully dealing with an 'easier' method" (A25)

"Didn't know what to expect, never worked in group for this amount of time" (B30)

"Do not know course content when choosing them [the assignments]" (B84)

Comments about a lack of *Clarity* regarding the novel instructional method (e.g., wanting clear instructions) may have also been put into the *Tolerance for Ambiguity* code, but students' comments often connected the lack of *Clarity* with increased *Difficulty* or *Time* needed to learn, so those comments were categorized within the **Perceived Workload** theme.

In response to the Q-START question about why they chose a certain rating regarding their willingness to engage with an instructional method they did not expect, a few students indicated that their willingness would depend on the actual method being used. Their hesitancy was also interpreted as a lack of tolerance for ambiguity and not knowing which method would be used was identified as their reason for being less willing to engage with it:

"It really depends on what method it is" (A12)

"I'm not sure what the methods are so I'm not sure if I will enjoy them?" (B13)

"Unsure of what the teaching method is, so have no idea whether it will be a positive or negative experience" (B62)

Responses such as these may be connected to a *Preference* to avoid specific methods – and would then fit into the **Experience with Methods** theme – but their brief responses typically did not provide enough detail to make this determination. No students indicated that they would be encouraged by ambiguity.

Summary

Overall, comments categorized into the codes of *Openness to Change* and *Tolerance for Ambiguity* within the **Risk Tolerance** theme seem less prevalent as reasons to discourage rather than as reasons to encourage. However, sufficient data appear to exist to support this theme and these codes.

5.10 Summary of Thematic Data Analysis Findings

The findings from the data analyses described in the previous sections have been distilled into Table 5.1, and these findings suggest that the first research proposition is supported. In fact, students identify most of the same barriers to engagement with new instructional methods as what emerged from the research literature review. However, that students within one course identified barriers to change that supported all but one of the initial themes would not have been predicted by the literature reviewed. The students also identified one new theme that did not arise from the studies that were surveyed. This exploratory study has identified a more comprehensive view of this change management situation than appears in the existing literature reviewed. Reimann's (2011) findings are perhaps the closest to being this comprehensive, but she identified only six themes (time and workload management, group work, autonomy, guidance and feedback, strategic considerations, and opportunities and risks), but how discrete they are is unclear from the data she presented.

The tabular synthesis of the themes, codes, and properties of the codes also represents a revision to the preliminary conceptual framework. Being able to identify properties for the various codes helps to flesh out the meanings of the variables listed in the initial framework and contributes to creating a better understanding of the barriers than is currently available in the research literature. A summary of the key revisions to the initial conceptual framework appears after the table, and a further refined fishbone diagram concludes this section.

Table 5.1: Revised Conceptual Framework of Student Barriers to Change

Themes	Codes	Properties
PRE-EXISTING BARRIERS		
Experience with Methods * Academic Discipline and Year of Study may be latent variables for various themes	Methods Preferences	Preference for conventional instructional methods
		Dislike of conventional methods
		Dislike of specific methods beyond conventional methods
		General dissatisfaction with past new methods experienced
	Familiarity with Innovative Method(s)	No previous experience with instructional method
Instructional Conceptions	Acceptable Methods (now includes Student Role & Instructor Role)	Inappropriateness of the method in a post-secondary course
		Inappropriateness of the method based on discipline-based beliefs about course content
		Inappropriateness of the method based on beliefs about roles of students and instructors (some discipline-based, some not)
Incoming Skills	Insufficient data	
Risk Tolerance	Openness to Change	Lack of willingness to experience a new method
	Tolerance for Ambiguity	Presence of uncertainty
		Lack of certainty about new method
IN-SITU BARRIERS		
Environmental Constraints	Class Size	Class is too large
	Class Time	Class is too early
Perceived Risks	Effect on Grades	Negatively affects grades
		Importance of grades
		Lack of incentives
		Lack of fairness in grading
	Effect on Learning	Negatively affects learning
		Lack of relevance to course goals
	Emotional Risk	Uncomfortable in front of others
		Feelings of stress/anxiety
		Fear of being incorrect
Perceived Workload	Difficulty	Difficult/complicated methods
	Clarity	Unclear methods
		Lack of support given to use method
	Time	Too much time needed to learn or use method
		Time spent lacks utility
		Lack of convenience
Influence of Others	Influence of Instructor	Lack of immediacy behaviors
	Influence of Course Peers	Negative responses of peers
		Dysfunctional peer performance with method
Context-Specific Motivation	Interest	Lack of interest in instructional method
		Lack of interest in course subject matter
	Autonomy	Lack of control over learning environment
	Self-Efficacy	Lack of confidence connected to skill
		Lack of confidence connected to background content knowledge

- In the **Experience with Methods** theme, *Academic Discipline* and *Years of Study* were not substantiated as codes; however, it is anticipated that they may function more as latent variables across multiple themes. Further analyses in the next chapter (see section 6.3) help to determine the possibility of this supposition.

- Data analyses in the **Instructional Conceptions** theme suggest that beliefs about *Roles for Instructors and Students* may be better subsumed by the *Acceptable Methods* code since few comments were made explicitly in relation to the roles and yet the roles are an integral part of an instructional setting. The academic discipline of a course appears to make a difference to the students' beliefs about appropriate methods in a course, suggesting that instructional conceptions may be more context-specific than individual-dependent beliefs.

- **Incoming Skills for Learning** did not have sufficient data from students to support its existence as a theme within the conceptual framework, despite faculty members often citing this as a student barrier to engaging with new instructional methods. The theme may be subsumed by the code about *Clarity* within the **Perceived Workload** theme: if students want clear instructions about how to learn from a particular method, that could mean they lack the skills for learning with that method (or they want to know how to optimize their use of time and/or final grade). Students, however, do not focus on a lack of skills but rather on the need for clear expectations and information about what they need to do in their courses. They can also perceive a lack of confidence in their skills (*Self-Efficacy*), but again their focus is on an issue related to a lack of skill rather than the lack of skill itself. This thematic area may be a key area of misalignment between faculty members and students.

- The **Environmental Constraints** theme differed only slightly from the initial conceptual framework, with comments about *Classroom Design* being too limited to warrant being included as a barrier to engagement while scheduled *Class Time* was identified as a new barrier. A different classroom space may have resulted in more comments about classroom design.

- The **Perceived Workload** theme was pared back to include only *Difficulty*, *Clarity*, and *Time*. The preliminary variable about *Observable Expected Outcomes* may be subsumed within the code about *Clarity* (e.g., students' quest for information about

the course assessments may also include a desire to see sample end products).
Explicit comments about *Instructor Skill* with the methods were also extremely
limited, which removed this potential variable from the revised conceptual
framework, and yet it may be that comments about the instructor's skill were implied
by comments about a lack of *Clarity* (e.g., if instructors lack skills, they may not be
able to clearly explain the new method). It could also be that the particular instructor
observed for this case study was perceived as having skill with the methods used.

- The codes within the **Influence of Others** theme were made broader in order to better
represent the properties that emerged from the data, particularly students' responses
about how their class peers may influence them. The extensive use of group work in
the case study course may have overly influenced the properties of the *Influence of
Course Peers* code.

- The **Context-Specific Motivation** theme and the **Perceived Risks** theme remained
fairly stable across the two versions of the conceptual framework. The initial
variables were identified as the codes within these two themes, but the understanding
of the properties within each theme is expanded within the revised framework.

- One new theme arose from the data analyses which has been labelled **Risk
Tolerance**. The **Risk Tolerance** theme appears to be a little different in focus from
what is typically found in resistance to organizational change literature in that the
codes within the theme appear to possibly be more contextually than dispositionally
oriented and, therefore, open to change. This theme was identified as a type of pre-
existing barrier.

- The themes for encouraging engagement with novel instructional methods were only
mentioned briefly in this chapter but could be analyzed more thoroughly – an idea
suggested in the final chapter regarding ideas for future research.

The revised fishbone diagram in Figure 5.2 captures the increasing complexity of a more
comprehensive view of the various potential barriers to change when students experience an
instructional innovation.

Figure 5.2 Revised Comprehensive Fishbone Diagram: Thematic Analyses Findings
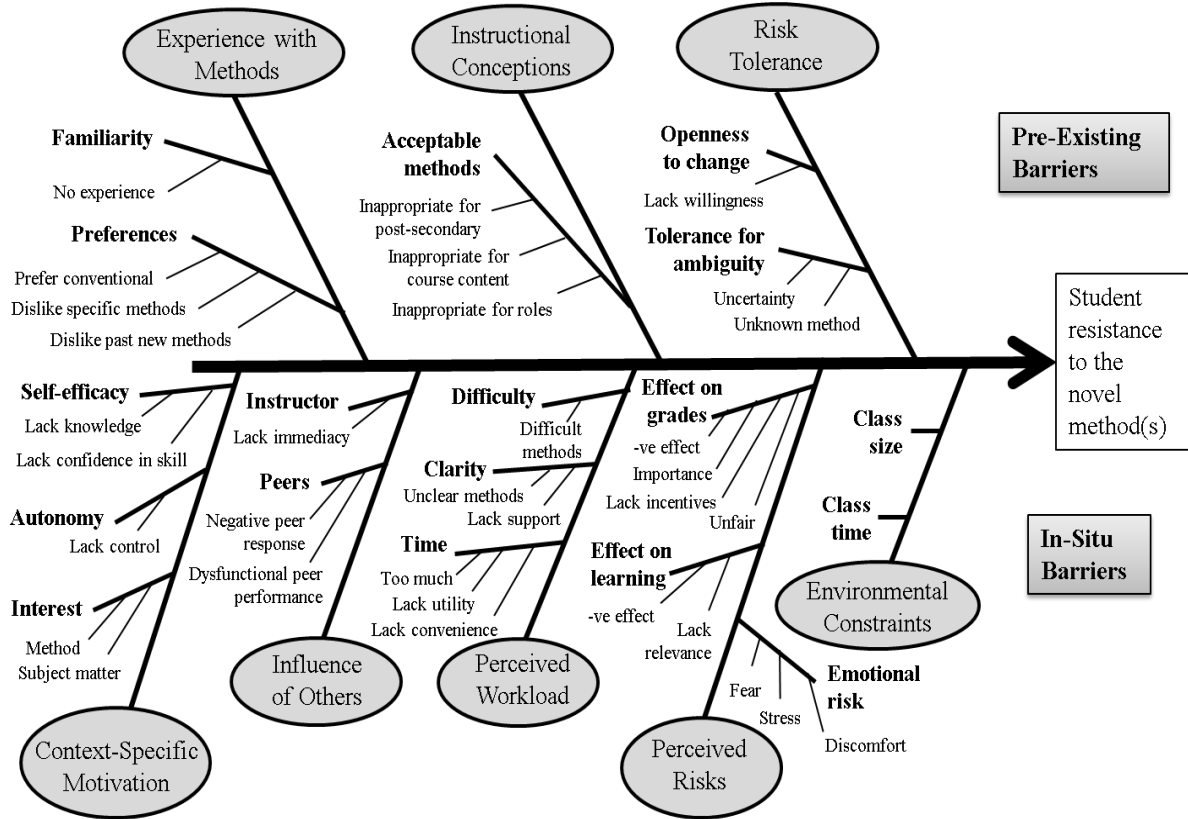
Overall, evidence was provided by students to support all but one of the pre-existing possible thematic barriers to engaging with an innovative instructional method, and one new theme was identified. Various revisions were made at the code level to better represent the findings from the case study, and properties that help to explain the codes were identified.

Further data analyses are required to explore the data in an effort to begin to better understand the prevalence of the themes and codes, particularly in relation to students who were least willing to engage with the course (the most resistant). The next chapter provides the results of more detailed comparative data analyses and identifies further possible revisions to the analytic fishbone diagram which reappears at the beginning of Chapter 7.

Chapter 6: Research Findings – Comparative Analyses

The thematic findings described in Chapter 5 provide a comprehensive empirical overview of possible barriers to engagement from students regarding novel instructional methods. The data stemmed directly from the students and provide evidence to support the first research proposition. However, no attempt was made in that chapter to prioritize the barriers from Table 5.1 according to criteria such as prevalence in an effort to make the research findings more manageable for practitioners to contemplate and use in future course planning and delivery.

Hence, the focus of this chapter is on the three remaining research propositions from Chapter 3. To investigate these propositions, various comparative data analyses were performed on the same data sets as were used in the previous chapter – student questionnaires and interviews – in addition to the instructor interviews and course evaluations. These analyses were selected to help address the propositions as well as the overall research questions.

> *P2: Students have both pre-existing and in-situ barriers to change which influence their potential resistance to innovative instructional methods.*
>
> *P3: Senior students who have experienced less instructional variety will be less willing to engage with innovative instructional methods than either junior students who have less educational experience or students who have experienced more instructional variety.*
>
> *P4: When student resistance is present in an innovative course, students and faculty members do not have a shared understanding of the barriers underlying the resistance.*

Some support was found for all three propositions, although the initial division of the codes in Proposition 2 between **pre-existing** and **in-situ** appears to be inaccurate. Given the exploratory nature of this research, various theoretical and methodological refinements would need to be done to make more definitive judgments. This chapter concludes with a synthesis of key findings in relation to the propositions which will be further explored in Chapter 7 and used in the creation of a revised conceptual framework and model.

6.1 Initial Analyses and Background Material

The data collection instruments were designed to support an open-ended, exploratory study, as is suggested by the broad research questions, and consequently they were targeted towards gathering qualitative data. Given the type of data collected, the analyses performed beyond the thematic analyses discussed in the previous chapter primarily involved frequency counts and calculations of proportions. To perform more rigorous statistical tests, non-parametric tests would have been needed since the data were categorical in nature. Chi-square tests were considered but deemed unsuitable for two main reasons. First, for the thematically coded data (from the Encourage and Discourage responses), respondents often gave more than one idea in their answer, thereby violating a key assumption for the chi-square test: the total number of responses cannot exceed the total number of respondents (Howell, 1999, pp.385-386). Second, when willingness of the students to engage was analyzed in relation to other attributes (e.g., see Table 6.8), the number of respondents in the *Least Willing* subcategory was very low, resulting in expected frequencies below the standard minimum of five (Howell, 1999, p.382; Siegel & Castellan, 1988, p.49). Overall, more basic analyses based on frequencies and proportions were considered appropriate for both the data collected and the focus of the research study.

Frequency counts of all Encourage (ENC) and Discourage (DISC) responses were calculated as a baseline for examining which codes were most frequently cited as reasons to encourage or discourage student engagement with new instructional methods. All responses – both ENC and DISC – were able to be coded using the same coding labels, making possible their inclusion in one analytic table. Rankings were done based on frequency of responses.

Table 6.1 juxtaposes two versions of the rankings when the results from the start-of-term (Q-START) and end-of-term (Q-END) questionnaires are combined (Total = Q-START + Q-END). Only the top ten codes appear in each set of rankings in Table 6.1; a complete table appears in Appendix H (see Table H.1). While there are some similarities in the frequency rankings when viewed by Total and by Discourage responses, differences do occur when the different ranking criteria are used. For example, ***Time*** and ***Emotional Risk*** move into the top five most frequent Discourage codes when compared to the rankings by Total, whereas ***Effect on Learning*** and ***Interest*** decrease in prevalence when ranked by Discourage. Such

differences in prevalence suggest the need to reduce the data further and focus on only the Discourage responses since the focus of this research is on barriers to engaging with innovative instructional methods.

Table 6.1: Combined Questionnaire Responses Ranked by Total and by Discourage

Ranked by Total				Ranked by Discourage			
	Total	Enc	Disc		Total	Enc	Disc
Effect on Grades	286	194 (68%)	92 (32%)	Time	125	31 (25%)	94 (75%)
Effect on Learning	157	120 (76%)	37 (24%)	Effect on Grades	286	194 (68%)	92 (32%)
Openness to Change (1)	151	130 (86%)	21 (14%)	Methods Preferences	140	60 (43%)	80 (57%)
Interest	142	103 (73%)	39 (27%)	Peers	134	56 (42%)	78 (58%)
Methods Preferences	140	60 (43%)	80 (57%)	Emotional Risk	77	18 (23%)	59 (77%)
Peers	134	56 (42%)	78 (58%)	Autonomy	74	24 (32%)	50 (68%)
Time	125	31 (25%)	94 (75%)	Class Time	43	1 (2%)	42 (98%)
Emotional Risk	77	18 (23%)	59 (77%)	Interest	142	103 (73%)	39 (27%)
Autonomy (2)	74	24 (32%)	50 (68%)	Effect on Learning	157	120 (76%)	37 (4%)
Clarity	63	30 (48%)	33 (52%)	Tolerance for Ambiguity	37	0 (0%)	37 (100%)

Note for all Tables in Chapter 6:

(1) Responses in the *Openness to Change* code on Q-END that stated "Nothing" were reverse-coded, with Encourage comments being counted as Discourage responses, and vice versa. For example, it was assumed that when "nothing" encourages, students are actually discouraged and not open to change.

(2) For responses in the *Autonomy* code, Encourage responses that indicated the students had "no choice" were counted as Discourage responses.

As was explained in Chapter 4, in all analyses of individual responses, a discrete idea within a comment was counted as one response, so when one comment contained multiple ideas, each idea was counted as one response within the code with which it fit. This practice is consistent with qualitative data coding (Miles & Huberman, 1994), and helps to explain why the total number of responses is far greater than the total number of respondents, beyond students having made multiple comments on their questionnaires. The analytic level of thematic codes was used in most of the comparisons rather than the higher level themes since

the results by theme were not as informative. As well, only the Discourage comments are used in the subsequent analyses presented.

To explore the data more deeply and assist in assessing the remaining research propositions, various subgroupings of the available data were created for further analyses and are outlined briefly in Table 6.2. A checkmark denotes that a data subgrouping was used in the corresponding analysis. For example, the "*Least Willing* Discourage responses" included the responses about what would discourage engagement that were made by students who indicated they were *Least Willing* to engage with at least one of the methods being assessed. This subgroup of students was assumed to be of key importance because of the research focus on barriers to engagement with innovative instructional methods. Further explanations of the subgroupings appear with each set of findings. Where appropriate, detailed data analyses appear in Appendix H, which allows for distillations of the findings to be highlighted in this chapter.

Table 6.2: Summary of Analytic Data Groupings

	Comparative Analyses		
	P2: **Time of Term**	**P3:** **Experience of Students**	**P4:** **Perspective**
Student Data Groupings			
Discourage (DISC) responses	✓		✓
New and Not Expected DISC responses	✓		
Least Willing (LW) DISC responses	✓		✓
LW DISC respondents		✓	
LW Junior (Jr) respondents (2nd year)		✓	
LW Senior (Sr) respondents (3rd and 4th year)		✓	
Low Variety respondents (Jr & Sr)		✓	
High Variety respondents (Jr & Sr)		✓	
LW and Low Variety respondents (Jr & Sr)		✓	
LW and High Variety respondents (Jr & Sr)		✓	
LW and Hard Discipline respondents (Jr & Sr)		✓	
LW and Soft Discipline respondents (Jr & Sr)		✓	
Student interview responses	✓		✓
Student course evaluations			✓
Instructor Data Groupings			
Interview responses			✓

The findings from these comparative analyses appear in the subsequent sections, and the chapter concludes with a summary of the major findings. Given the exploratory nature of this research, all findings are considered preliminary and tentative.

6.2 Comparisons Based on Time of Term

The second proposition suggests that students may experience different barriers to engaging with new instructional methods as a function of the time in the academic term. The premise posits that at the start of a course students have **pre-existing barriers**, but as the course progresses and they become more aware of the context of that course, **in-situ barriers** can also arise:

> *P2: Students have both pre-existing and in-situ barriers to change which influence their potential resistance to innovative instructional methods.*

The assumption was made that the barriers in these two timeframes would be different, thinking which is captured in the conceptual frameworks and fishbone diagrams in the previous chapters. This proposition also relates to the first research question which asks which barriers are most salient throughout a term.

To investigate this proposition, responses made on the start-of-term questionnaires (Q-START) about what would discourage students from engaging with innovative teaching and assessment methods were compared to the discourage responses made about the four potentially innovative instructional methods assessed on the end-of-term questionnaire (Q-END). **Pre-existing** barriers were presumed to exist at the start of term and **in-situ** ones by the end of term. The relative saliency of the barriers was determined primarily based on frequency counts (i.e., a salience index), and was used as a crude measurement to identify the most relevant barriers in this case study. Three main comparative analyses were completed on the Discourage responses to investigate the possible effects of time on the barriers:

A. Comparing the frequencies of barriers that were identified at the start of term versus the end (Time of Term in General)

B. Comparing the frequencies of barriers by type of instructional method in relation to the time of term (Type of Method and Time of Term)

C. Comparing barriers identified by those *Least Willing* to engage in relation to time of term (*Least Willing* and Time of Term)

The results of these analyses appear next, followed by a summary of two main assumptions about the data used in the analyses. More detailed explanations of and comprehensive results from these analyses appear in Appendix H.

6.2.1 Analysis A: Time of Term in General

When comparing the Discourage codes from the start and end of the term, the most dominant codes, as determined by frequency counts, change from the first time period to the second (see Table 6.3). The top eight codes are bolded, after which the frequencies tend to drop off. The most frequent codes are also different from the combined ranking of Discourage codes found in Table 6.1. Overall, it appears that different barriers have different levels of saliency depending on the time of the term, which suggests that students do have both **pre-existing** and **in-situ** barriers and that a shift in prevalence might occur during the term as students' understanding of what is expected in the course increases. However, almost all of the *same codes* appear in both time periods, with the exception of the environmental factors of *Class Size* and *Class Time*. The existence of the same codes in both time periods brings into serious question the initial dichotomous division of the codes as being either 100% **pre-existing** or **in-situ**, and these labels are dropped in subsequent chapters.

Table 6.3: Rank Ordering of Discourage Code Responses at Start versus End of Term

Start of Term	n	%	End of Term	n	%
Methods Preferences	**68**	**17%**	**Peers**	**67**	**19%**
Effect on Grades	**63**	**16%**	**Time**	**45**	**13%**
Time	**49**	**13%**	**Class Time**	**42**	**12%**
Effect on Learning	**34**	**9%**	**Autonomy**	**36**	**10%**
Clarity	**29**	**7%**	**Emotional Risk**	**33**	**9%**
Emotional Risk	**26**	**7%**	**Effect on Grades**	**29**	**8%**
Tolerance for Ambiguity	**26**	**7%**	**Interest**	**21**	**6%**
Difficulty	**24**	**6%**	**Openness to Change**	**13**	**4%**
Interest	18	5%	Methods Preferences	12	3%
Autonomy	14	4%	Acceptable Methods	11	3%
Peers	11	3%	Tolerance for Ambiguity	11	3%
Openness to Change	8	2%	Class Size	11	3%
Other	7	2%	Instructor	5	2%

Table 6.3 (continued)

Start of Term	n	%	End of Term	n	%
Instructor	5	1%	Self-Efficacy	5	2%
Familiarity with Methods	5	1%	Difficulty	4	1%
Self-Efficacy	2	0%	Clarity	4	1%
Acceptable Methods	2	0%	Effect on Learning	3	1%
Incoming Skills	1	0%	Other	2	0%
Class Size	0	0%	Familiarity with Methods	1	0%
Class Time	0	0%	Incoming Skills	0	0%
Total responses	392	100%	Total responses	355	100%

6.2.2 Analysis B: Type of Method and Time of Term

Differences in the saliency of barriers also appeared between the start and end of term when the data were analyzed according to the type of instructional method. Table 6.4 provides the top five codes for each method according to time of term.

Table 6.4: Ranked Frequencies of Discourage Responses by Instructional Method

START OF TERM		END OF TERM			
Teaching Methods	**Assessment Methods**	**Interactive Lectures**	**Extensive Group Work**	**Selecting Assignments**	**Random Attendance**
Methods Preferences (n=38)	Effect on Grades (n=53)	Emotional Risk (n=30)	Peers (n=48)	Peers (n=14)	Class Time (n=26)
Effect on Learning (n=24)	Methods Preferences (n=30)	Interest (n=18)	Time (n=27)	Time (n=11)	Autonomy (n=17)
Time (n=23)	Time (n=26)	Class Time (n=16)	Autonomy (n=9)	Autonomy (n=10)	Effect on Grades (n=16)
Interest (n=17)	Difficulty (n=18)	Class Size (n=11)	Effect on Grades (n=8)	Tolerance of Ambiguity (n=5)	Acceptable Methods (n=9)
Clarity (n=16)	Clarity (n=13)	Openness to Change (n=6)	Methods Preferences (n=7)	Effect on Grades (n=4)	Time (n=6)

The differences that appear when the data are reported by instructional method may suggest that different barriers could emerge in other innovative, learning-centred courses – particularly by the end of term – if alternative instructional methods are used since the barriers appear to vary in saliency according to method. However, the innovative methods used in this case study are consistent with those recommended for a learning-centred course

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(e.g., methods that encourage students to be more involved in and responsible for their own learning). Therefore, the overall barriers may not differ greatly for other courses that adopt learning-centred methods, although the saliency of the barriers could shift depending on which and how many new methods are used. Further research would be needed to test these tentative claims.

As well, it seems reasonable that the frequencies would vary across the different methods given that the instructional methods studied in this research possess different characteristics (e.g., participating in lectures involves speaking in front of others while engaging in group work involves interacting with peers). However, the saliency of the barriers identified from Q-START do not relate closely to those from Q-END when the method types are similar (e.g., interactive lectures are a type of teaching method but the frequency ranking of the barriers is not the same). It may be that these differences stem from the students not being asked to respond to the same four specific instructional methods at the start of term; however, it also seems plausible that students may shift their perceptions of a course as they experience more of it and better understand the expectations. Hence, despite the inclusion of different instructional methods, time of term may also contribute to the saliency of the barriers, but further investigation would need to be done.

6.2.3 Analysis C: Least Willing and Time of Term

Analyses on the Discourage comments from all respondents provide useful insights, as is seen in Analyses A and B. However, the case study research focuses on resistance to engaging with innovative instructional methods, which suggests that the most informative data would stem from the students who were *Least Willing* to engage with these methods. The assumption was made that this cohort of students would be the most likely to resist since they indicated that they were least open to engaging (see Section 4.3.3 for further discussion of resistance versus engagement). On Q-START, 19% of students were *Least Willing* to engage with either new teaching or assessment methods, whereas by the end of term, 39% were *Least Willing* to engage with at least one of the four methods assessed.

Key results from this *Least Willing* cohort appear in Table 6.5, which is designed as a basic 2 x 2 matrix. The columns represent the time of term (start and end), and the rows highlight the most salient barriers. The first row of the matrix shows the codes that were the

most frequently cited. The second row includes the codes that represent the highest proportion of *Least Willing* responses by code. Representative quotations from *Least Willing* respondents are included to provide further context to the labels for the codes.

Table 6.5: Most Salient Barriers to Engaging with an Innovative Instructional Method

		Start of Term		End of Term	
Most Frequent Codes	Methods Preferences n=14/68 (21%)	"I dislike group work" (A1)	Peers n=25/67 (37%)	"I really don't like group work, as I tend to end up doing most of the work" (B18)	
	Effect on Grades n=13/63 (21%)	"I approach different grading styles with great caution because of the unknown bringing increased chances of poor performance" (B53)	Class Time n=21/42 (50%)	"It's also early in the morning. Not a morning person" (A37)	
	Time n=10/49 (20%)	"Took more time WHY? Because I don't have spare time" (B80)	Autonomy n=19/36 (53%)	"I also don't like to give up that much control" (B66)	
	Clarity n=9/29 (31%)	"A method which would create more work or confusion for the students" (B5)	Time n=15/45 (33%)	"Group work is less efficient than individual work" (A23)	
Highest Proportion Codes	Clarity 31% (n=9/29)	"I don't like to be assessed in a manner I don't understand" (B40)	Acceptable Methods 82% (n=9/11)	"This is university – it should be my own work and I should not have to rely on other students" (B17)	
	Peers 27% (n=3/11)	"If you are matched with a bad group you could receive a mark unrepresentative of your individual abilities" (A3)	Methods Preferences 75% (n=9/12)	"I don't like interacting in class. I prefer straight lectures where I don't have to participate if I don't want to." (B18)	

The Frequency results are very similar to those reported in Table 6.3, which suggests that the *Least Willing* respondents were discouraged by the same barriers to making a change as the rest of the class. However, the Proportion results provide some new barriers that were clearly also important to the *Least Willing* cohort, particularly the ***Acceptable Methods*** and ***Methods Preferences*** codes at the end of the term. When the frequencies and proportions are considered together, three codes appear to be most salient at both the start and end of term: ***Methods Preferences***, ***Time***, and ***Peers***. The high proportion of *Least Willing* students' comments in the ***Acceptable Methods*** code also seems noteworthy because it represents such a high percentage of the Discourage responses. Complete tabular results from these

frequency and proportional analyses on the *Least Willing* comments appear in Appendix H (see Table H.4).

One may question how unique the *Least Willing* participants' responses are. When the *Least Willing* responses are removed from the comprehensive results in Table H.4, a few differences emerge in the frequency ratings for those not in the *Least Willing* cohort. In particular, at the start of term, the top three codes remain the same, but the next two most frequent codes are **Effect on Learning** and **Tolerance for Ambiguity**. At the end of term, the differences by frequency are even more compelling: for the students who were not *Least Willing*, **Peers** was also their most commonly cited barrier, but **Time** and **Emotional Risk** were the next two most common barriers. These differences suggest that the *Least Willing* cohort did perceive the course somewhat differently than the other students in the two classes and may benefit from different interventions to overcome resistance, but future research would be needed to assess these claims.

6.2.4 Additional General Assumptions Tested about the Data

Two main assumptions about the data were also tested:

1. In Section 2.4, an oversight in the literature was identified regarding whether the findings from the studies reviewed were truly in response to innovative instructional methods. The start-of-term questionnaires only asked about methods that were *New* or *Not Expected* so all responses are assumed to be in relation to innovative methods. The end-of-term questionnaires (Q-END) asked about four specific methods which may or may not have been innovative. As a result, Q-END results were analyzed to determine how *New* or *Not Expected* the respondents found the end-of-term instructional methods. Overall, 60% of all end-of-term respondents reported that at least one method was *New* or *Not Expected*, and of those *Least Willing* to engage within the same timeframe, 73% indicated that at least one of the methods was *New* or *Not Expected*. These proportions led to the assumption that the complete data set for Discourage responses from Q-END is reasonably representative of barriers to innovative instructional methods. Additionally, frequency counts in Table 6.3 were re-tabulated for responses from students for whom at least one of the methods was "Somewhat" or "Very" *New and Not Expected*. The same codes appeared in the top

five most frequent codes, again supporting the assumption that the data represent barriers to innovative methods.

2. Given that a single case study was used, the existence of the Discourage codes from the questionnaires was also checked against the Discourage codes from the end-of-term student interview transcriptions as a means of triangulation. All codes from the questionnaires were used in coding the interview transcription data except for the *Incoming Skills* and *Openness to Change* codes. Neither exception is unexpected. The former code did not appear in the Q-END responses either and the interviews were conducted after classes were finished. The latter code only appeared on Q-END as a "Nothing" response and no interviewees provided such a cryptic response to questions about what encouraged or discouraged their engagement. Additionally, no new codes were identified in the interview data coding. Such triangulated results suggest that the questionnaire data codes are comprehensive, but further research would be needed to make a more definitive judgment.

6.2.5 Summary

Overall, different barriers were found to be most salient at the start of term compared to the end of term, which supports the idea that time of term may have an effect on what would most discourage students. It appears, though, that students have a multitude of the *same* possible barriers in both time periods. This lack of a difference suggests that the proposed dichotomous categorization of the barriers as either **pre-existing** or **in-situ** is inaccurate and needs to be reconceptualized as part of the revision of the conceptual model in the next chapter. The implications of and possible connections between the barriers highlighted in Table 6.5 will also be explored in Chapter 7.

6.3 Comparisons Based on Experience of Students

Proposition Three is complex and multi-faceted:

> *P3: Senior students who have experienced less instructional variety will be less willing to engage with innovative instructional methods than either junior students who have less educational experience or students who have experienced more instructional variety.*

Given its complexity, Proposition Three required multiple analyses to explore it more fully. The data collected also enabled this proposition to be analyzed with two different subgroupings of data – one based on respondents' self-reports of instructional variety experienced and another based on variety as determined by their academic discipline. Given that the data sets used are necessarily based on two different subgroupings of the data, their ability to be systematically compared is limited.

6.3.1 Analysis A: Variety in Methods Experienced as Determined by Questionnaire Responses

The first set of analyses involves the subset of respondents who completed both questionnaires. To assess variety experienced, students were asked on Q-START to identify from a pre-determined list which teaching and assessment methods they had already experienced in their university courses. Students who experienced 0 to 3 teaching or assessment methods were considered *Low Variety* respondents and those who experienced 9 to 11 teaching methods or 6 to 8 assessment methods were considered *High Variety* respondents (more teaching methods were listed than assessment methods). Students only provided responses about instructional variety on Q-START, so only students who completed both questionnaires (n=57/172) could be included in this set of analyses. Results from both questionnaires were used to maximize the n's. Proportions of students *Least Willing* to engage, divided into the relevant subgroupings, were used as the main measure for this analysis of the proposition.

First, the students' *Year of Study* was assessed in relation to their willingness to engage in order to identify the proportion of *Junior* versus *Senior* students who were *Least Willing* to engage. Students in second year were classified as *Junior* students and students in third and fourth year were labelled *Senior* students. For the students *Least Willing* to engage with at least one of the instructional methods at the start or end of term, the breakdown appears in Table 6.6. Overall, the proportional results indicate that a higher proportion of the overall sample of junior students was *Least Willing* to engage with innovative instructional methods (46%), although the difference appears to be relatively small.

Table 6.6: Junior versus Senior Students Least Willing to Engage

	Proportion by Year	
Junior	n=11/24	46%
Senior	n=14/33	42%

Table 6.7 shows the proportion of students with *Low Variety* and *High Variety* according to *Year of Study* in order to identify the sample size for each combination of *Variety* versus *Year*. The results indicate that a higher proportion of *Junior* students has *Low Variety* in instructional experiences (42%) compared to *Senior* students (21%), and a lower proportion of *Junior* students has *High Variety* in experiences (21%) compared to *Senior* students (30%). These results make sense based solely on the amount of university experience each cohort has.

Table 6.7: Junior versus Senior Students with Low and High Variety

	Low Variety		High Variety	
	% by Year		% by Year	
Junior	n=10/24	42%	n=5/24	21%
Senior	n=7/33	21%	n=10/33	30%

When the *High/Low Variety* subgroup is further reduced by analyzing only those who were also *Least Willing* to engage, the proportions shift, as is seen in Table 6.8. Here a higher proportion of *Low Variety Senior* students is *Least Willing* to engage (57%) as compared to the *High Variety* students when years are combined (33%), although given the very small n's these results may not be reliable.

Table 6.8: Amount of Variety Combined with Least Willing to Engage

	Low Variety and Least Willing		High Variety and Least Willing	
	% by Variety Subgroup		% by Variety Subgroup	
Junior	n=4/10	40%	n=3/5	60%
Senior	n=4/7	57%	n=2/10	20%
Total	n=8/17	47%	n=5/15	33%

The proposition requires two separate comparisons of the *Least Willing* cohort, as are shown in Table 6.9:

1)   the willingness of *Senior* students with *Low Variety* to engage with innovative instructional methods compared to *Junior* students, and

2)   the willingness of *Senior* students with *Low Variety* compared to students at any level with *High Variety* in instructional methods.

Overall, it appears that a higher proportion of *Senior* students with *Low Variety* (57%) is <u>less willing</u> to engage with new instructional methods than *Junior* students who have less educational experience (46%). As well, this same cohort of *Low Variety Senior* students also seems to be <u>less willing</u> to engage than all levels of students with *High Variety* when years of study are combined (33%). These findings suggest that Proposition Three may be accurate; however, it is acknowledged that the results are based on very small n's.

Additionally, it appears that the proportion of *Least Willing Junior* students is higher than that for the *High Variety* cohort. When considered comprehensively, the findings may also suggest that in order to help students be more open to innovative instructional methods, academic programs should ensure that students experience a variety of instructional methods as early in their programs as possible.

Table 6.9: Comparative Summary A for Proposition Three

Student Cohort	Proportions
Low Variety and Least Willing Senior Students	57% (n=4/7)
Least Willing Junior Students	46% (n=11/24)
High Variety Students at all levels who are Least Willing	33% (n=5/15)

6.3.2 Analysis B: Variety in Methods Experienced as Determined by Type of Discipline

Another way to attempt to evaluate this proposition is to consider the *Discipline* of the students as an indicator of *Variety*. Neumann et al. (2002) and Nelson Laird et al. (2008) suggest that different types of disciplines, categorized as *Hard* or *Soft*, may typically use less or more variety in instructional methods, respectively. Based on Biglan's (1973) dimensions of academic departments, which has been updated by Nelson Laird et al. (2008), departments may be categorized as *Hard* or *Soft*, *Pure* or *Applied*, and *Nonlife* or *Life* systems. For the

purposes of this research, the *Hard-Soft* dimension is of most interest, and can be used to categorize the Faculties at the University of Waterloo. Faculties in the *Hard* dimension include Engineering, Math, and Science, while Faculties in the *Soft* dimension include Applied Health Sciences (minus Kinesiology), Arts, and Environment.

For this second set of analyses, all unique questionnaire respondents from both Q-START and Q-END were included who provided *Year of Study* and *Program of Study* information (n=138/172). They were categorized according to being in a *Hard* or *Soft* program of study and *Junior* or *Senior*, then the *Least Willing* students were extracted. The results in Table 6.10 look similar to those in Table 6.9. The proportions are all close, but the *Least Willing Senior* student cohort had the highest proportion of *Least Willing* students (38%), which supports the third research proposition.

Table 6.10: Comparative Summary B for Proposition Three

Student Cohort	% by Group
Low Variety (Hard) and Least Willing Senior Students	38% (n=12/32)
Least Willing Junior Students	33% (n=22/67)
High Variety (Soft) Students at all levels who are Least Willing	36% (n=33/92)

The accuracy of this second analysis may be questionable since the students' discipline might not accurately reflect the amount of instructional variety experienced. For example, there were 6 students from *Soft* Faculties who indicated they had actually experienced *Low Variety* in instructional methods (5/6 were *Junior* students). Once they were removed from the calculation in the bottom row of Table 6.10, the proportion by group dropped to 31%, which makes the proportion of *Least Willing Junior* students higher than those *Least Willing* with *High Variety*, replicating the result from Analysis A.

6.3.3 Summary

Overall, the results of both comparative summary analyses performed to assess Proposition Three provide some support for the proposition. Both suggest that proportionally more *Senior* students with *Low Variety* in instructional methods are <u>less willing</u> to engage with new instructional methods than *Junior* students or students at any level with a *High Variety*

of experiences. It is acknowledged, however, that this proposition was very challenging to assess based on the data collected since neither data set represented the total number of unique respondents. For the first set of analyses, since not all students completed both questionnaires, the n's were quite small. For the second set, the students were not asked for their program of study on Q-END, so again there were missing data which reduced the amount of usable data to test. As well, the type of discipline may not be the most accurate indicator of instructional variety experienced. This proposition would require further testing to reach more definitive conclusions.

6.4 Comparisons Based on Perspective of Respondent

The fourth Proposition aims to compare barriers identified by the two main parties involved in a course – the students and the instructor – to check for areas of misalignment that may hinder an instructor's ability to prepare for and ward off student resistance:

P4: When student resistance is present in an innovative course, students and faculty members do not have a shared understanding of the barriers underlying the resistance.

Analyses performed to assess this Proposition used data from the two student questionnaires and student interviews as well as the instructor interviews that occurred one month before the start of term (I-A), one month into the term (I-B), and at the end of term (I-C). Course evaluation data were also considered in these analyses.

6.4.1 Barriers Identified in Instructor Interviews

During the interviews, the instructor identified many ideas about why students may engage or not with the four innovative instructional methods he used in his course. He commented that of the four methods assessed in Q-END, he assumed that all but the interactive lectures were new to the students based on the questions he had received about the other methods in previous terms. His comments about how he typically introduces the course provides further evidence for his perceptions about how new he believes the methods are for students: "I think a lot of what I do at the beginning of the semester is honest salesmanship. I tell them what it is and I tell them why it is" (I-A). He was also unsure how much students expected to experience any of the methods: "I don't know what they are expecting. I don't know if I want to" (I-B).

Sample quotations from his three interviews help to explain his thinking about possible barriers to student engagement. In Table 6.11, the barriers are organized according to the conceptual framework from Chapter 5 and are used to explore how his perceptions intersected or not with those of the students'. A complete comparison of how closely the instructor's perceptions aligned with the students' appears in Appendix H (see Table H.6).

Table 6.11: Instructor's Perceptions of Students' Barriers to Engagement

POSSIBLE BARRIERS	SAMPLE QUOTATIONS
Experience with Methods	
Preference for traditional instructional methods	"There are a percentage of students who like the two multiple choice tests. They get to sit down. They study on their own. They know how to memorize, or they know how to acquire the knowledge…I think a percentage of students come to a class expecting it all to be laid out like a smorgasbord" (I-A)
Lack of familiarity with method (as a function of academic discipline)	"There are pockets of students in particular programs and this [group work] is 'fish out of water' stuff for them" (I-C)
Incoming Skills	
Lack of skills (as a function of academic discipline)	"I would say like the Math area. AFM have trouble with group work. They do group work prior to that, I just don't know if they are developing the skills to do group work together" (I-C)
Influence of Others	
Influence of Peers	"They've picked up somebody in their group who doesn't have the maturity to even be in university let alone interact with others" (I-C)
Perceived Workload	
Lack of clarity regarding assignments	"I tend to be somewhat vague in instructions and there are some students that are OK with that and others it's like I'm poking their eyes out with a needle. It's a course about being abstract. Entrepreneurship is taking incomplete information and trying to complete a puzzle" (I-A)
Time	"a lot of student responses [from previous course evaluations] say that the workload is very high" (I-B)
Perceived Risks	
Effect on grades	"another major challenge for students is 80% of my mark comes from group work…I have students drop out for that reason alone" (I-A) "The ones that are in there for the mark will quite often give me grief because they just realized that the acquisition of said mark is a whole lot harder than they thought coming in" (I-A)
Effect on grades (as a function of academic discipline)	"I have AFM students in my class and they are challenged…It's all about the marks. They just don't get it. They are there for a mark…To hell with learning…However, you get the Environment and Business students or the Speech Comm students, delightful…they are going to be challenging me every step of the way" (I-A)

Table 6.11 (continued)

POSSIBLE BARRIERS	SAMPLE QUOTATIONS
Perceived Risks	
Emotional risk	"You get some people who are like deer in the headlights, and I'm thinking, 'I don't ask a lot of you in this class in terms of classroom involvement.' I have to manage that better." (I-C)
Environmental Constraints	
Class time	"If I do an attendance at 8:30, not a happy group. I mean there is a 100% probability that that is the case" (I-A) "Students' brainwave activity at 8:30 in the morning, it just doesn't happen" (I-C)
Class size	"The criticism is on group size" (I-B)
Classroom design	"There is a flat part at the very back [of the room] where I literally cannot see heads" (I-C)

6.4.2 Overlaps in Barriers Identified

The instructor identified many of the same barriers to engagement as the students, including differences based on the students' academic discipline. However, he appears to prioritize them somewhat differently than the students did in Section 6.2. His quotations suggest that he feels much of the students' focus is on grades and anything that may negatively affect them: poor group members, lack of skill, lack of assignment clarity, and lack of time due to a high workload. The course design included elements to help minimize such barriers; perhaps the alignment of perceptions regarding these elements helped the instructor to minimize at least some of the resistance.

For example, he devised a fairly detailed spreadsheet, called a credit grid, outlining each assignment. He also required a group contract assignment which was intended to help students protect themselves against poor performing group members. ***Effect on Grades*** declined in saliency by the end of term, so perhaps his measures to decrease this type of negative effect were successful. As well, students made almost no comments about a lack of ***Clarity*** on Q-END. Perhaps the credit grid, along with the instructor's willingness to answer students' questions, helped to mitigate this potential barrier. However, students still provided a number of comments about the negative ***Influence of Peers*** on Q-END – this was the most prevalent Discourage code – but the instructor also indicated that not all groups had developed solid contracts to assist in dealing with problem group members. He had tried to help the students to deal proactively with peer-related issues, but from his perspective they

did not fully help themselves. Perhaps the students did not perceive the potential problems with their group mates early enough in the term since the contracts were the first assignment due.

Two other of the most prevalent codes for students which the instructor also identified as barriers were *Class Time* and *Time*. Unfortunately, with *Class Time* an instructor has limited options. He can empathize with the possible negative effects of class time on the students' willingness to attend and participate in class, but this variable is somewhat beyond his control given that classes are scheduled by the Registrar's Office. That said, the instructor did note that he preferred teaching first thing in the morning when he was fresh and accordingly he requested an early time slot. Both parties understood the potential effects of the early class time, particularly in relation to the interactive lectures, but the time of day affected them in opposing ways and was a salient barrier for many students.

For *Time*, the instructor only referred to workload issues in relation to past course evaluation data, which suggested that at least a quarter of the class felt that the course required too much work. The course required steady work from the students throughout the term, unlike a more traditional, concentrated structure of lectures-midterm-final exam. Since the instructor continued with the ongoing group work activities and various course assignments, which were to be completed outside of scheduled class time, perhaps he disagreed with the students' perceptions about workload. However, within the *Time* code, the students had initially been concerned whether the new method would take more time to use or learn from (and therefore take away time available to spend on other courses) or if it would be a waste of their time. By the end of term, the group work was often cited as being less efficient and causing scheduling challenges, but only a few students complained specifically about the overall "workload". The instructor may not have fully understood all of the dimensions of "workload" from the students' perspective, which might have made it difficult to reduce student resistance regarding this issue.

Similarly, for *Emotional Risk*, the instructor recognized that interactive lectures made some students anxious. However, he did not want to make them feel uncomfortable: "I don't want to put kids on the spot to embarrass them. I want to put them under the spotlight to let them shine" (I-C). His efforts may not have been enough, though, since *Emotional Risk* was

fifth and sixth for the overall and *Least Willing* frequencies of responses respectively, which suggests he might not have fully understood why some students felt uncomfortable (e.g., some reported English-as-a-second-language issues while others were concerned about speaking in front of so many students or feared being wrong) and therefore could not have compensated for such concerns.

Overall, despite an overlap regarding possible barriers, a shared understanding may still not occur due to different perceptions regarding a barrier, and the barrier may persist.

6.4.3 Student Barriers Not Identified by the Instructor

While the listing of barriers between instructor and students did overlap, a number of barrier codes that emerged from the students' comments were not identified by the course instructor as reasons to discourage engagement, which makes having a shared understanding quite improbable. However, a few of the barrier codes were identified solely as reasons to encourage engagement by the instructor, so perhaps could be considered to be part of his awareness of the students' perspectives of the course (or the overlap may be purely coincidental). These reasons included ***Influence of Instructor***, ***Effect on Learning***, and ***Interest***. The instructor was aware, in particular, of trying to connect with the students by discussing material of interest to them and by moving throughout the classroom and interacting with them directly. It appears that the students perceived his immediacy behaviors as they were intended since ***Influence of Instructor*** received numerous Encourage comments by the end of term and almost no Discourage ones.

The instructor was also very focused on ensuring that the course had a positive ***Effect on*** the real-life ***Learning*** needed by entrepreneurs: "I say 'Everything I've done in this course is to prepare you for what goes on once you get out of here…I say that the success of the entrepreneur, if you are an island, you will not statistically get your company beyond the two million sales mark'" (I-A). He sought to incorporate certain learning experiences in his course such as working with others, making decisions that involve risk, and being punctual. As such, the group work, assignment selection, and random attendance checks were instrumental parts of his course because they all aimed to reinforce real-life learning for the students. He also wanted to capitalize on the students' ***Interest*** regarding entrepreneurship.

And yet, in the student interviews a few of the *Least Willing* students shared that they were not interested in becoming entrepreneurs or even working in business:

"I'm not going to be an entrepreneur. It just didn't interest me." (A1)

"I'm mostly just here to get the credit so I don't necessarily have this deep intrinsic understanding of the entrepreneurial process…Business isn't really the emphasis of my academic career, but I figured Arts and Business is better to have than just an Arts degree, so it's sort of more a means to an end as opposed to an end in and of itself. I'm sort of paying my dues as opposed to any overlying interest." (B10)

The course was required for the two students quoted above, and they clearly had different interests from the instructor and different ideas about what they wanted to learn, resulting in a lack of shared understanding. Having a limited perspective on possible barriers like *Interest* and *Effect on Learning* perhaps made the instructor less aware of those students who have perspectives different from his own. The skills and attitudes that are taught in this course are applicable to numerous situations beyond entrepreneurship, but perhaps the students who felt discouraged were unable (or unwilling) to see the learning opportunity and the instructor did not explicitly encourage them to consider this possibility.

Other student-identified barriers simply did not arise as part of the three interviews with the instructor. In particular, comments that could be categorized within the codes of *Acceptable Methods*, *Autonomy*, *Self-Efficacy*, *Difficulty*, *Openness to Change*, and *Tolerance for Ambiguity* were not mentioned. Interestingly, none of these same codes were applicable in the coding done on responses to the course evaluation open-ended question about weaknesses of the course. The instructor indicated that the course evaluation comments were his primary source of feedback about the course which he used to help revise it each term. Given this lack of consistency between the questionnaire responses from this study and the course evaluation responses, course evaluation data may not be the best data for faculty to rely on when attempting to assess students' responses to an innovative course.

Two of the absent codes seem particularly noteworthy since they are ones that were the most salient for the *Least Willing* students. First, unlike the other absent codes, *Autonomy* was in the top five Discourage codes based on frequency for all students as well as for those

Least Willing to engage. Despite being able to choose some of their own assignments, some students still focused on the fact that they had no choice but to work in groups or to attend class if they wanted the attendance bonus marks. These students were from second- to fourth-year and in a variety of programs, suggesting that neither year nor program of study were contributing factors. An instructor who is not thinking about the role of autonomy in a course would not necessarily contemplate explicitly teaching about autonomy in learning-centred environments nor highlighting the possible opportunities and challenges associated with it, and yet having students increase their level of autonomy is a hallmark characteristic of a learning-centred course (Blumberg, 2008; Weimer, 2002). The lack of awareness of such a possible barrier could represent a type of misalignment and would not help to decrease the possibility of resistance.

The other major code that the instructor's comments did not fit within was ***Acceptable Methods***. Being proportionally ranked the highest by the *Least Willing* students at the end of term as a barrier to engagement, this code may encompass some critical ways of thinking that instructors would benefit from considering when using new instructional methods. For example, a number of the *Least Willing* students found the random attendance checks to be juvenile, questioning their acceptability in a university setting. Their beliefs about what makes a method acceptable overrode the instructor's stated desire to reward punctuality. When pushed during the final interview to explain the rationale behind the random attendance checks, though, the instructor admitted: "So you can only tell students that I'm testing them on the real world circumstance. The driving force for including attendance checks is because I needed them there because they had no other way to learn my materials" (I-C). With no textbook and limited information on lecture slides, students did need to attend classes to learn about material needed for their group assignments and the end-of-term test. Earlier comments made during that same interview about the attendance checks indicated that the instructor focused solely on his students' negative reactions about marks lost when their group members missed an attendance check; he did not talk about the concept of taking attendance as jarring students' sense of what methods are appropriate at the university level. The students and the instructor did not appear to share an understanding about the instructional purpose of the attendance checks, perhaps because their thinking was not articulated.

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When beliefs about acceptable methods are not expressed, limiting beliefs can persist which can hinder engagement as well. For example, in the student interviews, one student in particular made comments that suggested she had limited views of what constitutes 'teaching':

> "For my Grade 12 year, I had one teacher three times and he basically taught us like real university students. He gave us the textbook and he assigned us all the work and *didn't teach us for the whole term*…He said that 'It's time to be independent and learn for yourself, and if you need anything, I'll be here to help you'. So we had a class with him, *he just didn't teach anything*" (emphases mine) (A1).

This limited thinking appeared again in a comment from this same student about the Economics course: "I think I learned more outside of the class than I did in the class" (A1). It appears that this student associates the instructor speaking with the act of teaching. However, the design of a course also constitutes teaching. For the course under study, the student did not appear to understand the role of group work in the course design nor did she appear to recognize that the instructor had designed the group experiences as major learning opportunities within the course – they were part of his teaching even if he was not physically present. When students hold such limiting beliefs, they may resist instructional methods that put instructors in non-traditional roles, such as that of a facilitator. The lack of shared understanding, then, may also stem primarily from the students.

Many of the students' beliefs about 'learning' uncovered during the interviews also show limitations:

> "Learning is when you find out something new…just kind of new information" (A1)

> "It means that you actually take some time and review the material. And in the end you remember something from the course" (A37)

> "The exposure to and retaining of knowledge" (B10)

> "Showing that you can actually use information and not just repeat it by like writing down a list of three things" (B34)

> "Finding out new things. New ways to do calculations. Ways the industry uses theory" (B49)

The focus in these quotations is on information. When part of the learning in a course is linked to the instructional methods themselves, information is not the only focus for learning. Skills and attitudes join knowledge as foci for learning, but again, a shared understanding cannot be known to exist if students and instructors do not talk about their beliefs regarding acceptable methods, which are part of their conceptions of teaching and learning. Further discussion about the value of articulating beliefs appears in the next chapter.

6.4.4 Summary

Overall, Proposition Four seems plausible. With some barriers, the instructor and students did seem to share an understanding of the key issues, the instructor worked to resolve them, and the barrier was diminished (e.g., *Clarity*). For other barriers, even when both parties were aware of the main issue, the barriers remained. However, it could be that the underlying barriers were not clearly enough understood to be resolved (e.g., ***Emotional Risk***), the importance of the barriers differed (e.g., ***Class Time***), or the provided solution was not being fully implemented (e.g., the team contract to ward off conflicts with ***Peers***). In all of these cases, a shared understanding was not achieved and the barriers persisted. When the students and the instructor were not clearly both aware of a barrier (e.g., ***Acceptable Methods***), it is questionable whether a shared understanding could exist because the possible issues underlying the barrier were not explicitly uncovered and discussed.

Identifying the specific barriers from this case study for which the instructor and his students did not share an understanding is less critical since different faculty members may be aware of different possible barriers to engagement. What is more important is the realization that a lack of shared understanding tended to result in barriers developing and/or persisting. As a result, faculty members should be aware of the possible impact of misalignments, particularly for the students' most salient barriers. The lack of a fit between the course evaluation results and the most salient barriers is also noteworthy if faculty members are relying primarily on these evaluative data to understand students' perceptions of an innovative course.

6.5 Summary of Comparative Data Analysis Findings

Three main comparative analyses were performed in order to assess the final three research propositions stated in Chapter 3. The various findings described in this chapter provide some support for all three propositions, but further research is warranted to make more definitive judgments. Key highlights from the findings are as follows:

- The barriers to change identified most frequently by students *Least Willing* to engage and those cited by the largest proportion of the same student cohort are suggested as those that instructors most need to attend to when preparing for and teaching a course that uses innovative teaching and/or assessment methods. These barriers include: ***Methods Preferences***, ***Effect on Grades***, ***Time***, ***Clarity***, ***Peers***, ***Class Time***, ***Autonomy***, and ***Acceptable Methods***. It should be noted that different barriers may emerge as most salient with a different mix of instructional methods, although the methods employed in this case study were representative of learning-centred methods.

- While time of term appears to affect the saliency of the barriers identified, the dichotomous categorization of these barriers as either **pre-existing** or **in-situ** does not seem to be accurate and needs to be revised.

- The students' ***Year of Study*** and amount of ***Instructional Variety*** (which may be connected to ***Academic Discipline***) appear to have some impact on their willingness to engage with novel instructional methods. The results of two sets of analyses indicate that proportionally more *Senior* students with *Low Variety* in instructional methods are <u>less willing</u> to engage with innovative instructional methods than either *Junior* students or students at any level with a *High Variety* of instructional method experiences. These findings, however, are very preliminary given the limited data sets for both analyses, but future research in this area seems warranted.

- When the instructor and his students had a similar understanding of a barrier to engagement with novel instructional methods and students accepted the strategy used to resolve the barrier issue, the barrier appeared to dissipate during the term. However, both parties did not recognize all of the same barriers to change, and even if they did identify the same barriers, they did not always appear to fully understand

or share one another's perspectives. This lack of a shared understanding appeared to result in misalignments and the persistence of student barriers to engaging with innovative instructional methods.

- Relying on course evaluation data as the primary source of feedback on students' perceptions of an innovative course may not lead to a full understanding of those perceptions, which could exacerbate misalignments in understanding.

The next chapter returns to the research questions posed in Chapter 1, compiles the major findings into a final revision of the fishbone diagram, and proposes overarching themes for the thematic analysis findings. It then proceeds to contemplate possible interpretations and implications of the findings identified in Chapters 5 and 6. Additionally, it provides an opportunity to consider how the findings connect to the existing research literature. This broad-ranging discussion helps to inform an overall summary of the major findings as a next step towards preparing for future research.

Chapter 7: Discussion and Summary of Findings

This exploratory case study has aimed to investigate students' responses to innovative instructional methods, focusing primarily on the barriers that would discourage students from engaging with these methods. In the case study, learning-centred instructional methods were the example methods studied and are considered to be innovative since such methods have not been widely adopted in higher education. Detailed analyses to investigate the four stated research propositions were presented in the previous two chapters. The purpose of this chapter is to contemplate the main research findings in relation to the overarching research questions and existing empirical literature in order to situate the findings and contemplate their possible implications for both faculty members who want to innovate with learning-centred methods and the educational developers who aim to support them. The chapter ends with a summary of the overall findings from this exploratory study.

The research questions posed in the introductory chapter are as follows:

- What are students' barriers to change for a course that uses innovative instructional methods, beginning from the outset of the course through to the end, and which are most salient?

- How might the students' year of study, academic discipline, and amount of instructional variety experienced affect the possibility of resistance, and how could any effects found inform decisions about when it is best to innovate in a curriculum?

- Do students and faculty members identify the same barriers to change? If not, what are the differences and what are the implications of these differences?

7.1 What are Students' Barriers to Change?

In Chapter 5, an Ishikawa (fishbone) diagram was created to capture the plethora of possible barriers to change that faculty members could encounter as they introduce and implement novel instructional methods in their teaching. Chapter 6 provided some guidance about possible revisions to help the diagram better represent this change situation, including removal of the assumed division of barriers as being either **pre-existing** or **in-situ** and

identification of those barriers that appear to be most salient for the cohort of students who were least willing to engage with learning-centred instructional methods.

A summary of the most salient barriers for the *Least Willing* students – based on frequency and proportions – appears in Table 7.1. A further revised fishbone diagram is presented in Figure 7.1. This fishbone diagram provides a comprehensive view of the various barriers to engagement that can all exist within one course when innovative instructional methods are used. Additionally, it attempts to highlight visually the most salient barriers at the start and end of term to reflect those barriers that practitioners may most want to address. Overall, it represents a potentially useful analytical tool to assist future researchers and practitioners in understanding and categorizing students' barriers to change.

Table 7.1: Most Salient Barriers to Change for Least Willing Students

	Start of Term	**End of Term**
Most Frequent Codes	Methods Preferences	Peers
	Effect on Grades	Class Time
	Time	Autonomy
	Clarity	Time
Highest Proportion Codes	Clarity	Acceptable Methods
	Peers	Methods Preferences

Figure 7.1: Comprehensive Fishbone Diagram: Student Barriers to Change
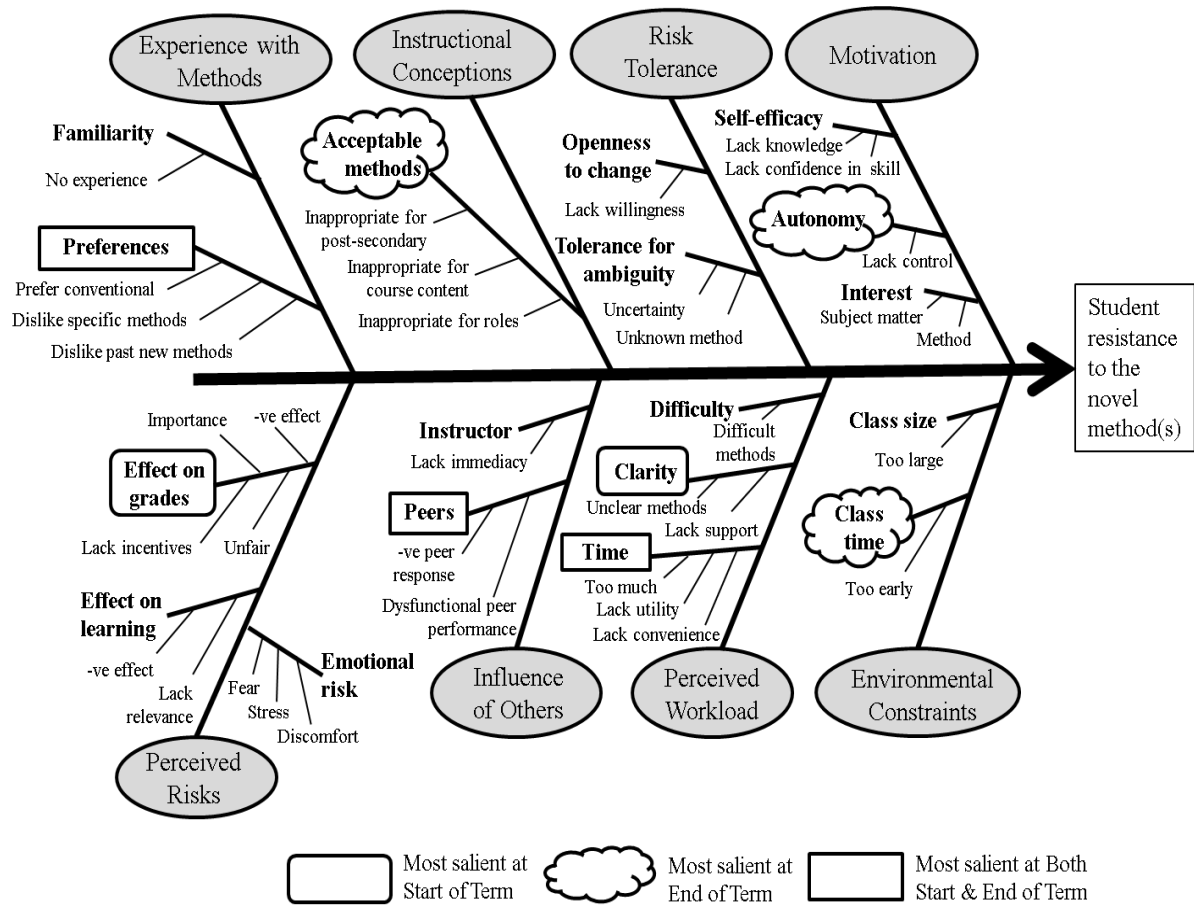
How may these most salient barriers be further categorized to assist in contemplating them more deeply and searching for possible theoretical linkages? While numerous possible barriers to change emerged from the case study data, the most salient barriers identified by the *Least Willing* students in this exploratory study appear to revolve around the overarching themes of **<u>Perceived Lack of Control</u>** and **<u>Risk of Negative Consequences</u>**, themes which emerged as a result of theoretical coding (Charmaz, 2006). How the most salient codes fit into these two themes is explored next.

At the start of term, students who were least willing to engage with innovative instructional methods voiced discouragement about having to face methods they did not prefer (*Methods Preferences*). This barrier remained one of the most salient at the end of term. The reasons that students provided to help explain this barrier were extremely varied, ranging from the possible negative effect on grades to a lack of autonomy to a negative

impact on their available time. This variation seems reasonable given the variety of instructional methods that they named, but it also highlights that students were discouraged by both a reduced sense of control over their learning environment and the possibility of negative consequences such as losing grades or feeling discomfort.

Possible negative ***Effect on Grades*** was the second most prevalent barrier identified at the start of term, reinforcing the message from the least willing students that possible negative consequences would discourage them from engaging with new instructional methods. When discussing grades, the students indicated that if the new methods were too difficult or were somehow unclear that their grades could suffer unfairly. They also suggested that a lack of ***Clarity*** – which was identified as one of the most salient barriers at the start of term based on both the frequency and proportion of responses – could negatively affect how well they learned, which would represent another negative consequence and in turn could result in the previously mentioned consequence of decreased potential grades.

Both their ***Peers*** and issues involving ***Time*** were most salient at both the start and end of term. These barriers could also fit into the overarching themes of control and risk. When students have to work with their peers in a course, they do not have complete control over their learning situation. As the students in this study identified, their peers may not contribute equally and interactions with them may result in tension. These dysfunctional ways of working could result in more than a lack of control; the students indicated that methods such as group work discouraged them because they could (or they did) experience the consequences of decreased grades and lost time from having to deal with team conflicts or doing extra work on behalf of less active or absent team members. At the start of term, the least willing students in this study were also concerned that new instructional methods would create more work or take more class time, which is problematic when the time available to work on each course is limited. By the end of term, the time-related reasons connected more to inefficiencies when trying to coordinate group meetings and get assignments completed. The overwhelming sentiment from the least willing students was that it would have been easier for them to just work alone because then they would be in control and the grades would be based on their own work.

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Two of the most salient barriers from the end of term – *Class Time* and *Autonomy* – could also both reasonably illustrate a lack of control. A number of students were very clear that the morning class times were not preferred and did not encourage them to participate in class, but the scheduling was beyond their control. The second barrier – autonomy – is synonymous with control in that a lack of control equates a lack of autonomy. The course instructor did attempt to give the students some control within the course (e.g., selecting some assignments and using a group contract), but not all students perceived or accepted the opportunity provided by that autonomy and instead complained that they had a lack of choice because they had to participate in the various elements of the course, particularly the group work and the random attendance checks. For those least willing to engage, feeling forced to engage in a particular instructional method or activity seemed discouraging and could result in low perceptions of control.

The *Acceptable Methods* barrier is perhaps the hardest to fit into the overarching themes of control and risky consequences, although the students who gave such reasons for potentially resisting indicated that the methods somehow did not "feel right" or fit with their ideas about how teaching and learning "should" happen either at university or in a specific discipline. Their instructional norms or conceptions were challenged by the innovative methods, which perhaps may have made them feel a lack of control over their learning situation or even perceive an increased risk of poor outcomes (or negative consequences) since they were in an unfamiliar situation.

Overall, it makes sense that **Risk of Negative Consequences** and **Lack of Control** emerged as overarching themes for the *Least Willing* cohort since the primary focus of the research was what discourages people from engaging with something new or not expected. When people are in a novel situation, it seems reasonable that at least some of them may feel threatened. However, not all of the most salient barriers logically link to being faced with a new situation. For example, the timing of a class would not on the surface appear to relate to whether students would engage with a new method, nor would a barrier like class size, but students might still find them discouraging or even threatening in relation to deciding about whether to engage with any instructional method. If these environmental factors can limit students' willingness to engage with instructional methods of any sort, then such contextual

constraints still seem noteworthy to attend to when seeking to understand and respond to the complete picture of this educational change management situation.

If risk and control are, in fact, key considerations for students in deciding whether to engage with innovative instructional methods, how might these themes fit with what is known about learning-centred ways of teaching and learning, particularly from the students' perspective? In Barr and Tagg's (1995) synthesis of the desired learning paradigm model (see Appendix A), the students are positioned much more centrally than in the teaching paradigm and need to actively engage in and take responsibility for their learning. Learning is conceived of in constructivist ways which involve moving beyond the comfort of the teacher being fully in control and limiting the messiness of learning. One key characteristic suggested in the learning paradigm is that the act of learning fits with the metaphor of how to ride a bicycle (versus the teaching paradigm metaphor of learning as a storehouse of knowledge). I have very clear recollections of watching my husband teach our youngest son how to ride a bike by taking him to a grassy hill near our home: there were false starts, numerous falls, and many tears, all of which were forgotten at the moment when he could put all the pieces together and simply ride away.

When students enter new instructional situations, they too are "at the top of the hill", in a risky situation where stumbling is not uncommon and feelings of control may be quite low. Weimer (2002) concurs that learning-centred approaches to teaching are threatening and involve losses for the students. The conceptions of learning literature, which stems from students' perceptions, may provide further insights. The main conceptual framework still in use stems from Marton, Dall'Alba and Beaty (1993), in which an introductory conception of learning typically involves students gaining factual information whereas more advanced conceptions see students changing how they view the world or even themselves. The more the focus in a course is on transformation versus stockpiling – which is likely the case with a learning-centred course – the greater the risk to the students. True learning, then, involves change and requires students to take risks, be willing to fail, and feel out of control. But these feelings may not always be well received and may discourage students from wanting to engage in their own learning, an idea that will resurface later in this chapter when challenges to implementing change interventions are explored.

Two other noteworthy observations about the potential barriers identified involve the possible effects of the time of term and the type of innovative instructional methods employed. Table 6.4 summarized the most salient themes according to both time of term and type of method. The differences between the start versus end of term suggest that students' perceptions of their learning situation may change during a course as their experiences with the instructional methods increase. If this possibility of change is generalizable to other contexts, faculty members should be aware that the students' most salient barriers may fluctuate with time and experience in the course. Consequently, whatever measures faculty members put in place to address possible resistance will probably need to be repeated or even altered throughout the term. This interpretation is not unreasonable given the input-output model of education introduced in Figure 1.1. The feedback loops suggest a dynamic environment which would require ongoing monitoring on the part of faculty members to remain connected to their students and their concerns. Additionally, depending on the mix of innovative instructional methods in a given course, faculty members should consider that different barriers to change may emerge in relation to each method. Preparing for and handling the integration of innovative methods is not likely to be a "one size fits all" kind of situation. The effects of time of term and type of method(s) should be investigated further in future research studies.

7.2 What May Affect the Possibility of Resistance?

Research question two asked about the effects of students' year, program of study, and amount of instructional variety on the possibility of resistance. The data sets used to investigate this question were not large, which make the findings quite tentative. However, the findings from the two different analyses performed suggest that upper-year students who have experienced limited variety in instructional methods are less willing to engage with innovative instructional methods than either students with less overall educational experience (junior students) or students who have experienced a lot of variety in instructional methods regardless of their year of study. For year of study, Messineo et al. (2007) found a similar effect when studying senior versus junior students' attitudes about active learning in large classes; senior students were less likely to prefer a variety of instructional activities in that

context. No information was included, though, about the students' previous instructional variety and the results were not analyzed according to academic discipline.

Students' amount of instructional variety alone may also be interesting to consider in relation to the possibility of resistance. Ashby's (1964) law of requisite variety indicates that only variety can destroy variety. In the educational context, this theory would suggest that the more variety in instructional methods experienced, the less challenging new variety becomes. Only a few students indicated that not being familiar with a new method would discourage them, so the key does not appear to be exactly which methods they have already experienced. Rather, having experience with various methods may make it easier to adapt to a new method in general; the tentative findings from this study support this supposition. Kember (2001) suggests that students should be purposefully exposed to novel learning-centred methods, which would not only prepare them to work with such methods but also increase their instructional variety and make new methods less problematic.

In the case study questionnaires, academic discipline was also explored in relation to instructional variety. Beyond the students' self-reports of experience with various teaching and assessment methods in past university courses, their academic discipline was identified as a means of possibly establishing instructional variety. The hard disciplines of math, science, and engineering have been shown to use less variety in instructional methods, particularly learning-centred methods (e.g., Nelson Laird et al., 2008; Neumann et al., 2002). When combined with year of study, limited instructional variety that may stem from hard versus soft disciplines appeared to increase the possibility of resistance. The case study interview data used to explore the **Instructional Conceptions** barrier in Chapter 5 provide further evidence of disciplinary differences being connected to resistance; students in the hard disciplines indicated that the learning-centred methods used in the case study were unlikely to work in courses in their specific disciplines. However, they were not all in the *Least Willing* cohort for the course being studied, suggesting that the students' academic discipline alone may not predict the possibility of resistance. Students' perceptions may be more contextual than personal, being linked to the discipline of the courses they experience and, perhaps even more importantly, to the cultural academic norms that they perceive exist in those disciplines. Hofer (2000) and Palmer and Marra (2004, 2008) also found that

students' perceptions tend to be discipline-specific rather than universal, in that students hold different perceptions about courses in different disciplines (in this case, epistemological perspectives). It may be that the amount of instructional variety students have experienced is a better predictor of resistance than their academic discipline, and that academic discipline becomes more meaningful when considered in relation to a specific course rather than specific students. Further studies would need to be conducted, however, to assess more definitively the possible effects of year of study, instructional variety, and academic discipline on students' willingness to engage with innovative instructional methods.

These tentative findings, particularly when combined with the barrier themes of risky consequences and perceived lack of control, do suggest that students could benefit from being exposed to various instructional methods as early in their programs of study as possible to help prepare them for different types of methods and increase their flexibility as learners. This advice seems particularly relevant to those teaching in the hard disciplines since instructional variety does not normally occur as students progress through their program, and it dovetails with calls in the literature on learning within those disciplines about the need to increase instructional variety (particularly using learning-centred methods) from the first year of a program (e.g., Meltzer & Manivannan, 2002; Virtanen & Lindblom-Ylänne, 2010). Comments from two of the follow-up interviews with students suggest that if students experience variety in instructional methods in secondary school they can feel more prepared for further variety in university, which reinforces the possible value of instructional variety, but faculty members cannot control students' educational experiences pre-university. As a result, purposeful integration of various instructional methods throughout a program's curriculum could assist in reducing students' perceptions of risk and lack of control and encourage engagement in future new methods as students progress through their program and beyond.

One factor beyond amount of variety, year of program, and academic discipline may also affect the possibility of resistance and began to emerge in this research study: students' perceptions of the focus or purpose of learning. In the interviews, the majority of students who had responded negatively to the instructional methods were asked how they define "learning". As shared in Chapter 6, overwhelmingly their responses indicated that for them

learning involves gaining new knowledge or material; the focus appears to be primarily on course content. In some cases they also included new skills, but they did not mention skills such as learning how to learn from different teaching or assessment methods. Further data would be needed to reach a more definitive interpretation. However, it is interesting to contemplate whether students may view instructional methods solely as transparent media through which faculty members facilitate learning and students demonstrate learning. But might it be more useful to have students think about these methods as a recognized *part of* their learning? McLuhan (1964) claimed that "the medium is the message" (p.235, as cited in Golden, Bergquist, & Coleman, 1989); in the case of innovative instructional methods, could at least part of the end message – the learning – be the actual media for learning?

Empirical literature on students' conceptions of learning tends not to focus directly on instructional methods nor ask questions such as the ones posed above (e.g., Marton at al., 1993; Entwistle, 2010). Tynjälä (1997), who focuses on students' conceptions of the learning process, did not delve into students' thoughts about instructional methods, and even Elen, Clarebout, Léonard, and Lowyck (2007) have not yet expanded their work on instructional conceptions beyond the roles of teachers and students to study the role of instructional methods in students' learning. But these questions could be very fruitful in helping to understand students' responses to innovative instructional methods. As such, it would be intriguing to ask students directly about how they perceive the role of instructional methods in their learning.

A different strain of literature on course design, which involves concepts such as intended learning outcomes and alignment, can provide guidance to faculty members and educational developers about how to think quite explicitly about instructional methods. Creating a solid course design involves clearly articulating intended learning outcomes and demonstrating alignment amongst these outcomes and the teaching and assessment methods (e.g., Fink, 2003). Learning outcome statements can focus on cognitive components of learning as well as skills such as metacognitive skills regarding learning how to learn (Fink, 2003). Faculty members may need not only to teach students how to learn from new instructional methods but also to ensure that their students recognize that this learning is part of the total course experience by explicitly articulating these elements of the course in their

intended learning outcomes. On the start of term questionnaire, some students indicated a desire to experience new teaching methods, but no one expressed a desire to experience new assessment methods. Again, if learning how to learn from new instructional methods is made an explicit part of a course design, students may be more open to experiencing these new methods, even if they are new assessment methods. Further research would be needed, though, to assess these assertions.

Other theories and constructs that were not explored as part of this case study data collection might also provide insights into additional possible underlying reasons for students' responses to innovative instructional methods. Additional possibilities will be explored further in Section 7.4 when the case study results are analyzed in relation to an existing theoretical framework.

7.3 How Well Aligned are Faculty Member and Student Perceptions?

In Chapter 6, the instructor's perceptions of possible reasons for resistance were compared to those identified by the students. In some cases, extensive overlap existed. It appeared that when perceptions overlapped and the faculty member worked to reduce the barrier (e.g., concerns about clarity), the barrier diminished in saliency. This finding suggests that faculty members may be able to have some positive influence on barriers to engaging with new instructional methods but only if they identify the same barriers as their students and if their strategies for reducing the barriers are well-received by the students.

However, even if the faculty member and students identify the same barriers, they may encounter challenges for a number of reasons. First, they may not understand the barrier in the same way and fail to share a common definition (e.g., understanding the emotional cost of participating in an interactive lecture). Second, they may value the barrier differently, not giving it the same level of importance (e.g., the effect of the early class time). Finally, the provided solution may not be fully accepted and implemented by the students (e.g., comprehensive contracts for group work). In such cases, barriers may remain. As well, when barriers do not overlap (e.g., autonomy was only identified by students) or when the faculty member and students are not fully aware of a barrier (e.g., acceptable methods), then

the barriers may also persist. Misalignments between student and instructor perceptions, then, appear to have some effect on the barriers to change.

The presence of misalignments fits with the limited literature that compares faculty members' and students' views about teaching and learning. In Virtanen and Lindblom-Ylänne's (2010) qualitative study, they conclude that "the conceptions and definitions of teaching and learning were substantially more different between students and teachers than expected" (p.366). The teachers and students in their study did not define teaching or learning in the same ways; the faculty member and students in the present case study did not always perceive the same barriers to engaging with innovative instructional methods or, even if they did perceive the same type of reason, they did not share the same understanding of that barrier.

Overall, given the misalignments that can occur between faculty members' and students' perceptions, one key implication is the need to communicate. An aligned course design that is communicated via a clear syllabus would be a good first step, but since the tentative findings from this case study suggest that numerous barriers may be present and that the barriers can shift in saliency throughout a course, faculty members should strive to maintain open communication with their students during the entire term. Faculty members should also strive for self-awareness about the assumptions they are making about their students' perceptions and work to clarify and make explicit both their thinking as well as their students'.

A more hidden communication consideration that stems from the comparative analyses completed in Chapter 6 is that faculty members may want to re-consider the potential value of course evaluation results as a source of comprehensive feedback. Marks (2012) conducted a primarily qualitative study based on the wording of the course evaluation instrument used in the Faculty of Arts at the University of Waterloo in an attempt to investigate ideological perspectives inherent in the document. The findings from her textual analysis, which fit with those of Kember and Wong (2000), indicated that two main semantic categories were present in the instrument's questions – teaching skills and teaching attitudes – both of which suggest that a teaching-centred orientation to instruction is the expected norm. For example, she indicates that "what is excluded or absent in this particular list of 'teaching skills' is any

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recognition of an active role for students in the teaching and learning enterprise" (p.13). As well, "according to this instrument, 'good instructors' are good at presenting and organizing material…[and] the instructor bears all of the responsibility for both teaching *and learning*, while the student adopts a passive role" (p.14, emphases hers). There are no questions on the instrument such as whether the students participated in the teaching of the course, whether they were expected to work autonomously, or whether they learned to work in groups. While further research in this area could be beneficial, it would seem reasonable to suggest that if students are not asked questions that intersect with the types of instructional methods used in a course, they cannot very easily provide feedback on such methods, nor are they encouraged to believe that these methods would even be desirable in their courses. As a result, faculty members and institutional administrators may want to question the utility and representativeness of course evaluation data when analyzing the efficacy of a course that uses innovative instructional methods if those methods are not addressed by the evaluation instrument's questions. More broadly, they may also want to question the type of educational norms being communicated by institutionally approved course evaluation instruments.

7.4 Making the Link to Existing Theoretical Frameworks

Connections were made in the previous sections of this chapter between the case study findings and various empirical studies. However, no attempts to link the comprehensive set of findings to the existing research literature have yet been made. In this section, one key theoretical framework is explored – the reasoned action approach – which distills the findings into a more accessible format and provides some general guidance to practitioners regarding how to think about and approach reducing students' barriers to engaging with innovative instructional methods.

7.4.1 The Reasoned Action Approach

Fishbein and Ajzen's (2010) reasoned action approach (RAA) provides a conceptual framework that may help to categorize and explain in a clear format the majority of the findings in this case study. This framework – which stems from previous work done by the same authors on expectancy-value theory, the theory of reasoned action, and the theory of

planned behavior – provides a social cognition approach that can be used to predict and assist in changing human behavior (pp.17-20). Testing of its validity and reliability has been accomplished through numerous correlational studies in a variety of domains. The RAA does not assume that people make rational decisions but rather that they follow a consistent process when deciding to perform behaviors, whether done consciously or more automatically (pp.23-24). The framework has been captured in a visual model that demonstrates its parsimony; it appears in Figure 7.2.

Figure 7.2: Fishbein and Ajzen's Reasoned Action Approach Model
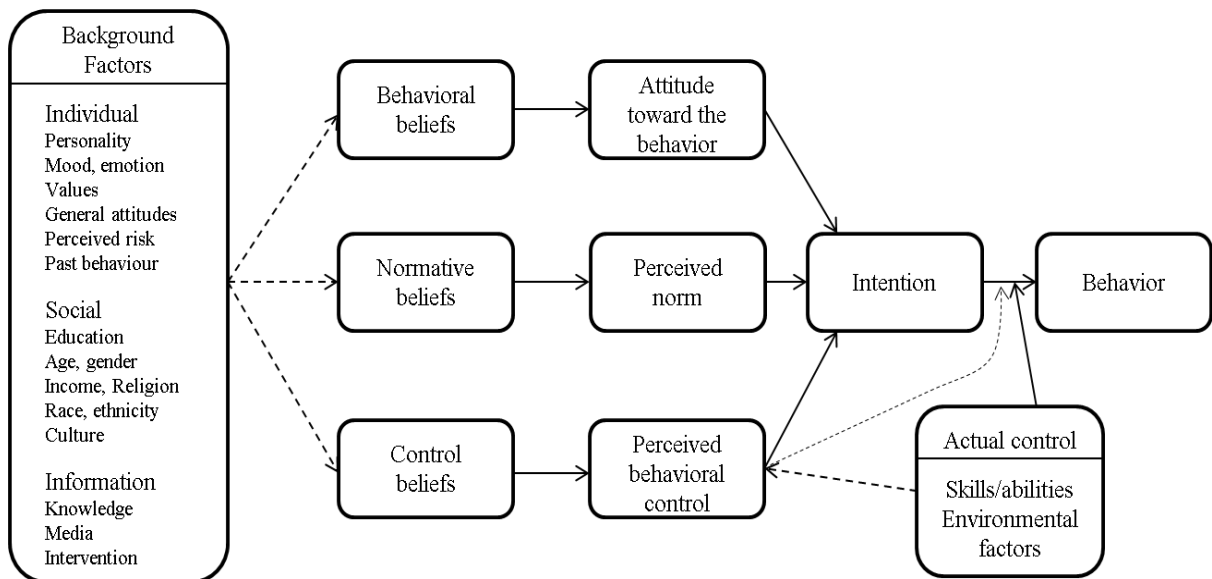
Source: Fishbein and Ajzen, 2010, p.22

According to the RAA, people's behaviors are predicted by their intentions, which are guided by a combination of attitudes, norms, and perceptions of control that form based on their beliefs. Actual control can intervene between intentions and behaviors, but this control can be hard to measure and perceived control often becomes its proxy (Fishbein & Ajzen, 2010, p.21). Feedback loops are described by the authors in which behaviors can result in unexpected consequences, reactions from others, or difficulties/facilitating factors which can then change beliefs, creating a potentially dynamic system (p.218), but these feedback loops were not portrayed as part of the authors' visual model. People's underlying beliefs are informed by background factors, yet these are only linked to the main model with broken lines since the authors claim that

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there is no necessary connection between background factors and beliefs…In light of the vast number of potentially relevant background factors, it is difficult to know which ones should be considered without a theory to guide selection in the behavioral domain of interest. Theories of this kind are not part of our conceptual framework but can complement it by identifying relevant background factors and thereby deepen our understanding of a behavior's determinants. (p.25)

The level of behavioral, normative, and control beliefs is where the authors claim "we learn about the substantive considerations that guide people's decisions to perform or not to perform the behavior of interest" (Fishbein & Ajzen, 2010, p.23). These three types of beliefs are described further:

- **Behavioral beliefs** include the positive or negative consequences that someone believes they may experience if they perform X behavior (also known as outcome expectancies) – these beliefs then form attitudes about performing the behavior
- With **normative beliefs**, someone believes that important others would approve or disapprove if they performed X behavior and that these referents do or do not perform the behavior themselves – these beliefs create perceived norms (injunctive and descriptive) or social pressure
- **Perceived control beliefs** include certain personal and environmental factors that someone believes can help or impede their attempts to perform X behavior – these beliefs affect perceived behavioral control (pp.20-21).

Given the overarching themes of **Risk of Negative Consequences** and **Lack of Control** proposed in Section 7.1, the barrier codes from the current case study research seem to fit best at the level of beliefs. However, a perfect fit is not required to be able to use this theoretical framework since the authors indicate that the RAA is flexible, serving as a "unifying conceptual framework that encourages the incorporation of unique constructs from divergent disciplinary perspectives" (p.2). This framework has been adopted and adapted in other higher education empirical studies (e.g., Cheon, Lee, Crooks, & Song, 2012; Kuyini, 2011; Robinson & Doverspike, 2006; Shih, 2008), but its application has been rather limited to date. In a search of the ERIC research database, only 78 peer-reviewed articles were located that included "higher education" AND "student experience" AND "innovation" AND

"theory of reasoned action" OR "theory of planned behavior" OR "reasoned action approach". Of these, only four used this theoretical framework to study students' adoption of a specific instructional method (all of which involved learning technologies). The remaining articles that focused on students rather than teachers studied behaviors such as sleep, food consumption, smoking, academic integrity, retention, career choice, academic program choice, and environmental sustainability. A Google Scholar search that used the same search items returned 54 results, with almost half being connected to the adoption of instructional technologies or online learning. None appeared to use the RAA to analyze or explain findings regarding engagement with or adoption of non-technological instructional methods.

7.4.2 Applying the RAA to the Context of Innovative Instructional Methods

How can the situation of reducing student resistance to innovative instructional methods fit with the reasoned action approach? First, the RAA requires a focus on an observable end behavior or a category of behaviors (Fishbein & Ajzen, 2010, pp.29-36). This case study research has focused on identifying possible reasons why students may resist engaging with innovative instructional methods as the first step in a change process. When attempting to align the case study with the RAA, the target end behavior could be "resistant" behaviors (e.g., avoidance, withdrawal, or covert action taken against the instructor), which interventions would aim to reduce. The desired end behavior could more positively be identified as "engagement", which is how it was portrayed in the data collection instruments used in the case study. Engagement would function as a "behavioral category", similar to "resistant behaviors" or Fishbein and Ajzen's example of "studying" (p.325), and could comprise various behaviors such as regularly attending and participating in all class and course activities, asking questions, and persisting with assignments. These positive behaviors could be easier to observe and measure than the example resistant ones. Regardless, whether aiming to decrease resistant behaviors or increase engagement behaviors, faculty members would essentially be aiming for the same end goal: to engage students in their learning. A future study using the RAA would need to specify the target behaviors clearly.

Next, the RAA indicates that the key drivers of whether people engage in the behaviors – their intentions – link back to their beliefs about those behaviors. Fishbein and Ajzen

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(2010) suggest that researchers should identify underlying beliefs by asking research subjects to respond to open-ended prompts regarding: the advantages and disadvantages of performing the desired behavior, who would approve and disapprove of them engaging in the behavior, who else performs (or not) the behavior, and the factors that would make it easier or more difficult for them to perform the behavior (p.327). These beliefs represent, in essence, "the information that people have about a behavior" (p.322) which helps to guide their decisions to perform the behavior or not (p.23). The authors also claim that "to fully understand why people do or do not perform a behavior of interest we must examine the underlying behavioral, normative, and control beliefs" (p.206). The questions asked of the case study participants were similar in nature to those recommended by the authors, being very open-ended and even less directive. The participants' open-ended responses reflected their thinking about why or why not they would be willing to engage with various instructional methods; in other words, their responses reflected the information they had that would help them decide whether or not to engage. As such, their responses are assumed to reflect their beliefs and can be used to check for fit against the RAA beliefs.

7.4.3 Applying the RAA to the Case Study Findings

Table 7.1 summarizes how the case study data can align with the three types of beliefs included in the RAA model. An explanatory discussion for each belief area follows. One extension to the model has been proposed to more fully reflect the case study findings. It should be noted that since the case study focused on barriers to change, the explanations of fit with the RAA come from this negative perspective as well. The findings regarding reasons to encourage engagement have not been discussed in this dissertation, but initial analyses were completed (a conceptual framework appears in Appendix I). The same coding labels were applicable for both the discouragement and encouragement data, suggesting that the connections made between the RAA belief categories and the barrier codes would hold if reasons to encourage engagement are considered in future.

Table 7.2: Proposed Links to the Reasoned Action Approach Beliefs Framework

Type of Belief	Description in Relation to Case Study Context	Related Case Study Codes
Behavioral	Beliefs about positive or negative consequences of engaging with novel methods	Effect on Grades
		Effect on Learning
		Emotional Risk
Normative: Social	Beliefs about dis/approval of important others about engaging with novel methods Beliefs about engagement in novel methods by others	Influence of Course Peers
Normative: Cultural*	Beliefs about appropriateness within academic culture of engaging in novel methods (may be dis/approval of members of academic culture)	Acceptable Methods
Control	Beliefs about personal and environmental factors that can help or impede attempts to engage with novel methods	**PERSONAL:**
		Familiarity with Methods
		Methods Preferences
		Interest
		Autonomy
		Self-Efficacy
		Openness to Change
		Tolerance for Ambiguity
		ENVIRONMENTAL:
		Influence of Instructor (Immediacy)
		Difficulty
		Clarity
		Time
		Class Time
		Class Size

* indicates a possible extension to the reasoned action approach model

Behavioral Beliefs

The fishbone diagram and conceptual framework developed from the case study data cluster the codes of *Effect on Grades*, *Effect on Learning*, and *Emotional Risk* into one theme labeled **Perceived Risks**. These risks appear to represent possible negative

consequences of engaging with innovative instructional methods. More specifically, students indicated that they believed their grades and their learning might decrease as a result of the innovative instructional methods being used, and that possibility discouraged them from wanting to engage with these methods – it gave them a negative attitude about engaging. Some students also indicated that their engagement with the methods – particularly the interactive lectures – would make them feel uncomfortable, anxious, or stressed, which represents another possible negative consequence. Fishbein and Ajzen (2010) clearly indicate that emotions which individuals may experience when thinking about performing a behavior are part of their behavioral beliefs category (p.249). These three case study codes, then, appear to fit reasonably well into the category of behavioral beliefs, but further study would be warranted to determine if other negative consequences emerge.

Normative Beliefs: Social

On the fishbone diagram, the **Influence of Others** theme includes both the *Instructor* and *Course Peers*. However, only the *Course Peers* code seems to fit within this RAA belief category. The students indicated that they would be discouraged from engaging with the instructional methods if their peers did not also engage. Their peers' lack of engagement in lectures was one issue, but the larger issue was the lack of peer involvement in the group work activities. The lack of group work contributions would render the groups dysfunctional and, at that point, could be viewed as more of an environmental factor that could impede engagement and control. This belief category would need to be further explored to identify other possible social influences on behavior and allow a better assessment of how applicable it might be to the situation of trying to engage students with innovative instructional methods.

Normative Beliefs: Cultural

A slightly different kind of normative belief emerged from the case study data, which is captured by the **Instructional Conceptions** theme. Fishbein and Ajzen (2010) appear to focus more on individuals or distinct groups of individuals when describing social normative beliefs, but the case study data suggest that beliefs based on the culture of academic disciplines may also be present which may limit students' willingness to engage with innovative instructional methods. Therefore, it is proposed that the normative beliefs

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category be extended to include academic culture normative beliefs. As was shared in Chapter 2, Michela and Burke (2000) define norms as "what people typically do and shared understandings of what people are supposed to do", and they connect the definition of organizational culture with that of norms (p.229). Higher education researchers who focus on instructors' approaches to teaching have identified the presence of discipline-based instructional norms, or "rules of appropriateness" (Trowler & Cooper, 2002, p.230), about elements such as patterns of classroom interaction, assessment methods, learning activities, and teacher behaviors (see also Donald, 2002; Neumann et al., 2002; Taylor, 2010). These norms become most apparent when faculty members (or perhaps students) are asked to engage in behaviors that contravene the accepted ways of doing "instruction", and rejection of these non-compliant behaviors may occur (Trowler & Cooper, p.231). These disciplinary norms may join with more general norms about what it means to "be a student" or "engage in higher education" to create what may be dubbed "academic culture". In the case study, students indicated that they would be discouraged from engaging with an innovative instructional method if it seemed inappropriate in a post-secondary course, did not fit with their discipline-based beliefs about course content, or did not fit with the types of roles they thought that students and instructors should play in a course. They seemed to be aware of some tacit beliefs about appropriate ways of behaving in the higher education context, but many of these comments only emerged during individual interviews. These norms would seem to stem from students' experiences and interactions in the social system of classrooms and educational institutions, but again could benefit from additional exploration.

Control Beliefs

Fishbein and Ajzen (2010) indicate that two kinds of control beliefs exist: personal (or internal) and environmental (or external). The case study findings appear to include codes that could align with these two categories. For personal factors that can help or impede attempts to engage with innovative instructional methods, codes from the themes of **Experience with Methods**, **Motivation**, and **Risk Tolerance** would seem to fit into this category. Students who cited a lack of *Familiarity* with a specific innovative method(s) as one impediment to their engagement could believe that they lacked control because they were unsure what to expect from a new method or what might be expected of them. As well,

students indicated that if they did not prefer the innovative method or it did not interest them, that these reasons (*Methods Preferences* and *Interest*) would also discourage their engagement; the choice of methods would be beyond their control. The motivational constructs of *Autonomy* and *Self-Efficacy* are viewed by Fishbein and Ajzen as being synonymous with control (p.167), so are considered to fit well into the category of control beliefs. Finally, the codes of *Openness to Change* and *Tolerance for Ambiguity* are also seen as good matches for personal control beliefs since if students believe they are not open to change or do not tolerate ambiguity well, they may perceive a lack of control when put into a novel learning situation.

Control beliefs also include environmental ones – beliefs that stem from a source outside of the students. For the case study findings, one code that would seem to fit into this category is the *Influence of the Instructor*. If students had indicated a desire to please or displease the instructor, this code would have fit better in the social norm beliefs category. However, the focus of the students' comments was on how well the instructor connected with them. A lack of instructor immediacy was voiced as an impediment to engagement, perhaps suggesting that a lack of connection to an instructor could make students feel less in control of their learning situation. As well, the *Difficulty* and *Clarity* codes from the **Perceived Workload** theme would appear to fit into the environmental control beliefs category because when students perceive that the course work is hard they may feel less able to complete it. As well, the levels of difficulty and clarity are under the control of the instructor – not the students – and include the amount of support provided to assist with the learning activities. Fishbein and Ajzen (2010) also include difficulty in their control category (p.167). The third **Perceived Workload** code of *Time* could be another external factor: students often indicated that time was an impediment to engagement since they did not always feel they had (or wanted to spend) the time needed to complete the course work (which was sometimes exacerbated by errant group members). Finally, the **Environmental Constraints** of *Class Time* and *Class Size* also seem to fit into the environmental control beliefs category since these codes focused on beliefs about what could reasonably be accomplished in large classes held early in the morning.

Summary

Overall, the findings from the exploratory case study appear to fit reasonably well with Fishbein and Ajzen's (2010) categories of behavioral, normative, and control beliefs. All codes were accounted for in this RAA theoretical framework, with one extension being made to more clearly encompass the possible influence of normative academic cultural beliefs on behaviors. The belief categories also fit well with the overarching themes of the **<u>Risk of Negative Consequences</u>** and **<u>Lack of Control</u>** which were chosen in relation to the most salient codes identified in Chapter 6.

7.4.4 Possible Implications of Applying the RAA Model

While the fishbone diagram developed throughout this exploratory research study may provide a useful analysis tool in identifying and categorizing students' barriers to change, it may not be the most suitable vehicle for conveying results to practitioners. The RAA model's parsimonious design may help to communicate the barrier findings more clearly to potential end users such as faculty members and educational developers since they would primarily need to keep in mind only the three main types of belief barriers: behavioral, normative, and control. Despite the actual RAA model's (and its predecessors') seeming underutilization in the higher education context, its beliefs-intentions-actions structure would be familiar to educational developers in particular. This structure is identical to one tool commonly used by educational developers to help instructors assess their conceptions of teaching (see Pratt's Teaching Perspectives Inventory: http://teachingperspectives.com/drupal/). Overall, the utility of this model to practitioners would need to be assessed further.

For future researchers, applying the RAA model may also be beneficial. Given the model's generality and history, its design may serve as a research design tool for future correlational and multiple regression research study designs and analyses, particularly to test the effects of change interventions on engagement behaviors, assuming a pre/post test design. As well, the model also appears to have some flexibility which could allow it to accommodate possible further barriers (or facilitators) to engagement not uncovered by this exploratory study.

While it is beyond the scope of this dissertation to test the RAA model in the context of student engagement with innovative instructional methods, it may be interesting to ponder briefly some possible limitations of the model as well as two main ideas connected to the application of the RAA: 1) possible theoretical frameworks from higher education that may serve as background factors to investigate in future research, and 2) considerations regarding the development of effective change interventions.

Limitations of the RAA Model

Fishbein and Ajzen (2010) identify various limitations to their RAA model. Overall, they indicate that their existing model can account for 50-60% of variance in intentions and 30-40% of the variance in behavior (p.283). Of particular relevance to this research study, they discuss the inclusion of possible new factors to improve the predictive validity of the model, such as moral norms, self-identity, anticipated affect, and past behavior, all of which they contemplate and reject in relation to the model's parsimony and robustness. They suggest that these new factors are more likely to be extensions of or variations on their existing factors, which is consistent with the current research study's proposal to extend the normative beliefs factor to include academic cultural beliefs.

Taylor and Todd (1995) provide two other perspectives on reasoned action models which could be considered limitations and may also be worth considering for future research projects in this area. They compare statistical results from the original two reasoned action models (Theory of Reasoned Action and Theory of Planned Behavior) along with two variations on these models. In the first variation, they challenge the unidimensional calculation of the beliefs by decomposing them according to other theoretical frameworks into specific beliefs to measure. In the second, they challenge the linear progression from one type of belief to only one type of predictive factor (attitudes, norms, or control) by studying hypothesized crossover effects amongst the decomposed beliefs and predictive factors. Overall, they found that all four models provided a good fit for their data, but they recommended that while theoreticians would benefit most from the parsimonious pure models, applied researchers and practitioners would benefit more from a decomposed model since it would help to more clearly identify the most salient beliefs in predicting behavior, which would then help identify more narrowly targeted subsequent change interventions (see

for example Hartshorne and Ajjan (2009) who used a decomposed reasoned action model in their higher education technology adoption study and found numerous significant results). Very few significant crossover effects were found in the Taylor and Todd study, but they recommended further research. Overall, although reasoned action approach models have been in existence for more than 40 years, some limitations will likely continue to exist which researchers will need to consider should they choose to adopt the RAA model as a theoretical framework.

Possible Theoretical Frameworks as Background Factors

In considering future possible applications involving the RAA, another area to contemplate further would be salient background factors that could affect beliefs. Fishbein and Ajzen (2010) indicate that the number of possible background factors which can influence people's beliefs is "virtually unlimited", so researchers need to use other existing theories beyond the RAA to help identify these factors (pp.224-225). These factors will become important to consider "only if we have reason to believe that people who vary in terms of that factor may have been exposed to different experiences and thus may have formed different behavior-relevant beliefs" (p.225). Beyond the factors of year of study, instructional variety, and academic discipline explored as part of the current case study research, three other theories from higher education may help identify further relevant background factors should the RAA model become the basis for future studies on the topic of student engagement with innovative instructional methods.

First, from the domain of motivation, the theory of **achievement goal orientation** may provide a useful distinction when trying to understand, in particular, students' perceptions of the possible consequences of engaging with innovative instructional methods. Handelsman et al. (2005) aimed to create subgroupings of student survey respondents by asking a question about their end course goal. Students had to choose one goal of either getting a good grade or being challenged. According to achievement goal orientation theory, students who seek competence and success (e.g., good grades) have a performance goal orientation while those who seek to really learn in the course (and be challenged) regardless of the effort required have a mastery goal orientation (Pintrich, 2000; Svinicki, 2004). While the dichotomous survey question outlined above seems somewhat crude, knowing students' primary desired

end goal could be useful since Svinicki (2004) indicates that mastery oriented students are more willing to take risks, persevere when challenged, and try new strategies for learning because they are focused on actual learning and personal improvement rather than on outperforming others. One would predict that this cohort of students would have a positive attitude about engaging with innovative instructional methods, but further research would be required to test this prediction. Having students identify their dominant orientation in a course could also help to inform future research focused on whether those with different orientations have any determinable patterns to the beliefs most salient to them, which may help guide instructors' change strategies as well as limit how much data they would need to collect about students in order to devise these strategies. In practical terms, this information could simply be helpful to instructors in identifying which students may be more discouraged about possible negative effects on their grades versus learning.

Second, **student intellectual development theory** could also be applied to help understand students' responses to innovative instructional methods and possibly predict at least some of their beliefs regarding engagement. Central to this theory are students' epistemological beliefs, which include the dimensions of certainty of knowledge, simplicity of knowledge, source of knowledge, and justification of knowledge (Hofer, 2000, p.380). Baxter Magolda (1992) developed a streamlined framework of four domains or stages of knowing, refining Perry's (1970) pioneering work in the area and more clearly linking her findings to specific elements of the educational context. In her model of epistemological reflection, she identifies five domains (the roles of learners, peers, instructor, and evaluation in conjunction with the nature of knowledge) and four types of knowing (absolute, transitional, independent, and contextual) (p.30). For example, students in the least advanced, absolute knowing stage believe that knowledge is certain or absolute, so they perceive that learners should obtain knowledge from the instructor, the instructor should communicate the knowledge and ensure that students understand it, peers can only re-explain what they have learned from the instructor or other trusted resources, and evaluation enables learners to show instructors what they have learned (p.30).

This cognitive developmental theory suggests that students will progress through the stages during a degree program, but might not reach the most advanced level by graduation

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from an undergraduate program (Baxter Magolda, 1992, p.189). This developmental approach suggests that numerous epistemological beliefs may be present in a course that includes students from different years (the case study course included students from second- to fourth-year). To encourage students' movement from one stage to the next, Baxter Magolda suggests that instructors need to employ various strategies for creating "a balance of *confirmation* and *contradiction* that enables the student to constantly reevaluate ways of knowing in the face of new experiences" (p.227, emphases mine). More recent theorists have indicated that epistemological beliefs can also differ according to discipline (Hofer, 2000; Palmer & Marra, 2004, 2008), which would further expand the complexity of applying this theory and suggest the strong need to elicit students' beliefs about courses in different disciplines before trying to claim any generalizability of results.

As with achievement goal orientation, knowing the intellectual development stage(s) of students in a course could help instructors prepare for how their students may perceive innovative instructional methods. For example, if an instructor plans to use extensive group work but students are in the absolute knowing stage outlined above (which is most common amongst junior students), the theory would suggest that they might be resistant to engaging with the group work because they do not see their peers as valuable sources of or contributors to knowledge. Their negative responses could be amplified if the course is in a hard discipline and they are senior students who continue to have an absolutist orientation. Data about how students view knowledge could also help to predict and/or explain students' beliefs regarding a number of the codes identified in the case study beyond the ***Influence of Course Peers***, including ***Acceptable Methods***, ***Methods Preferences***, ***Autonomy***, and ***Influence of Instructor***. If students' conceptions of knowledge could be linked to how they perceived the properties of the various codes, it might be possible to pre-determine salient beliefs that may be holding students back from engaging. However, different data than were collected for this exploratory study would be needed to assess the potential value and role of epistemological beliefs in the context of student engagement with innovative instructional methods.

Related to theories of intellectual development are theories regarding **conceptions of teaching and learning**. Students' conceptions of learning were minimally explored in this

dissertation, but such data were not collected from all students and no data were collected specifically regarding their conceptions of teaching. Given the possible connections to epistemological beliefs, these areas of inquiry bear consideration in relation to relevant background factors. These conceptions have historically been studied according to teachers' conceptions of teaching and students' conceptions of learning (e.g., Devlin, 2002; Entwistle & Peterson, 2004; Kember & Kwan, 2000; McLean, 2001; Trigwell, 1995), but they are starting to be combined in different ways. For example, Kember (2001) studied students' conceptions of learning and teaching (and epistemology) while Virtanen and Lindblom-Ylänne (2010) studied both types of conceptions from the perspectives of both students and instructors. These conceptual frameworks are also often viewed as being developmental and hierarchical, and they seem to require some sort of confrontation of beliefs to move students or teachers from one stage to the next (Kember, 1997, 2001).

For the current case study research, knowing how students may conceive of both learning and teaching may assist in better understanding their beliefs about *Acceptable Methods* (or their **Instructional Conceptions**). For example, if they perceive teaching as "a didactic process of transmitting knowledge" and learning as involving students "absorb[ing] the material defined by the teacher" (Kember, 2001, p.215), then it seems plausible they would likely believe that lectures would be the most appropriate teaching method. Students with such low-level conceptions may also have a greater need for clarity and could feel less in control of their learning situation when lectures are not used. Again, knowing how students define teaching and learning could assist instructors in better understanding and even predicting their students' various beliefs about engaging with innovative instructional methods. However, instructors may also want to identify their own conceptions of teaching and learning which they can compare to those of their students' to help identify gaps that may result in the kinds of misalignments discussed in Section 7.3. Frustratingly, the literature on conceptions of epistemology, teaching, and learning have not yet been well connected in the higher education literature; if these strands of research become more closely interconnected in future, it might not be necessary to contemplate uncovering all three types of conceptions but rather be possible to study just one.

Other background factors may also influence students' behavioral, normative, or control beliefs. Investigating further possibilities would be a useful next step in furthering this research area, but this is beyond the scope of this dissertation.

Considerations in Developing Effective Change Interventions

The RAA model may also provide useful guidance about how to change beliefs as part of developing change interventions. Fishbein and Ajzen (2010) indicate their model "suggests that influencing intentions and behavior requires changes in the relevant salient behavioral, normative, or control beliefs" (p.322). Therefore, once beliefs have been qualitatively elicited and the key predictors of intentions have been identified through regression analyses, key target beliefs for change should be evident. One strategy for influencing change involves sharing information. The authors indicate that attitudes, norms, and perceived control can be influenced not only by changing existing salient beliefs but also by making new beliefs salient, which can be accomplished by giving information (p.334). I have witnessed faculty members trying this technique by explaining to students how an innovative, learning-centred instructional method can lead to better learning outcomes (some have even asked me to deliver this same information), but I have yet to see it be convincing, perhaps because what faculty members were really trying to do was change beliefs, not make new ones. Additionally, this situation connects to later advice which cautions that successful change interventions often do not simply entail giving people more or better information; rather, they require active participation from those involved in the change (p.352). This advice to seek involvement from those being targeted to change is reminiscent of what Lewin's (1948/1999) studies determined decades earlier.

To instigate a change in beliefs, more than information and involvement may be needed: "to break open the shell of complacency…it is sometimes necessary to bring about deliberately an emotional stir-up" as part of the unfreezing stage of change (Lewin, 1948/1999, p.282). Higher education authors who discuss changing students' or instructors' conceptions of epistemology, teaching, and learning also give the same recommendation, claiming the need for some type of dissonance (Baxter Magolda, 1992; Bendixen & Rule, 2004; Gamache, 2002; Ho, Watkins, & Kelly, 2001; Kember & Gow, 1994; Palmer & Marra, 2004, 2008). Hence, to encourage students to contemplate engaging with a new type of

instructional method, they may need to be made aware of their existing beliefs and be confronted with the limitations of those beliefs in enabling them to engage in the behaviors expected of them in an innovative course. This awareness and confrontation could perhaps be sought by having an instructor direct students to complete a "diagnostic task" early in the term that requires them to try out the new method (e.g., participate in an interactive lecture), followed by a debriefing discussion to uncover what discouraged them from engaging. An additional conversation about what encouraged engagement would help identify alternative beliefs to increase students' awareness of other possible ways of thinking. If instructors and students could identify the types of beliefs that would most likely lead to engagement behaviors, then students would be exposed to what was expected of them. Having an explicit conversation about "enabling" beliefs for engagement behaviors would also help to clarify and highlight that instructional methods are an expected and important part of students' learning. As well, putting the focus on beliefs could avoid emphasizing any skill deficits since students tend not to recognize a lack of skills. This type of conversation could be an expeditious change method, particularly in a 12-week course. Facilitating such conversations may be beyond many instructors' comfort zones, so educational developers may need to provide support. However, currently this type of intervention is hypothetical and its efficacy would need to be tested.

The students would also need to be supported through such an intervention. Engaging in open conversations about instruction and being willing to try new ways of being taught and assessed understandably lead back to the two main barrier themes identified in Section 7.1: **Risk of Negative Consequences** and **Lack of Control**. When engaging with innovative methods, there are no guarantees of success and the experience may make students feel uncomfortable. What can faculty members do to support student risk-taking in learning and provide some sense of control? Reid (2009) provides five concrete suggestions:

- Model risk-taking behavior – push students' thinking and let them play with ideas
- Use peer-based learning – students may be more willing to reveal uncertainties in front of a small group versus the whole class
- Build assignments around questions – have students explain why and how they struggle with a problem and reward question-asking

- Scaffold risk-taking – start with low stakes activities that include feedback to prepare students for larger tasks

- Reward academic risk-taking – give grades to acknowledge the complexity of the work done, not just the end product, and ask students to explain the risks they have taken (p.3)

These strategies reflect those provided by Bandura (1977, 1986) and discussed by Conger and Kanungo (1988) in relation to self-efficacy theory. Modelling successful risk-taking behavior (vicarious experience), using increasingly more challenging activities (enactive attainment), and seeking to reduce students' stress and anxiety by giving grades for descriptions of the learning process (emotional arousal state) can all encourage student empowerment, along with using positive feedback and encouragement (verbal persuasion). Reid's strategies could provide additional or alternative ways of encouraging student engagement with innovative instructional methods since they lower the possibility of negative consequences and give students a sense of control. But how willing are today's students to take risks in their education?

Generational theory would identify the current cohort of university students – the Millennials – as generally being extremely reluctant to take risks with their learning. Millennials have been characterized as wanting high grades for complying with clear academic standards, guarantees of success, and no exposure to risk-taking and failure (DeBard, 2004; DiPietro, 2012; Espinoza, 2012). Piper (2010) suggests that these attitudes may have stemmed from students' experiences in the larger educational system:

An over-concentration on success and on target-driven results has also contributed to conservative teaching…a perhaps unintended consequence is that many [students] will never have been allowed to experience failure. Yet failure is what has often led to innovation, since much learning is learning by mistake. This lack of practice for failure, and the experience of a system in which failure is nearly always regarded as a disaster, could be regarded as a handicap from some perspectives. It may partly be responsible for much of the pressure young people experience in further and higher educational contexts. (p.22)

Risk-avoidance, though, may stem from even more pervasive societal consumerist attitudes. Singleton-Jackson, Jackson, and Reinhardt (2010) suggest "it is reasonable that some students might see the university as yet another entity vying for them as customers instead of as an academic institution recruiting them as scholars" (p.347), and Espinoza (2012) claims that "students today are savvy consumers and often consider their educational experience to be simply a service for which they pay" (p.34). This consumerist mentality does not fit well with the concept of risk-taking: "risk is the antithesis of the safe, pre-packaged 'product' that is at the heart of the commodified exchange" (Naidoo and Jamieson, 2005, p.47). Piper concurs, suggesting that "risks are to be avoided rather than embraced. This is a societal-level issue rather than just an educational one" (p.3).

Generational and consumerist theories were contemplated as potential background factors in the RAA model as it applies to the context of engagement with innovative instructional methods; however, it is unclear how much the student population might differ in the beliefs and attitudes that are reported to stem from these theories and how these various constructs and ideas may vary over time from first to final year. But it is interesting to contemplate how students' more general attitudes may affect and be affected by the socially constructed culture and perceived purpose of higher education and, in turn, how their emerging perceptions may influence their willingness to engage in certain behaviors. Perhaps the emerging self-service economy in which consumers are being required to participate more in their purchasing experience (just think of self-checkouts) will have a positive effect on consumerism in higher education: if you want to learn something, you need to do it yourself. This "mantra" is really at the heart of learning-centred teaching in which students need to take responsibility for their own learning and be open to the risks that such responsibility entails. If the higher education system can find more ways to encourage students (and instructors) to engage with innovative instructional methods, perhaps someday the literature on students' conceptions of learning will include a new category: learning as taking risks.

Summary

Overall, applying the RAA model to the context of student engagement with innovative instructional methods seems fruitful. The model itself appears to have utility in conveying

the case study research findings to potential end users. It affords some flexibility to include factors of interest from different domains, and provides a recognized and well-tested framework for correlational study design and analysis which could be useful in future research. Possible limitations of the RAA model also provide ideas for further research as do the potential influences of background factors that could stem from achievement goal orientation theory, student intellectual development theory, and the conceptions of teaching and learning. The RAA literature also helped to identify considerations regarding the development of effective change interventions which led to some broad thinking about negative consequences, control, and risk in education.

7.5 Summary of Findings

This exploratory case study sought to investigate students' barriers to engaging with innovative, learning-centred instructional methods. The study focused on two sections of one undergraduate course that included students from second- to fourth-year from all six Faculties at the University of Waterloo. A modified grounded theory approach was used to inform the data collection and analyze the results from various data sources, and numerous tentative findings emerged:

- The barriers identified that discouraged students from engaging with novel methods fell into eight themes: **Experience with Methods**, **Instructional Conceptions**, **Risk Tolerance**, **Motivation**, **Environmental Constraints**, **Perceived Workload**, **Influence of Others**, and **Perceived Risks**. Each of these themes contained various codes and properties to provide further clarification. These theme categorizations stemmed from an initial extensive literature review, but unlike the findings from this case study, none of the articles reviewed identified the presence of all of these barriers in relation to one course. Nor did they define the properties of each theme in such detail. The findings from the current research suggest that myriad barriers can exist in one course. As well, one new theme area on **Risk Tolerance** arose that was not identified in the higher education literature review and the existence of another theme area – **Incoming Skills** – was not substantiated by the case study data from students.

- Frequency counts and measures by proportion tentatively identified eight codes as being most salient to those students who were *Least Willing* to engage with the methods. Seven of the eight codes were connected to different themes, with two codes connecting to **Perceived Workload**. No codes from the **Risk Tolerance** theme were identified as most salient. Saliency was calculated for the reasons given that would discourage students from engaging in innovative instructional methods both at the start and end of term. At the start of term, the most salient codes were: *Effect on Grades* and *Clarity*. At the end of term, *Class Time*, *Autonomy*, and *Acceptable Methods* were most salient. At both times of term, the codes of *Methods Preferences*, *Influence of Peers*, and *Time* were most salient. These most salient codes were categorized into broader themes of **Risk of Negative Consequences** and **Lack of Control**. Innovative instructional methods may understandably make students feel negatively about a course, but taking risks and losing control are critical elements of truly engaging in learning.
- Time of term appears to affect the saliency of the codes since the most salient codes differed between the start and end of term. These differences may have occurred as a result of the students being asked to respond to more general prompts at the start versus the end of term or because of the number of different potentially innovative methods incorporated into the course. However, it is suggested that students' ongoing experiences in the course may have influenced their perceptions, and since their perceptions changed, instructors need to be aware that barriers may shift during the course of an academic term, potentially making it challenging to know which barriers are activated at which times without asking the students.
- Instructors also need to be aware that the types of instructional methods they choose to use may affect the barriers experienced. Interactive lectures had different barrier frequencies than extensive group work, for example. Depending on the mix of methods employed in one course, the saliency of certain specific barriers may be different. The benefit of studying a course that employed various methods and included students from a variety of academic programs and years of study is that much variety was captured as inputs to the fishbone diagram.

- Students' year of study and amount of instructional variety appear to have some impact on their willingness to engage with novel instructional methods. Senior students who have experienced low instructional variety (where low variety in methods may be connected to hard disciplines) indicate that they are less willing to engage with innovative methods than either junior students or students at any level who have experienced a high variety of methods. These findings are considered quite tentative due to limited data sets for analysis, but they suggest value in intentionally employing various instructional methods as early in a curriculum as possible to maximize students' flexibility as learners.

- The academic discipline of a course may also play a role in students' willingness to engage in innovative instructional methods. The student interview data indicated that when innovative methods do not fit with the academic culture that students perceive to exist in various disciplines, the new methods might not be easily accepted. Again, early variety in instructional methods may increase students' flexibility and broaden their beliefs about academic cultural norms.

- The instructor was also asked to identify possible student barriers to change and his perceptions were compared to those of the students. The specific barrier differences were deemed less important than tentative findings that when the instructor and the students did not share a common definition of a barrier, did not value it in the same way, did not accept the provided solution, or were not aware of its existence, then the barrier persisted; in contrast, if they shared an understanding of the issues and the students accepted the strategy to remove the barrier, then it decreased in prevalence. Instructors appear to be able to reduce student barriers to change, but the possible presence and negative effect of misaligned perceptions cannot be overlooked.

- The efficacy of course evaluation data as an adequate source of feedback about an innovative course is seriously questioned. Course evaluation instruments often do not include broad enough questions to elicit comments about non-traditional instructional methods. In this case study, the course evaluation data did not overlap fully with the barriers identified by the students, leaving the instructor with incomplete feedback data.

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- The reasoned action approach – a social cognition theoretical framework developed by Fishbein and Ajzen (2010) – appears to offer a reasonably good fit for the case study findings, with the codes being categorized according to behavioral, normative, or control beliefs. The RAA model may provide a more accessible structure for the findings than the analytic fishbone tool, showing the specific barrier beliefs and a relatively intuitive decision-making model. As well, it represents a generalized model that can be quantitatively tested in future research. Contemplating various implications of applying the model encouraged the exploration of further theoretical frameworks from higher education as possible background factors that might influence students' beliefs about engaging with innovative instructional methods and suggested issues to consider when attempting to devise change interventions.

A visual model to capture the integration of the most salient barriers and possible background factors into the RAA model appears in Figure 7.3.

Figure 7.3: Reasoned Action Approach Model for Instructional Innovations
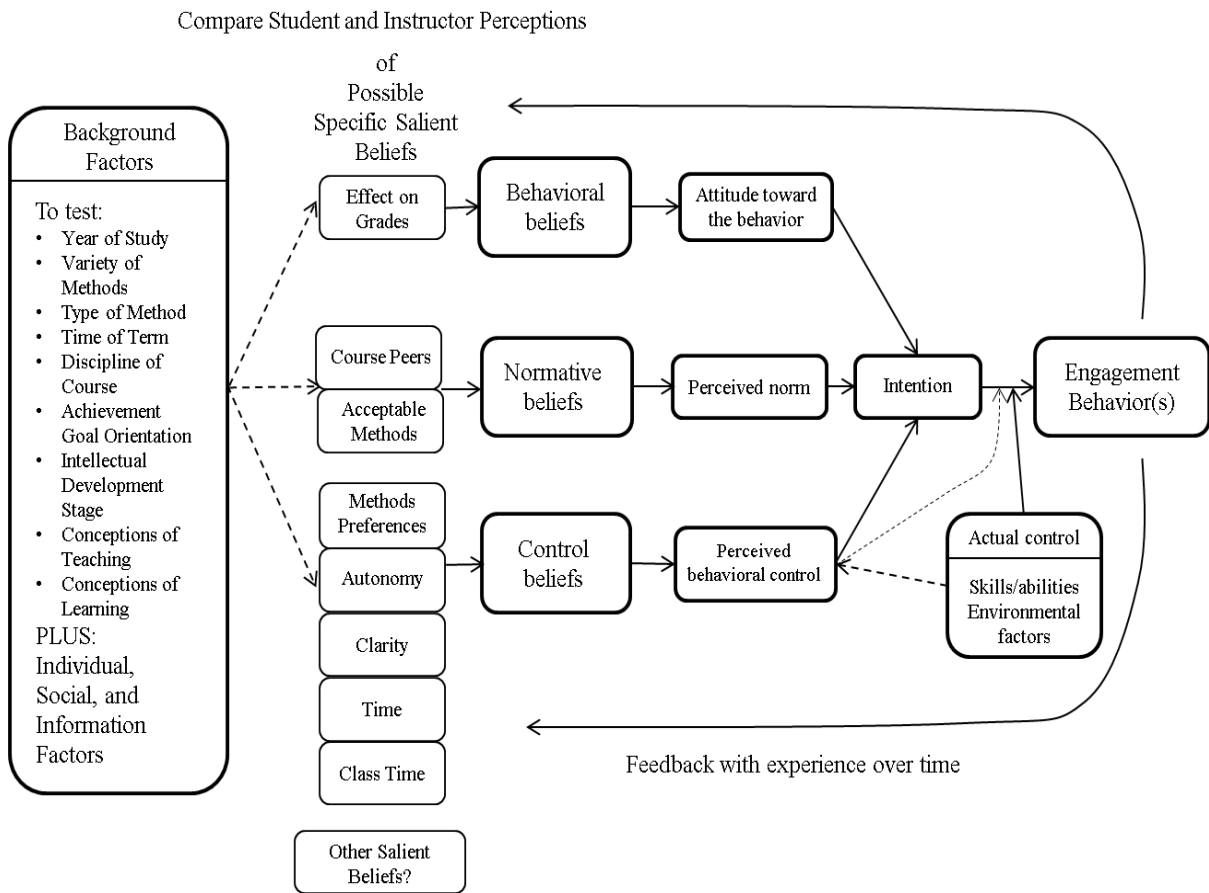
Overall, the research area of investigating students' responses to innovative instructional methods appears to be fruitful and opens many possibilities for future research agendas. The final chapter of the dissertation identifies possible next steps for this research area, along with the major contributions and limitations of this research study.

Chapter 8: Contributions, Limitations, and Future Directions

In this chapter, the potential contributions that stem from this research study are considered, followed by the study's limitations. The chapter concludes with ideas for future directions for researchers and practitioners working in the area of students' responses to innovative instructional methods.

8.1 Theoretical and Practical Contributions

This dissertation has aimed to produce theoretical contributions that will serve practical purposes, keeping in mind Lewin's (1951) infamous statement: "there is nothing so practical as a good theory" (p.169). While the theoretical contributions generated are tentative due to the exploratory nature of the study, the underlying intent was to empirically identify some ideas that practitioners could use to grapple with a real-world problem.

As was outlined in the first chapter of the dissertation, this research study stemmed from an applied problem: how to encourage students to engage with learning-centred instructional methods. These types of methods were used as an example of innovative instructional methods since they have not yet been widely implemented in North American higher education institutions, and yet there is much evidence about the potential efficacy of such learning-centred methods. Lewin's (1948/1999) force field analysis model for change management provided guidance to focus attention on the restraining, or resisting, forces when seeking to facilitate a change, indicating that change occurs more easily if these barriers can be reduced rather than the driving forces being increased. Following this model, various empirical studies were reviewed, each of which identified a few possible barriers to students accepting a change in teaching or assessment methods, but none of these studies provided a comprehensive picture of the various barriers that instructors may experience from their students. Without the big picture, instructors who wish to innovate and the educational developers who seek to support them will have an incomplete understanding of the change situation.

The findings from this research, while exploratory, make two key theoretical contributions that extend the existing literature in the following ways:

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1. Provide a comprehensive empirical understanding of students' barriers to change through a conceptual framework and fishbone diagram

2. Develop a reasoned action approach (RAA) model for instructional innovations to use in future research and for quantitative testing

Connected to these theoretical contributions are a number of practical contributions for instructors and educational developers:

1a. Insights into analyzing resistance and devising strategies to help decrease resistance to instructional innovations

2a. Increased accessibility of the barrier findings through use of the RAA model

2b. Identification of the critical role that students' underlying beliefs play in the change process

2c. Ideas for devising effective change intervention strategies

As well, two other key practical contributions arose from this research:

3. The questioning of course evaluation instrument efficacy in assessing innovative instructional methods

4. The value of soliciting both student and instructor perceptions in educational change management situations

Each area of contribution is explained further in the rest of this section.

Contributions Related to Comprehensive Barrier Identification

The main theoretical contribution of the present exploratory study is that it provides a comprehensive empirical overview of possible student barriers to engaging with instructional innovations. Eight barrier themes emerged from the case study data that stemmed from students, and these themes are supported by 35 different descriptive properties. The case study research has expanded the available understanding of possible student barriers to engaging with innovative instructional methods. The most salient codes (n=8) were also identified for those least willing to engage with the methods, and these were recommended as the most important barriers to attend to when contemplating how to reduce resistance to engagement. Various contextual factors that may affect the resistance were also identified:

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time of term; type of method; year of student; instructional variety experienced, which may be connected to students' academic discipline; and the perceived academic culture of the course in which innovative instructional methods are being implemented. The fishbone diagram in Figure 7.1 captures the most complete version of the barriers identified. This qualitatively focused study begins to provide what Erwin and Garman (2010) called for when describing the limitations of the resistance to organizational change literature: the examination of resistance at more than one point in time, a focus on understanding the effects of not just individual but also normative beliefs, and the provision of a range of perspectives that help to understand "the messy reality of the practitioner's world [and a] meaningful and useful link between research and practice" (p.53).

The theoretical contribution of the barriers also represents a practical contribution for instructors and educational developers. Having empirically based barriers identified could help to streamline the process of planning for or analyzing the use of innovative instructional methods in a course. These practitioners could draw from the pre-identified barriers to help predict and prepare for the types of strategies that might be needed to decrease the barriers and support students' engagement with the new methods. The detailed explanations of the codes and properties should provide a solid foundation to use. For example, to lower concerns about effects on grades, instructors could use low-stakes assessments early in the term, which can also help to build students' confidence and increase clarity about new types of course expectations. Instructors could also demonstrate on an early assignment without counting the grade how new types of marking rubrics will be applied as an illustration of how future work will be assessed. Even if practitioners do not explicitly prepare for resistance in their course designs, knowing about the possible barriers may help them to more quickly understand the possible rationales for the resistance that may appear during a course and avoid making unproductive, negative judgments about the students. The fishbone diagram tool could be of great assistance for such detailed analyses. In addition, knowing that barriers may vary according to a number of contextual elements should encourage instructors and educational developers to analyze each course carefully.

Contributions Related to the Reasoned Action Approach Model

The barriers identified through the exploratory study were linked to Fishbein and Ajzen's (2010) reasoned action approach (RAA) model. It was suggested that the barriers could represent beliefs that would inform the attitudes, perceived norms, and perceived behavioral control which influence intentions to behave in certain ways. While this study did not test the saliency of the beliefs in relation to the RAA model, providing a model that could be quantitatively tested in future research represents another possible theoretical contribution from this dissertation. Having various beliefs and possible relevant background factors already identified by this research study would facilitate the creation of a survey instrument that could be administered to students at the beginning of a course to help identify which barriers may be most significant to them, which would assist in developing strategies to address those barriers.

Connecting the barriers to the RAA belief categories also provides a number of practical contributions. First, the RAA model may provide a more accessible, parsimonious view of the study's findings while at the same time situating the findings in the more comprehensive context of the elements involved in making a decision to engage in a behavior (or not). The fishbone diagram is perhaps too detailed to make the change situation seem manageable to instructors and educational developers and too removed from the larger decision-making context about behaviors; therefore, the RAA model might be more helpful to practitioners, particularly educational developers. Second, understanding the need to focus on students' underlying beliefs may assist instructors and educational developers in the development of more effective change interventions. Regardless of whether practitioners administer a student survey or not, knowing to focus on underlying beliefs may be instrumental in helping these practitioners approach the change situation better. Finally, the RAA literature provides recommendations on how to approach change interventions based on the need to change beliefs; this guidance should also prove useful in the higher education context and extend the ideas discussed in the previous chapter.

Additional Practical Contributions

Two other practical contributions also emerged from this case study research. First, by questioning the efficacy of course evaluation results in capturing comprehensive feedback for

courses that employ innovative instructional methods, this research may help to discourage instructors from relying solely on the data provided by these instruments when considering how to improve their courses. Additionally, university administrators could be encouraged to reconsider the weight they put on course evaluation results when innovative instructional methods are used in a course as well as the wording of their institution's evaluation instruments and the often teaching-centred educational values that these instruments convey and promote. For innovation and learning to be promoted institutionally, instructors (and their students) need supportive environments.

Second, the identification of differences between an instructor's and his students' perceptions of a course should emphasize the value of soliciting and listening to the student voice and comparing it to that of the instructor. Having an awareness of these different perspectives can help instructors engage in conversations to seek better understanding on the part of both students and instructors, which should assist in smoother implementations of innovative instructional methods. Instructors or educational developers could facilitate such conversations.

8.2 Study Limitations

Given the exploratory nature of this study, a number of limitations may exist related to the methodology as well as to the findings.

Methodological Limitations

The primary methodological limitation is that the study is based on one case study conducted at one educational institution. As a result, it is plausible that the barriers identified in this case study research may be incomplete or inaccurate when tested in a different setting, including at different institutions. However, the case study did include a cross-section of students from all six Faculties at the University of Waterloo. Students' year of study ranged from second- to fourth-year, which also provided a broad pool of respondents. Two sections of one course were used as cases, allowing for an embedded design, and data were collected from students and the instructor as well as via classroom observations and analyses of course evaluation data. The existence of the barriers was verified through the results of the follow-up interviews done with a purposeful sample of the students. As well, the sample quotations

used throughout the dissertation are intended to provide the type of thick descriptions needed for others to determine the representativeness of the case study results to their own context.

Next, the interpretations made of the data were not checked by the primary study participants, a validation strategy commonly used in qualitative research (Creswell, 2007). Trying to contact students after the end of a school term is challenging, particularly since the senior students would have graduated by the time the initial data analyses had been completed. The instructor had already contributed significantly to the research study by allowing class time for administration of the student questionnaires, providing course materials, and consenting to three interviews; therefore, he was also not asked to comment on the analyses until the complete dissertation document was drafted. His subsequent feedback on the document was positive overall, indicating that he "found it accurate, with logical perspectives drawn from solid research" (B. Jones, personal communication, March 25, 2013). To provide means of validation during the work of data collection and analysis, triangulation was employed (multiple sources of data, different data collection methods, and multiple theories considered), classroom observations were conducted throughout an entire term, and peer review of the process and product of the research study was provided by members of the University of Waterloo's teaching centre.

Another possible limitation of this study is that only one researcher coded the data collected. The data were collected via reliable processes. For all interviews, quality recording equipment was used and verbatim transcripts were prepared and checked by the researcher for accuracy. The questionnaire data were also put into an electronic format and checked for accuracy. I engaged in multiple iterations of data coding, first coding openly with no pre-determined categories, then comparing the codes to those that emerged from the literature review. Codes were revised to reflect existing theoretical or empirical constructs from the published research literature. I continued to revise and refine the coding themes, codes, and properties over time, and also received and responded to feedback from the educational development professional community in response to preliminary conference presentations. The coding was also checked and accepted by the research supervisor.

Finally, as the sole researcher, I have approached the case study and the data collected with the bias of an educational developer. My professional role is to support instructors in

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the development of curricula and courses as well as in their role as teachers. I look for ways to enhance classroom practices and often have my focus on finding solutions to their challenges. I initially wanted the goal of this research to be identifying and testing ways to change students' willingness to engage with new instructional methods. Instead, I was cautioned to step back and seek to better understand the problem at hand by digging below the surface. Engaging in this research study has been revealing and has contributed enormously to my development as an educational developer. I have learned about the multi-faceted and complex nature of how students may respond to various instructional methods. Beyond published studies, an educational developer's resources are often published texts that have distilled research findings into neat checklists and heuristics. But actual classroom research is not nearly so clear and compartmentalized. I now have a commitment to helping instructors understand the complexity of their courses and engage their students in learning more about the teaching and learning environments that they share.

Limitations of the Findings

As was indicated when discussing methodological limitations, this research was based on one case study at one institution. As a result, the findings may or may not hold for subsequent case studies. Factors such as disciplinary differences, year of study, and amount of instructional variety were posited as possibly affecting students' willingness to engage with innovative instructional methods. However, might there be factors such as the academic culture of an institution that could affect the findings? The University of Waterloo is a highly competitive, research-intensive academic institution. Our students' entering grade point averages are exceptionally high – the average entering grade is 87.2% (*Waterloo Facts*, n.d). We also have an intense 12-week academic term that is often alternated with full-semester work terms. Additionally, the NSSE results shared in Chapter 1 suggest that interactive, learning-centred instructional methods are not commonly used at Waterloo. As a result, some of the most salient findings from this case study – such as the importance of *Time*, *Effect on Grades*, and *Acceptable Methods* – may not be as prevalent for students at other academic institutions who do not experience the same type of academic environment. Faculty members and educational developers will need to consider the context of their educational institution when contemplating the utility of these findings in their setting.

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Additionally, the context of the case study course may also make the findings specific to the course. First, while the course used a variety of potentially innovative instructional methods, the methods used may have unduly influenced the findings. This possibility was explored in Chapter 6 when the barriers were analyzed according to each instructional method. However, the methods used in this course were representative of learning-centred methods, which should help to improve the potential applicability of the findings to other course contexts. That so many different methods were used in one course may confound the findings, but the variety in methods may resemble other instructors' implementation of innovations where controlled experimental conditions are of less concern than creating a positive, enriching learning experience for students.

Finally, the faculty member for this course may also have influenced the findings. As was identified in Chapters 5 and 6, this instructor was able to connect well with the students through his charismatic personality and enthusiasm for his course content, both of which he demonstrated via concrete verbal and nonverbal immediacy techniques. As a result, very few barriers to change were linked to the instructor in this case study. A different instructor who was not so successful at connecting with his or her students may have a different experience with student resistance, and further properties for this code may become apparent in such a situation. Nonetheless, immediacy techniques can be learned (McCroskey & Richmond, 1992), suggesting that instructors and the educational developers who support them may be able to mitigate student resistance in relation to the *Influence of Instructor* and limit this potential barrier to change.

8.3 Future Directions

The topic area of student responses to innovative instructional methods is fruitful and opens the way for various next steps for research and practice. Both will be discussed in this section.

Future Research

One logical next step for future researchers in this area is to pursue further case studies in various settings to test out the accuracy and utility of the fishbone diagram findings. It would seem reasonable to study four to six more courses at the University of Waterloo –

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perhaps one per Faculty – and then another four to six courses at other universities with different contexts (e.g., primarily undergraduate versus research-intensive). The research instruments could also be altered somewhat in an effort to assess the effect of the various possible background factors discussed in Chapter 7 (e.g., ask about achievement goal orientation or conceptions of teaching or learning). With more data, the broader emergent themes of the **Risk of Negative Consequences** and **Lack of Control** could also be further assessed and fleshed out if they appear to be representative of the data. More data collection points could also be added (e.g., at mid-term) to check for actual differences in barriers during a course. For cohort-based programs (e.g., Engineering), data could also be collected in both the term before and after an innovative course to get an even broader picture of the student experience. If further qualitative data analyses result in consistent barrier patterns, more expeditious surveys could be created and used which would focus on the barriers found to be most salient at different times of a term. The results of such surveys could help instructors focus their efforts and address the most salient barriers.

An additional way to test the fishbone diagram would be to test the coding results. Engaging additional coders could help to further refine the themes, codes, and properties identified in this research study. One potentially interesting twist to this idea could be to engage students in the coding. Given that the data coding aims to represent the student perspective, it could be informative to see how students would categorize the same data. Their potential lack of theoretical background may make it challenging for them to assign meaningful labels to the coding, but even seeing what ideas they would group together and hearing their rationales for their analyses may provide further insights into how the data could be interpreted, which could then be used to refine the fishbone diagram.

Another area of study could be to test the effects of the beliefs generated from this study in relation to the RAA model. In this case, a survey would need to be developed that would include statements based on the case study data collected from students about beliefs that could influence their attitudes, subjective norms, and perceived control. Fishbein and Ajzen (2010) provide detailed guidelines about how to construct surveys to test the RAA model, which would be beneficial to consult if such a survey were to be developed. Factor analyses could be done to help distill the various beliefs identified for study, and multiple regression

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analyses could be performed to help identify the beliefs that most significantly affect the intention to act.

Data were collected in this case study about not only what discouraged students from being willing to engage with innovative instructional methods but also what encouraged them. These encouragement data were collected to give the research instruments a balanced focus and avoid pursuing solely the negative. Lewinian change management theory identified the resisting forces as the area to explore; however, other change theories take the opposite approach. Recent authors such as Heath and Heath (2010) focus on the positive, asking questions such as "What's working, and how can we do more of it?" (p.45). The first step in their change management strategy involves finding these 'bright spots'. Data already available from this case study could be analyzed from this opposing perspective to assess what most encouraged those least willing to engage compared to the rest of the students to see what bright spots might be leveraged in helping students adapt to a new educational environment. They also recommend a "see-feel-change" process versus an "analyze-think-change" approach to change management (p.106) which could be interesting to explore in the creation and testing of classroom change interventions.

A future study that stems from the case study findings could assess the effectiveness of different types of change interventions. The current focus on beliefs suggests the development of some type of experiential and discussion-based intervention, but other methods could also be tested (e.g., skill building, discussion-only, assessing readiness to change, testimonials from past students). In a 12-week term, knowing expeditious and effective change management interventions would be both useful and beneficial for instructors and educational developers.

Finally, a research area related to this case study but with a slightly different focus would be to study students' conceptions of academic culture and their effect on willingness to engage with innovative instructional methods. Various theoretical areas are making forays into this research area without seizing on it as the primary focus (e.g., Palmer & Marra, 2004, 2008). Elements of organizational culture could be reviewed (e.g., see the work of Schein, 2004), a clear operational definition of academic cultural norms could be determined for the post-secondary educational context, and then hypothesized connections could be made to the

higher education context to probe and study in various disciplines. The addition of academic culture normative beliefs to the RAA model could also benefit from further exploration. This type of study would benefit from a longitudinal research design in order to check for the possible effects of time over a number of years and could be accomplished primarily through semi-structured interviews. The current case study did not uncover a lot of information about acceptable instructional methods or the expected roles of students and instructors via the questionnaires; it was through the individual interviews that such topics were most productively explored.

Future Use by Practitioners

The research findings from this study were captured in two types of visualizations: an analytical fishbone diagram and a reasoned action approach (RAA) model for instructional innovations. Both of these visuals may be of use to both faculty members and educational developers when working on developing or troubleshooting a course involving instructional innovations. To provide a definitive statement about the preferred use of these visualizations by both faculty members and educational developers, usability testing would be required; however, as a seasoned educational developer, I will outline how I plan to use these visuals when consulting with my clients in future.

To me, the RAA model provides an excellent comprehensive picture of how students decide whether or not to engage with innovative instructional methods. From this visual, they can see that students have a variety of underlying beliefs that can affect their intentions and then their actions. I would continually refer back to the three main types of beliefs – behavioral, normative, and control – to cement this key take-away from the visual model. As part of putting their focus on these beliefs, I would also introduce the idea that they may need to challenge their students' beliefs should they encounter resistance. They can also see that a number of different background factors may also influence these beliefs, which would hopefully provide a sense of the potential complexity behind student engagement with instructional innovations and the need to proceed with patience.

I would then use the fishbone diagram to help flesh out the beliefs area. Using Figure 7.1, which includes the properties for each code along with the temporal saliency, I would walk faculty members through the various possible types of barriers to change to see which

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ones, if any, resonated with any of their past experiences with implementing instructional innovations. I would also highlight those barriers deemed to be most salient at different times of the term, which we would then compare to their own experiences to see if different key barriers may have emerged for them.

We would use these observations to work on creating concrete strategies to overcome the various barriers. For example, I would suggest that faculty members try the ideas already described in this dissertation to help limit resistance regarding the potentially negative ***Effect on Grades*** (e.g., see Section 8.1). Another idea would be to flip their classroom by putting more lecture-type materials online for students to review outside of scheduled class time and repurposing the class time for groupwork, which may greatly reduce comments about ***Time*** since the students would control when they watched the videos. Other ideas could include: providing multiple opportunities for peer feedback during the term to help decrease the negative effects of dysfunctional group behaviors (part of the ***Peers*** code), or having explicit conversations with the students about their instructional ***Preferences*** to enable commonalities between those methods and the innovative methods to be identified and/or help with devising an activity that would challenge the utility of the students' preferences in relation to the course's intended learning outcomes. I would also aim to keep in mind the contextual factors of year of study, instructional variety, and discipline of the course when recommending strategies for faculty clients, perhaps adding these to the fishbone diagram at some point in the future.

Overall, the analytic fishbone diagram would provide much-needed empirical data specific to instructional innovations that should help to identify and substantiate the course design and delivery guidance that I and my colleagues could contribute to our clients.

Summary

Various studies can be designed and implemented to continue a research program in the area of students' responses to innovative instructional methods. Additionally, a number of practical applications can also stem from this work. This dissertation study provides a reasonable foundation from which to embark on further work that can assist faculty members, educational developers, administrators, and even students in their approaches to new ways of teaching and learning.

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Appendix A: Comparison of Educational Paradigms

Table A.1: Instruction versus Learning Paradigms

The Instruction Paradigm	The Learning Paradigm
Mission and Purposes	
Provide/deliver instruction	Produce learning
Transfer knowledge from faculty to students	Elicit student discovery and construction of knowledge
Offer courses and programs	Create powerful learning environments
Improve the quality of instruction	Improve the quality of learning
Achieve access for diverse students	Achieve success for diverse students
Criteria for Success	
Inputs, resources	Learning and student-success outcomes
Quality of entering students	Quality of exiting students
Curriculum development, expansion	Learning technologies development, expansion
Quantity and quality of resources	Quantity and quality of outcomes
Enrollment, revenue growth	Aggregate learning growth, efficiency
Quality of faculty, instruction	Quality of students, learning
Teaching/Learning Structures	
Atomistic, parts prior to whole	Holistic; whole prior to parts
Time held constant, learning varies	Learning held constant, time varies
50-minute lecture, 3-unit course	Learning environments
Classes start/end at same time	Environment ready when student is
One teacher, one classroom	Whatever learning experience works
Independent disciplines, departments	Cross discipline/department collaboration
Covering material	Specified learning results
End-of-course assessment	Pre/during/post assessments
Grading within classes by instructors	External evaluations of learning
Private assessment	Public assessment
Degree equals accumulated credit hours	Degree equals demonstrated knowledge and skills

Table A.1 (continued)

The Instruction Paradigm	The Learning Paradigm
Learning Theory	
Knowledge exists "out there"	Knowledge exists in each person's mind and is shaped by individual experience
Knowledge comes in "chunks" and "bits" delivered by instructors	Knowledge is constructed, created, and "gotten"
Learning is cumulative and linear	Learning is a nesting and interacting of frameworks
Fits the storehouse of knowledge metaphor	Fits learning how to ride a bicycle metaphor
Learning is teacher centered and controlled	Learning is student centered and controlled
"Live" teacher, "live" students required	"Active" learner required, but not "live" teacher
The classroom and learning are competitive and individualistic	Learning environments and learning are cooperative, collaborative, and supportive
Talent and ability are rare	Talent and ability are abundant
Productivity/Funding	
Definition of productivity: cost per hour of instruction per student	Definition of productivity: cost per unit of learning per student
Funding for hours of instruction	Funding for learning outcomes
Nature of Roles	
Faculty are primarily lecturers	Faculty are primarily designers of learning methods and environments
Faculty and students act independently and in isolation	Faculty and students work in teams with each other and other staff
Teachers classify and sort students	Teachers develop every student's competencies and talents
Staff serve/support faculty and the process of instruction	All staff are educators who produce student learning and success
Any expert can teach	Empowering learning is challenging and complex
Line governance; independent actors	Shared governance; teamwork

From: Barr & Tagg, 1995, pp.16-17

Appendix B: Initial Faculty Member Questionnaire to Identify Courses to Study

For my doctoral research, I am studying students' responses to instructional methods which are different from what the students may expect to find in a course in your department. One example of a difference would be teaching or assessment methods that aim to have students take more responsibility for their learning than a standard lecture-and-exam based course and that involves interaction among the students rather than have all the material come from you as the instructor. I am particularly interested in courses where student resistance to these unexpected methods is an issue.

My aim from the brief questionnaire found at the end of this email is to locate a limited number of courses (primarily undergraduate) that could be used as case studies for my thesis research, and my end goal is to create a theoretical model that could help faculty members better understand the rationale behind students' responses when different instructional method(s) are used in courses.

I am conducting this research as part of my PhD studies in Management Sciences, under the supervision of Dr. Kenneth McKay. Participation in this research would involve three 60-minute interviews before and during the course; two 20-minute, in-class student questionnaires (beginning and end of term); in-class observations throughout the term; and course document analysis (course outlines and course evaluations plus student course work where applicable and where student permission is granted). I would like to begin my research as early as next term.

If you have taught a course that fits the criteria outlined above and would consider having that course used as a case study in future, please take 10 minutes to answer the following questions and return your responses to me (Donna Ellis) at donnae@uwaterloo.ca by email by **Friday, December 12, 2008**. Your participation in this research project is voluntary and all data collected will be kept confidential. I will contact possible case study participants as soon as possible to further discuss their course experiences. This study has been reviewed and received ethics clearance through the Office of Research Ethics. Thank you in advance for your time and assistance.

1. What are the most common teaching methods used in courses in your department?
2. What are the most common assessment methods used in courses in your department?
3. What teaching and/or assessment method(s) do you use in at least one of your courses that you consider to be different than those normally used?
4. Why do you consider them to be different?
5. How much of the class time and/or course grade are allotted to the method(s)?
6. How do your students respond to these different methods? How can you tell?
7. Does the student response change over the term? If so, how?

Please provide the following information.
Your name:
Department:
Contact information:

Course name and number that includes unexpected methods:
Term(s) in which course is offered:
Typical size of class:
Type of course (required or elective):
Number of times you have taught this course:

Donna Ellis
Associate Director, Centre for Teaching Excellence
and Doctoral Candidate, Management Sciences

Appendix C: Recruitment Information Provided to Students

Beginning of Course Questionnaire Recruitment Letter

Title of Project: Exploring Students' Responses to Instructional Methods

Researcher: *Donna Ellis*
Doctoral Candidate, Management Sciences, and
Associate Director, Centre for Teaching Excellence
University of Waterloo
519-888-4567 ext. 35713

I am a doctoral student in Management Sciences at UW, working under the supervision of Professor Kenneth McKay. This project involves studying courses as case studies and focuses on exploring your responses to the instructional methods used in your course ECON XXX that are different from what you may expect. Your course professor has agreed to let me use this course as a case study for my dissertation research.

The complete case study for your course will include the following elements:

- two in-class student questionnaires of approximately 20 minutes each to be completed in class, one in the first class and the other after course evaluations have been completed
- observations of the class as a whole throughout the term where I will sit in on your classes and unobtrusively note the overall functioning of the class
- follow-up individual student interviews after classes are over with a small number of students to provide more insights into their questionnaire responses
- analyses of documents related to the course: course outline, course evaluations, and possibly a graded assignment that I may request from you to copy
- interviews with your course professor

I will provide detailed information letters and request permission for the various elements of the study throughout the term. **In this information letter, I am specifically outlining the classroom observation element, the questionnaires, and the individual interviews and will be seeking your permission to participate in each one.**

For the classroom observations, I plan to attend your classes as an unobtrusive observer. I will not be a participant in the class but will merely sit near the back and take notes on your interactions with the course professor and the overall classroom environment. I will not be observing specific individual students or recording your identities as I am only looking to make observations about the class as a whole. Your participation in this part of the project involves nothing extra from you beyond attending the class as you normally would. I may use anonymous quotations in my thesis and any publications resulting from the observation data.

For the questionnaires, participation in this part of the project involves completing two questionnaires in class that ask about your educational background and responses to unexpected instructional methods. Completion of the questionnaires is voluntary and

involves a time commitment of approximately 20 minutes for each one. You may decline answering any questions that you do not wish to answer. All information that you provide will be considered confidential and grouped with responses from other participants. However, I may use quotations in my thesis and any publications resulting from the data analysis.   Although I am asking for your name so I can match your two questionnaires, I will remove this identifier from your data and no identifying information will accompany any of the quotations used; your responses will be considered completely anonymous. As well, your course instructor will not have access to the completed questionnaires, so will not be able to identify individual respondents. **By completing the questionnaires, you are giving your consent to participate in this part of the study.**   Please return all forms and questionnaires to me when you are done, including any blank forms.

For the individual interviews, I will contact a purposeful sample of students to obtain follow-up information that stems from the questionnaire responses. Each interview will take approximately 45 minutes, and those who participate will receive a $10 Tim Hortons gift certificate in appreciation of their time.

All data collected for this research project will be kept indefinitely in my office. All electronic data will be kept indefinitely on a secure UW server with access restricted to me. There are no anticipated risks to your participation in this research project. Your decision to participate, or withdraw your participation, will have no impact on your course grade.

If you have any questions about the study, please feel free to discuss these with me in person or by phone (519-888-4567 Ext. 35713) or with my thesis supervisor, Dr. Kenneth McKay at 519-888-4567, Ext. 35585. If you are interested in receiving a copy of the executive summary of the research project outcomes, please contact me at *donnae@admmail.uwaterloo.ca*. Results will not be available before December 2010.

I would like to assure you that this study has been reviewed and received ethics clearance through the Office of Research Ethics at the University of Waterloo. However, the final decision about participation is yours. Should you have concerns resulting from your participation in this study, please contact Dr. Susan Sykes in the Office of Research Ethics at 519-888-4567, Ext. 36005.

Thank you for your assistance with this project.

Sincerely,

Donna Ellis,
Doctoral Candidate, Management Sciences, and
Associate Director, Centre for Teaching Excellence,
University of Waterloo

<u>**End of Course Questionnaire Recruitment Letter**</u>

Title of Project: Exploring Students' Responses to Instructional Methods

Researcher: *Donna Ellis*
Doctoral Candidate, Management Sciences, and
Associate Director, Centre for Teaching Excellence
University of Waterloo   519-888-4567 ext. 35713

I am a doctoral student in Management Sciences at UW, working under the supervision of Professor Kenneth McKay. As you have been informed, this project involves studying courses as case studies and focuses on exploring your responses to the instructional methods used in ECON XXX that are different from what you may expect. Your course professor has agreed to let me use this course as a case study for my dissertation research.

With this letter comes the second of two questionnaires that I have administered in this course for my research project. You will be asked about your satisfaction with the course, your responses to instructional methods you might not have expected, and anticipated course grades. Completion of this questionnaire is voluntary and involves a time commitment of approximately 15 minutes. You may complete this questionnaire even if you did not complete the first one. You may decline answering any questions that you do not wish to answer. All information that you provide will be considered confidential and grouped with responses from other participants. However, I may use quotations in my thesis and any publications resulting from the data analysis.   Although I am asking for your name so I can match your two questionnaires, I will remove this identifier from your data and no identifying information will accompany any of the quotations used; your responses will be considered completely anonymous. As well, your course instructor will not have access to the completed questionnaires, so will not be able to identify individual respondents.

<u>By completing the questionnaire, you are giving your consent to participate in this part of the study.</u>   Please return your questionnaire to me when you are done, including any blank ones.

All data collected for this research project will be kept indefinitely in my office. All electronic data will be kept indefinitely on a secure UW server with access restricted to me. There are no anticipated risks to your participation in this research project. Your decision to participate, or withdraw your participation, will have no impact on your course grade.

If you have any questions about the study, please feel free to discuss these with me in person or by phone (519-888-4567 Ext. 35713) or with my thesis supervisor, Dr. Kenneth McKay at 519-888-4567, Ext. 35585. If you are interested in receiving a copy of the executive summary of the research project outcomes, please contact me at *donnae@admmail.uwaterloo.ca*. Results will not be available before December 2010.

I would like to assure you that this study has been reviewed and received ethics clearance through the Office of Research Ethics at the University of Waterloo. However, the final decision about participation is yours. Should you have concerns resulting from your participation in this study, please contact Dr. Susan Sykes in the Office of Research Ethics at 519-888-4567, Ext. 36005.

Thank you for your assistance with this project.

Sincerely,

Donna Ellis,
Doctoral Candidate, Management Sciences, and
Associate Director, Centre for Teaching Excellence
University of Waterloo

In-Class Recruitment Script for Students

I am Donna Ellis, a doctoral student in the Management Sciences department here at UW, and I'm working under the supervision of Professor Kenneth McKay. Your course professor, Professor XX, has kindly agreed to allow me to use this course as a case study for my dissertation research. My research focuses on understanding students' responses to instructional methods that are different from what might be expected in a course in this department.

If you agree to participate in this study, your participation will involve the following:

- completing two in-class questionnaires of approximately 15-20 minutes each
- possibly engaging in a follow-up individual interview
- possibly allowing me to retain a copy of a graded assignment for document analysis

These last 2 items will come with separate information letters and consent forms for those invited to participate.

I will also be observing the class as a whole throughout the term to monitor the overall classroom environment.

This study has been reviewed and received ethics clearance through the Office of Research Ethics. Your participation is completely voluntary. There are no anticipated risks. And if you participate, or not, there will be no impact on your course grade; Professor XX will not know who is involved in the study.

I have 2 handouts for you now: 1) an information letter and attached consent form, and 2) the first questionnaire. Please read through the letter. If you are willing to participate in this study, please detach and complete the consent form and then complete the questionnaire. Please pass all consent forms and questionnaires to the end of your row when you are done, including any blank forms. The information letter is yours to keep.

Thank you for being willing to help with my doctoral research study. I appreciate it very much.

Student Interview Recruitment Email

Subject line: ECON XXX: Request for an interview

Hi XX. As part of my doctoral research study on ECON XXX, I am conducting a small number of follow-up interviews with students who responded to the in-class questionnaires that I did in this course. Your questionnaire responses were of particular interest to me. Would you be willing to meet with me on-campus for a short individual interview before the

end of the term? The interview will take approximately 30-45 minutes and will enable me to collect more detailed comments from you. **There are no anticipated risks to your participation in this interview, and your decision to participate, or withdraw your participation, will have no impact on your course grade.** If you choose to participate, you will receive a detailed information letter from me as well as a Tim Horton's gift certificate at the interview to thank you for your time.

If you are willing to participate in this interview, please respond to this email as soon as you are able so that we can set up an interview time. I plan to conduct the interviews the weeks of April 13th and 20th.

Thanks in advance for your help.

Regards,

Donna Ellis

Appendix D: Faculty Member Interview Protocols

NOTE: Clarification questions were added as needed. Interviews were semi-structured.

Pre-Case Questions

1. Tell me more about the method(s) used in your course that you consider to be different than the departmental norm or than what the students may expect.
2. Why do you consider it/them to be different?
3. Why did you choose to use this different method(s) in your course?
4. Who are your students?
5. What percentage of your students resist the method(s)early in the term? By the end of term?
6. What do the students do to show their resistance to the method(s)?
7. How does this resistance affect you and your teaching?
8. Why do you think the students resist?
9. What, if anything, increases the resistance?
10. What, if anything, decreases the resistance?
11. When is the resistance at its worst (time of term)?
12. What key advice would you give others in your department who want to use this type of instructional method?

During Course Questions

Beginning of Term (third week of the term):

1. How did you introduce the different type of instructional method(s) to your students?
2. What was the students' overall response and how can you tell?
3. How is this response similar to or different from the response in past terms?
4. What is similar and different with the method(s) in this course than in past offerings (e.g., student cohort, type and level of support, classroom, your ability to work with the method)?
5. What do you think the students expected regarding instructional teaching methods and assessment methods that would be used in the course?
6. Is there anything else that you can think of that we haven't talked about that we should talk about in relation to how the students are responding to what is happening in your course?

At End of Term (after classes were finished):

1. How did the course go for you overall?
2. How do you feel the students responded to the new instructional methods?
   a. How new or unexpected do you think each method was for them?
   b. How willing do you think they were to accept each method?
   c. Why were they willing (or not)? How do you know?
   d. Did you perceive any change in their attitude about each method over the term?

3. Would you use these methods again? Why or why not? How would you change them?
4. For what other disciplines would you recommend these different instructional methods that you use and why?
5. How do you define a "lecture"?
6. Is there anything we haven't talked about that you think we should have in relation to this interview?

Appendix E: Case Study Student Questionnaires

Student Questionnaire: Beginning of Course
Exploring Students' Responses to Instructional Methods

Personal Background Information
Your Name: _____
Year and Term of Study (e.g., 1A): _____
Major: _____
Current University Grade Point Average: _____
Course Name & Number: _____

Past Course Information
Number of courses taken at UW (**not** including this term): _____

This course is (<u>check one</u>): ❏ a required course for me OR ❏ an elective course for me

How many university courses have you taken that used primarily lectures and exams as instructional methods? _____

What other types of instructional methods have you experienced in the rest of your university courses? (<u>check all that apply</u>)

Teaching Methods	**Assessment Methods**
❏ Case teaching method	❏ Assignments that reinforce lectures
❏ In-class small group work	❏ Assignments on material not covered
❏ In-class student presentations	❏ E-portfolio projects
❏ In-class whole class discussions	❏ Essays
❏ Interactive lectures	❏ Group projects
❏ Laboratories	❏ Lab books
❏ Online discussion groups	❏ Learning journals
❏ Online lectures	❏ Quizzes
❏ Seminars	❏ Other _____
❏ Student-directed problem-solving in lectures	
❏ Tutorials	
❏ Other _____	

Rate your past satisfaction with university courses that use:	Very Satisfied 1	Somewhat Satisfied 2	Somewhat Dissatisfied 3	Very Dissatisfied 4
Primarily lectures and exams	1	2	3	4
Primarily other types of instructional methods	1	2	3	4

Information about This Course

What types of instructional methods do you expect to experience in this course? Why?

How willing are you to engage with unexpected **teaching methods** in this course?	Very 1	Somewhat 2	Not at all 3

Why did you give this rating?

How willing are you to engage with unexpected **assessment methods** in this course?	Very 1	Somewhat 2	Not at all 3

Why did you give this rating?

What would encourage you to engage with a **teaching method** that you did not expect to experience in this course?	Why?
What would discourage you?	Why?

What would encourage you to engage with an **assessment method** that you did not expect to experience in this course?	Why?
What would discourage you?	Why?

Thank you for your assistance. Please return questionnaires to the front.

<u>Student Questionnaire: End of Course Winter 2009</u>

Exploring Students' Responses to Instructional Methods

Your Name: _____

Rate your overall level of satisfaction with this course: (circle one)

Very Satisfied	Somewhat Satisfied	Neutral	Somewhat Dissatisfied	Very Dissatisfied
1	2	3	4	5

What are your top 3 reasons for your rating?

　1.

　2.

　3.
_____

Four teaching/assessment methods were identified as being potentially new or not expected for at least some students in this course. Please answer the scaled questions below about these methods, and provide some written comments about what encouraged and discouraged you from wanting to engage in these methods and why.

1. Interactive lectures (professor gets students to participate in the lecture)

	Very	Somewhat yes	Somewhat no	Not at all
	1	2	3	4

How new was this method to you before taking this course?	1	2	3	4
How much did you expect to have this method in this course?	1	2	3	4
How willing were you to engage with it at the start of term?	1	2	3	4
How willing were you to engage with it by the end of term?	1	2	3	4

What encouraged you to want to engage in interactive lectures in this course and why?

What discouraged you from wanting to engage in interactive lectures in this course and why?

2. Extensive group work (80% of your course grade comes from group assignments)

	Very	Somewhat yes	Somewhat no	Not at all
	1	2	3	4

How new was this method to you before taking this course?	1	2	3	4
How much did you expect to have this method in this course?	1	2	3	4
How willing were you to engage with it at the start of term?	1	2	3	4
How willing were you to engage with it by the end of term?	1	2	3	4

What encouraged you to want to engage in extensive group work in this course and why?

What discouraged you from wanting to engage in extensive group work in this course and why?

3. Selection of Assignments (your group chose some of the assignments to complete)

	Very	Somewhat yes	Somewhat no	Not at all
	1	2	3	4

How new was this method to you before taking this course?	1	2	3	4
How much did you expect to have this method in this course?	1	2	3	4
How willing were you to engage with it at the start of term?	1	2	3	4
How willing were you to engage with it by the end of term?	1	2	3	4

What encouraged you to want to engage in selecting assignments to complete in this course and why?

What discouraged you from wanting to engage in selecting assignments to complete in this course and why?

4. Random Attendance Checks (your attendance was checked in random classes)

	Very 1	Somewhat yes 2	Somewhat no 3	Not at all 4
How new was this method to you before taking this course?	1	2	3	4
How much did you expect to have this method in this course?	1	2	3	4
How willing were you to engage with it at the start of term?	1	2	3	4
How willing were you to engage with it by the end of term?	1	2	3	4

What encouraged you to want to engage in random attendance checks in this course and why?

What discouraged you from wanting to engage in random attendance checks in this course and why?

_____

Predicting Grades in this Course:

In which grade range do you expect your final course mark to be? (check one)

❑ Less than 50   ❑ 50-59   ❑ 60-69   ❑ 70-79   ❑ 80-89   ❑ 90-100

In which grade range do you expect the class average to be? (check one)

❑ Less than 50   ❑ 50-59   ❑ 60-69   ❑ 70-79   ❑ 80-89   ❑ 90-100

_____

Thank you for your help by completing this questionnaire!

Appendix F: Follow-up Student Interview Protocol

NOTE: Clarification questions were added as needed. Interviews were semi-structured.

1. How was XX course for you overall?
2. How did XX course differ from other courses you have taken? (consider the interactive lectures, extensive group work, selection of assignments, and random attendance checks, in addition to anything else that was new)
3. By the end of the term, what new or unexpected instructional method (teaching or assessment method) were you most willing to engage with in XX course? Why? Where does your response stem from?
   a. How did your thinking about this method change during the term, if at all? Why did it change or not?
4. By the end of the term, what new or unexpected instructional method (teaching or assessment method) were you least willing to engage with in XX course? Why? Where does your response stem from?
   a. How did your thinking about this method change during the term, if at all? Why did it change or not?
5. How well would the instructional methods used in XX course work in courses in your department?
6. What most influenced your attitude about XX course? Did you have to change any attitudes or behaviors to engage with this course? Did you approach this course differently?
7. What was your main goal for this course?
8. In general, are you open to changes in instructional methods, or not so much? Why?
9. What's more unsettling to you in a course: teaching methods you didn't expect or assessment methods you didn't expect? Why?
10. Did you feel that XX course required you to take more responsibility for your learning than most of your other university courses? Why or why not?
11. What advice would you give to other students who register for this course if it is taught in the same manner?
12. What approximate percentage of the lectures did you attend?
13. How would you define the term "lecture"? What does the prof do and what do you do?
14. How would you define "learning"?
15. What have we not talked about that we should have?

Appendix G: Detailed Discussion of Data Collection and Thematic Analyses

To streamline Chapter 4, various specific details were omitted regarding the data collection and analysis methods employed. These details are explained below for readers who wish to probe deeper into the methodological decisions made and techniques used.

Data Collection Details

Given the exploratory nature of the research, data collection instruments had to be designed. In particular, the interview protocols and questionnaires were original to this research study, but were created based primarily on the theoretical framework explained in Chapter 3. All protocols and questionnaires were vetted by my colleagues in the teaching centre and my research supervisor, and the questionnaires were piloted with co-op students in my office. In the following subsections, the rationales for the various questions posed are provided.

Instructor Interview Protocols (see Appendix D)

In the **pre-case interview protocol** with the instructor, the first three questions provide contextual information about the innovative methods used in the course. These questions were asked to help assess the innovativeness of the methods and verify that the course met the case study criteria outlined in Section 4.2. Question 4 provided context about the students in the course to determine the variety of students likely to be enrolled; students from different years and academic disciplines would likely have a variety of educational experiences which could assist in responding to the second research question. Questions 5 to 11 all focused on assessing past students' resistance to the innovative methods to help identify the instructor's perceptions of students' barriers to change as an entry point to responding to the third research question. The final question explored ideas about how to respond to student resistance as a way to wrap up the interview.

In the **early term interview protocol**, the first question focused on how the innovative methods had been communicated to the students since the resistance to change literature indicated that communication about a change can result in resistance (Oreg, 2006; Wanberg & Banas, 2000). The next question asked the instructor to assess the resistance perceived

from the current group of students in relation to each of the innovative methods being used. Question 3 was designed to assess the students' responses in the current offering compared to past ones to determine if the course still appeared to fit the case study criteria. Question 4 was intended to uncover contextual elements that may affect how the instructor was implementing the innovative methods in the current term. Question 5 mirrored a question from the initial student questionnaire about students' expectations regarding instructional methods in order to help assess the overlap between the students' and instructor's perceptions, which again was connected to the third research question. The final question provided a wrap-up to the interview.

The **end of term interview protocol** included many of the same questions as the students' interview protocol to allow for further comparisons between the students' and the instructor's perceptions regarding possible student reasons to resist. Question 3 provided the instructor an opportunity to discuss how he might change his use of the methods as an additional means of determining areas that he felt may have been barriers to engagement. The final question again provided a wrap-up to the interview.

Student Questionnaires

Given the exploratory nature of the case study, various questions were posed on the student questionnaires. On the **Beginning of Course questionnaire**, the questions were divided into three main sections: *Personal Background Information*, *Past Course Information*, and *Information about This Course*. The rationales for the questions posed are explained in turn.

The *Background Information* was intended primarily to enable the matching of beginning and end of term questionnaires (based on Name) as well as sorting by Year of Study and Major. Grade Point Average was requested but was not included in the analyses completed for this dissertation. *Past Course Information* was explored to help identify the students' amount and type of instructional experiences as a means of determining instructional variety, which was identified in Chapter 1 as having a possible effect on resistance. The question about their satisfaction with past lecture-and-exam courses versus courses that use other types of instructional methods was included to help determine their openness or desire for a change in methods. The questions in the *Information about This*

Course section were designed to elicit three main elements: 1) how different the innovative methods in the course would actually be compared to their expectations, 2) their willingness to engage with new teaching and assessment methods, and 3) what would actually encourage and discourage them. In the analyses, "willingness to engage" was a key differentiator when creating subgroupings, and reasons for discouraging engagement became key data for identifying the possible barriers to engagement.

The **End of Course questionnaire** opened with a question about the students' overall satisfaction with the course to help provide context about whether they perceived the course positively or negatively. The bulk of the questionnaire was designed to explore how innovative each method was for the students, how willing they were to engage with the methods, and what reasons would encourage and discourage their engagement. The innovation questions were included to address the gap identified in the literature review regarding whether the findings were connected to *innovative* instructional methods. The willingness questions were asked to help identify those students who were least willing to engage and, therefore, deemed to be the most resistant. This subgroup of students was of primary importance in the comparative data analyses. The questions that asked about what would encourage or discourage student engagement were intended to identify possible barriers (and enablers) to engagement which became the critical data that were coded and analyzed in relation to the preliminary conceptual framework.

Student Interview Protocol

The student interview protocol included a variety of questions to help further explore how the students had responded to the four possibly innovative instructional methods and their reasons why. The first question was broad and allowed me to begin to build some initial rapport with the students since I did not judge their responses. Question 2 was intended to assess how innovative the specific instructional methods were for the students. Questions 3 and 4 were designed to further assess students' willingness to engage and to collect data that could be checked against the questionnaire responses regarding reasons to encourage or discourage engagement. Question 5 focused on probing possible differences in disciplinary norms, which were identified in Chapter 1 as having a possible effect on resistance but which were not given much mention on the questionnaire responses. Question

6 was intended to capture what students perceived they needed to change in order to engage with the course as another means of identifying what was new or different about this course and to probe common elements of resistance to change as outlined in Section 2.2.1 (e.g., attitudes and behaviors). Question 7 was meant to probe the prevalence of the **Perceived Risks** theme, while Question 8 was intended to help explore the emergent theme of **Risk Tolerance**. Question 9 asked whether a teaching or assessment method innovation would be more unsettling for students and was included in relation to an emerging finding that not all innovations are perceived in the same way. The rationale for Question 10 was to help assess how learning-centred (Weimer, 2002) the students found the course to be given its focus on level of responsibility. Question 11 about advice for future students was intended to elicit other possible barriers (or enablers) to engagement. Question 12 was included to help determine the students' course attendance and, therefore, the possible value of their responses. The definitional questions (13 and 14) emerged during the interviews and were meant to probe how traditional the students' perspectives were about teaching and learning and begin to uncover their ideas about academic culture. The final question provided a wrap-up to the interview.

Data Coding Details

As was outlined in Section 4.4, the data were analyzed using a modified grounded theory approach (Corbin & Strauss, 2008; Lingard et al., 2003; Parkhe, 1993; Perry & Jensen, 2001). All closed-ended responses from the questionnaires were entered into a spreadsheet while all open-ended responses were entered into word processing documents. Open-ended questionnaire responses were entered with an identifier that captured each respondent's class section (A = 8:30, B = 9:30) and unique respondent number. This identifier information was included so that responses could be traced back to the original questionnaire to check for accuracy of data entry and analyses of subgroupings of respondents could be achieved. One "response" constituted a discrete phrase or sentence that was given after each open-ended question prompt.

All responses to the open-ended questions on Q-START were first coded using line-by-line coding, with discrete ideas within each response being the unit of analysis. Some questions generated more than one response on a single questionnaire, and some responses

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included more than one idea. For example, the discourage response "lots of work, little reward" (B42) was divided into two ideas: "lots of work" and "little reward". The first idea was placed under the *Time* code while the second went under the *Effect on Grades* code. When more than one code was identified within a response, the response was recorded under each relevant code, but the key word(s) connected to a code were underlined to show which part of the response fit with the code. Each discrete idea was categorized under only one code, being checked multiple times for accuracy as well as appropriateness of coding.

The data remained organized by question asked (e.g., what would encourage or discourage engagement for each instructional method) so that the final code and theme findings for each question area could be compared. On Q-START, responses to the questions about why students gave a certain rating of their willingness to engage with an unexpected teaching or assessment method were categorized as reasons to encourage or discourage engagement, based on the rating number and content of the response. These responses were then added to the overall groupings of responses to the questions about what would encourage or discourage engagement with a method. The label [WHY rating #] was added to these responses to identify that they stemmed from the rated questions. If a respondent's "why rated" response was categorized into the same code as their response to an encourage or discourage question, the responses were combined into one so that an individual's response would not be double-counted. For example, when asked what would discourage engagement with an assessment method that was not expected, one student replied: "Lose marks and time" (B75), but this same student's explanation about why they gave a rating of being "not at all" willing to engage with an assessment method they did not expect also mentioned a negative effect on grades: "It can cause me to ill-prepare for exams which would result in low marks [WHY 3]". These two responses were combined into one response in the *Effect on Grades* code.

As was explained in Section 4.4, the data were initially coded without reference to the preliminary conceptual framework in order to let codes emerge directly from the data. The codes were cross-checked numerous times against one another to check for discreteness of categories, and then were checked against the variables in the conceptual framework. Some coding labels were changed from the *in vivo* labels to match those in the preliminary

conceptual framework and acknowledge the presence of a code's construct within the existing literature. Then focused coding was undertaken to work on clustering similar codes into larger themes or clusters (Charmaz, 2004; Miles & Huberman, 1994). The barrier codex created by these refined codes and themes was then applied to the end of term questionnaire (Q-END) responses as well as to the student interview responses, the instructor interview responses regarding students' barriers to change, and the course evaluation open-ended responses, all of which enabled the codes to be further checked and refined. The instructor interview transcripts and observational data were coded selectively since much of the information in them was used to provide context to the case study.

Codes were deemed to be empirically supported based on frequency counts from the combined questionnaire data. If a code included a total of at least five responses, it was included in the revised conceptual framework (see Table 5.1).

Sample Data Coding from Two Themes

Theme 1: **Influence of Others: Peers (n= 5) (from Teaching Methods section on Q-START)**

NOTE: information in square brackets = code for idea not underlined when response includes more than one discrete idea

What would discourage?

- Classmates making fun WHY? Then I could feel demoralized (A17) [emotional risk]
- If I had heard from other students that the method was not useful (A18) [HVA] [effect on learning]
- If my classmates were not willing to participate WHY? Because I would feel like an outsider if I were willing to participate and no one else was (A19)
- Group work WHY? Bad experience with group members not working (B1) [methods preferences]
- If not everyone was on board WHY? Hard to engage with it alone (B47)

Theme 2: **Perceived Workload: Lack of Clarity (n= 13) (from Assessment Methods section on Q-START)**

NOTE: information in square brackets = code(s) for idea(s) not underlined when response includes more than one discrete idea

What would discourage?

- Lack of guidance WHY? Not understanding is discouraging (A7) [emotional risk]
- Lack of structure, organization, and clear instructions WHY? An assessment should test knowledge, not how well you know (or can remember) how to perform it (A10)

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- No outline/breakdown of how I am being assessed (A23)
- if it's not fair and complex WHY? <u>I'd like to know exactly how I'm evaluated</u> (B22) [effect on grades, difficulty]
- Lack of details on marking so lack of sense of direction (B24)
- If I was unaware or confused by it WHY? Because I don't like to be assessed in a manner I don't understand (B40)
- <u>Less guidelines for markers</u> WHY? Students who deserve an A+ only get an A (B42) [effect on grades]
- If the method was unclear (B45)
- I want to know what to expect (B47)
- <u>Vague expectations</u> and little relevance to course material WHY? Bigger chance for failure and lower opportunity to learn (B53) [effect on learning, effect on grades]
- I do not want to be surprised by the markings. I like to know what to expect in terms of assessment (B66)
- Methods that I deem unfair or insignificant to the course material WHY? Grades are very important to me and I expect to <u>fully understand</u> and agree with how they are earned (B70) [effect on grades]
- I want to know and be familiar with how I am being graded (B80)

Comparative Data Analysis Details

Frequency counts and tabular analyses were used to explicitly identify prevalent codes to encourage and discourage engagement with the various instructional methods studied and to serve as benchmarks against which more detailed analyses could be compared. The data were then further reduced by identifying subgroupings of data that would assist in responding to the research propositions posed in Chapter 3. The subgroupings used are all identified in Table 6.2 and the details of these analyses are explained in Chapter 6. Background details about the comparative data analyses appear in Appendix H.

Memo-Writing Details

Memo-writing was used to further assist with the various analyses performed. Exploring connections is an example of the constant comparative method used in grounded theory since it helps to construct discrete codes and themes (Charmaz, 2006; Corbin & Strauss, 2008). Memo-writing also helps to explore comparisons between the current study's emerging findings and theory and those from the existing research literature. My initial memo-writing occurred right in the coding notes for the questionnaire data as well as in my observational notes. Later memos were generated in a separate document as the comparisons became increasingly more abstract, conceptual, and theoretical.

The memos revealed my thinking about the potential findings, but they also helped to identify my potential biases as a researcher, which are important to state as part of establishing validity in qualitative studies. First, my commitment to understanding the complexity of the research area made it difficult sometimes to make analytical decisions. While I began this research with a conceptual framework based on existing literature, my intent was not to prove the existence of any particular theory in my research setting. Instead, I came to this research with a desire to discover "what is", which led to the collection of a somewhat overwhelming amount of data requiring interpretation. I have done my best to code the students' responses as conservatively as possible; however, I may have, at times, mis-categorized a comment or even a whole code. In the end, I had to trust my understanding of the research setting gained not only from my triangulated data collection but also from my extensive professional experience in higher education. Second, given my applied background and pragmatist perspective, I also engaged in this research with a desire to learn something that could inform the practice of educational developers. My intent was not to be purely theoretical; rather, I believed it was important to try to extend the emerging findings to the work of my profession. This practical intent required a fair amount of conjecture, but my suggestions for practice have been prefaced with statements of qualification regarding the need to test any recommended courses of action.

Appendix H: Detailed Discussion of Comparative Data Analyses

Some of the tables and the discussion of them became too lengthy for Chapter 6. As a result, these details were moved to this appendix to achieve concision in the main body of the dissertation while enabling readers to review specific details in this appendix as needed.

Initial Analyses

To provide overall context to the research findings in Chapter 6, coded data from both questionnaires were combined, and the codes were ranked according to *Total* number of responses and the number of *Discourage* responses. Table H.1 provides the complete frequency counts from the 1,620 discrete ideas that were coded in relation to what encouraged and discouraged engagement with innovative instructional responses. The different rankings of the codes based on *Discourage* versus *Total* indicated the need to focus solely on the Discourage responses in subsequent analyses in identifying the most salient barriers to engagement.

With the initial context set, three main sets of comparative analyses were completed for Chapter 6. Analyses used to inform Section 6.2 – comparisons regarding time of term – represent the primary content described in this appendix. Different ways of reducing the questionnaire data were used for these comparative analyses and are explained in relation to the three analyses presented in Section 6.2. As well, the analytic results used in Section 6.4 to compare students' barriers to change to the instructor's appear in this appendix. The remaining analyses in Chapter 6 are all described directly in that chapter.

Table H.1: Complete Combined Questionnaire Responses Ranked by Total and by Discourage

Ranked by Total				Ranked by Discourage			
	Total	**Enc**	**Disc**		**Total**	**Enc**	**Disc**
Effect on Grades	286	194	92	Time	125	31	94
Effect on Learning	157	120	37	Effect on Grades	286	194	92
Openness to Change (1)	151	130	21	Methods Preferences	140	60	80
Interest	142	103	39	Peers	134	56	78
Methods Preferences	140	60	80	Emotional Risk	77	18	59
Peers	134	56	78	Autonomy	74	24	50
Time	125	31	94	Class Time	43	1	42
Emotional Risk	77	18	59	Interest	142	103	39
Autonomy (2)	74	24	50	Effect on Learning	157	120	37
Clarity	63	30	33	Tolerance for Ambiguity	37	0	37
Difficulty	47	19	28	Clarity	63	30	33
Instructor	46	36	10	Difficulty	47	19	28
Class Time	43	1	42	Openness to Change	151	130	21
Tolerance for Ambiguity	37	0	37	Acceptable Methods	29	16	13
Acceptable Methods	29	16	13	Class Size	11	0	11
Self-Efficacy	27	20	7	Instructor	46	36	10
Familiarity with Methods	15	9	6	Other	15	6	9
Other	15	6	9	Self-Efficacy	27	20	7
Class Size	11	0	11	Familiarity with Methods	15	9	6
Incoming Skills	1	0	1	Incoming Skills	1	0	1
Total	1620	873	747		1620	873	747

Note for all Tables in Appendix H:

(1) Responses in the ***Openness to Change*** code on Q-END that were "Nothing" were reverse-coded, with Encourage comments being counted as Discourage responses.

(2) For responses in the ***Autonomy*** code, Encourage responses that indicated the students had no choice were counted as Discourage responses.

Time of Term Analysis A: Data Reduction #1

The first data reduction analysis involved splitting the Discourage responses by time of term. The frequency of responses made on the start-of-term questionnaires (Q-START) about what would discourage students from engaging with new or not expected teaching and assessment methods were compared to the frequency of discourage responses from the end-of-term questionnaires (Q-END) to test for any differences.

Frequency counts that appear in Table 6.3 (replicated below as Table H.2) suggest that different potential barriers had different levels of prevalence in the two time periods and that a shift in prevalence may occur as students' understanding of what is expected in a course increases. The only overlap in the five most frequent responses is the *Time* code, which includes comments about how long it takes to use a new method, particularly outside of class; feelings that the time spent involving the method is not useful; and a lack of convenience regarding scheduling challenges or competing commitments. *Emotional Risk* and *Effect on Grades* also overlap between start and end of term if the sixth ranked codes are included.

Table H.2: Rank Ordering of Discourage Code Responses at Start versus End of Term

Start of Term	n	%	End of Term	n	%
Methods Preferences	68	17%	Peers	67	19%
Effect on Grades	63	16%	Time	45	13%
Time	49	13%	Class Time	42	12%
Effect on Learning	34	9%	Autonomy	36	10%
Clarity	29	7%	Emotional Risk	33	9%
Emotional Risk	26	7%	Effect on Grades	29	8%
Tolerance for Ambiguity	26	7%	Interest	21	6%
Difficulty	24	6%	Openness to Change	13	4%
Interest	18	5%	Methods Preferences	12	3%
Autonomy	14	4%	Acceptable Methods	11	3%
Peers	11	3%	Tolerance for Ambiguity	11	3%
Openness to Change	8	2%	Class Size	11	3%
Other	7	2%	Instructor	5	2%
Instructor	5	1%	Self-Efficacy	5	2%
Familiarity with Methods	5	1%	Difficulty	4	1%
Self-Efficacy	2	0%	Clarity	4	1%
Acceptable Methods	2	0%	Effect on Learning	3	1%
Incoming Skills	1	0%	Other	2	0%
Class Size	0	0%	Familiarity with Methods	1	0%
Class Time	0	0%	Incoming Skills	0	0%
Total responses	392	100%	Total responses	355	100%

The only codes that did not appear at the start of term were *Class Size*, and *Class Time*. *Class Time* emerged as a new code as was identified in Chapter 5, not appearing in the literature review in Chapter 2, along with *Openness to Change* and *Tolerance for*

Ambiguity. On both questionnaires, the thematic analyses revealed that ***Incoming Skills*** only received one response which led to its removal from the conceptual framework in Table 5.1 although it was identified as a possible barrier by the instructor (see Section 6.4). On Q-START, very few comments were made that fit with the ***Self-Efficacy*** and ***Acceptable Methods*** codes, whereas on Q-END, a number of different codes had few comments: ***Difficulty***, ***Clarity***, ***Effect on Learning***, and ***Familiarity with Methods***. The first three of these less frequent Q-END codes had ranked fairly highly on Q-START, so presumably the course experience helped to quell those concerns. ***Familiarity with Methods*** did not rank highly in either timeframe.

While different codes were more prevalent in the different timeframes studied, a potentially interesting finding emerged when considering the **pre-existing/in-situ** categories of barriers. Only two codes from the revised conceptual framework in Chapter 5 do not appear in relation to the Q-START data, and one of these was new. The initial conceptual framework suggested that students would have both – yet different – **pre-existing** and **in-situ barriers**. Q-START was administered at the very start of the first class, just after the course professor confirmed the course name and number but before he provided any explanation about the course itself. Unless the students were aware of the course structure before the professor formally introduced it (only 14 out of the 113 respondents indicated that they had heard about the course from their peers, and an additional four had checked the course outline in advance), they would have had no experience regarding the course itself, and yet they identified barriers to change at the start of term that were initially defined as being **in-situ** with the exception of those within the **Environmental Constraints** theme. None of the **in-situ barriers** would be unfamiliar to students who have taken university courses before, and comments that fit with almost all of them were mentioned as of the start of term. The **pre-existing/in-situ** dichotomy needs reconsideration and was removed in further analyses.

Time of Term Analysis B: Data Reduction #2

The Discourage responses were further reduced by dividing them according to type of instructional method. On Q-START, students were asked to identify what would discourage them from engaging with Teaching Methods in general and Assessment Methods in general. On Q-END, they were asked to provide reasons that would discourage engagement for the

four specific instructional methods that were predicted to be new or not expected: Interactive Lectures, Extensive Group Work, Selection of Assignments, and Random Attendance Checks. This reduction shows that the barriers to change differ both from start of term to end of term as well as for the different types of methods (see Table H.3).

Table H.3: Complete Ranked Frequencies of Discourage Responses by Instructional Method

START OF TERM		END OF TERM			
Teaching Methods	**Assessment Methods**	**Interactive Lectures**	**Extensive Group Work**	**Selecting Assignments**	**Random Attendance**
Methods Preferences (n=38)	Effect on Grades (n=53)	Emotional Risk (n=30)	Peers (n=48)	Peers (n=14)	Class Time (n=26)
Effect on Learning (n=24)	Methods Preferences (n=30)	Interest (n=18)	Time (n=27)	Time (n=11)	Autonomy (n=17)
Time (n=23)	Time (n=26)	Class Time (n=16)	Autonomy (n=9)	Autonomy (n=10)	Effect on Grades (n=16)
Interest (n=17)	Difficulty (n=18)	Class Size (n=11)	Effect on Grades (n=8)	Tolerance of Ambiguity (n=5)	Acceptable Methods (n=9)
Clarity (n=16)	Clarity (n=13)	Openness to Change (n=6)	Methods Preferences (n=7)	Effect on Grades (n=4)	Time (n=6)
Emotional Risk (n=15)	Tolerance for Ambiguity (n=12)	Self-Efficacy (n=5)	Openness to Change (n=2)	Interest (n=3)	Openness to Change (n=5)
Tolerance for Ambiguity (n=14)	Emotional Risk (n=11)	Instructor (n=4)	Acceptable Methods (n=1)	Difficulty (n=3)	Tolerance for Ambiguity (n=5)
Effect on Grades (n=10)	Effect on Learning (n=10)	Peers (n=4)	Familiarity with Methods (n=1)	Clarity (n=3)	Methods Preferences (n=3)
Difficulty (n=6)	Autonomy (n=9)	Effect on Learning (n=2)	Difficulty (n=1)	Methods Preferences (n=1)	Emotional Risk (n=2)
Peers (n=5)	Openness to Change (n=6)	Methods Preferences (n=1)	Tolerance for Ambiguity (n=1)	Emotional Risk (n=1)	Peers (n=1)
Autonomy (n=5)	Peers (n=6)	Effect on Grades (n=1)	Clarity (n=1)		Effect on Learning (n=1)
Instructor (n=4)	Self-Efficacy (n=2)	Time (n=1)			Instructor (n=1)
Familiarity with Methods (n=4)	Interest (n=1)	Acceptable Methods (n=1)			

Table H.3 (continued)

START OF TERM		END OF TERM			
Teaching Methods	**Assessment Methods**	**Interactive Lectures**	**Extensive Group Work**	**Selecting Assignments**	**Random Attendance**
Openness to Change (n=2)	Familiarity with Methods (n=1)				
Acceptable Methods (n=1)	Instructor (n=1)				
	Acceptable Methods (n=1)				
	Incoming Skills (n=1)				

Given that the methods studied in this research possess different characteristics (e.g., participating in lectures involves speaking in front of others, engaging in group work involves interacting with peers), it seems reasonable that the frequencies of responses by code would also vary across the different methods. However, the saliency of the barriers given on Q-START do not relate closely to those given on Q-END when the method types are similar (e.g., interactive lectures are a type of teaching method but the frequency ranking of the barriers is not the same). It may be that these differences stem from the students not being asked to respond to the same four specific instructional methods at the start of term; however, students may need to experience specific methods within the context of a specific course to truly understand their barriers to engagement. At the start of a course, they would not yet have had this course-specific experience; as the course progresses, they increase their understanding of the expectations involved in working with different instructional methods. Overall, the changes in knowledge about a course that are gained over the course of a term may help to explain why students' most salient barriers shifted during the course. Further investigation would be required to resolve this issue.

Time of Term Analysis C: Data Reduction #3

One final data reduction analysis was performed to help understand the findings in relation to barrier saliency and time of term. Since the focus of the research is on barriers to engagement, responses from students who indicated that they were *Least Willing* to engage with at least one of the instructional methods were analyzed to see if the results differ for that

subgrouping of students. The assumption was made that this cohort of students may be most likely to resist since they indicated that they were the least open to engaging.

Students were identified as being *Least Willing* if they chose "Not at All" in relation to willingness to engage with the various instructional methods assessed on both questionnaires (or "Somewhat Not" for Selecting Assignments since no one chose "Not at All" for that method). On Q-START, 19% of students were *Least Willing* to engage with either new teaching or assessment methods, whereas by the end of term, 39% were *Least Willing* to engage with at least one of the four methods assessed.

Table H.4 shows the complete results of two main analyses done on the *Least Willing* data subset. The total frequency of responses from those *Least Willing* to engage with at least one of the methods being assessed appears in the **Least Willing** columns. The **Total** columns represent the total frequency of Discourage responses on each questionnaire. The **Percentage** column shows the proportion of *Least Willing* responses over total Discourage responses for each code in order to help identify the density of *Least Willing* responses. Codes are ranked for each timeframe according to the frequency of *Least Willing* responses to illustrate prevalence. The shading highlights the highest proportions.

When the ranking of the actual frequencies of *Least Willing* responses in Table H.4 is compared with the ranking of the frequencies for all responses (see Table H.2), the five most frequent codes for both start- and end-of-term are almost identical. For Q-START, ***Effect on Learning*** moves down substantially in the ranking, letting ***Emotional Risk*** enter the top five. On Q-END, the seven most prevalent responses are all the same between the two tables, although they appear in slightly different orders. However, the overall counts of responses quickly become quite small for those *Least Willing*. As a result, the proportions of *Least Willing* responses for each code were also calculated to see how representative the Discourage codes were for those *Least Willing* to engage and to help identify any further compelling themes to contemplate.

The ranking of codes shifts in Table H.4 when proportions are identified (see the shading). For Q-START, three codes appear on both top five lists – ***Methods Preferences***, ***Effect on Grades***, and ***Clarity*** – although none of the proportions is particularly large. For the Q-END results, none of the top five codes according to proportions for the *Least Willing*

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group is the same as the ranking based on frequency, and all of these proportional *Least Willing* responses account for 60% or more of the total Discourage responses for each code. As well, when comparing the top five responses ranked by proportion from the start and end of term, almost no similarities exist for those *Least Willing* to engage, with the exception of ***Methods Preferences***.

Table H.4: Rank Ordering of Discourage Codes for Least Willing to Engage Responses

Start of Term	Least Willing	Total	%	End of Term	Least Willing	Total	%
Methods Preferences	14	68	21%	Peers	25	67	37%
Effect on Grades	13	63	21%	Class Time	21	42	50%
Time	10	49	20%	Autonomy	19	36	53%
Clarity	9	29	31%	Time	15	45	33%
Emotional Risk	5	26	19%	Effect on Grades	14	29	48%
Difficulty	4	24	17%	Emotional Risk	11	33	33%
Peers	3	11	27%	Interest	10	21	48%
Autonomy	3	14	21%	Acceptable Methods	9	11	82%
Tolerance for Ambiguity	3	26	12%	Methods Preferences	9	12	75%
Openness to Change	2	8	25%	Openness to Change	9	13	69%
Interest	2	18	11%	Class Size	6	11	55%
Effect on Learning	2	34	6%	Tolerance for Ambiguity	5	11	45%
Familiarity with Methods	1	5	20%	Self-Efficacy	3	5	60%
Class Size	0	0	0%	Effect on Learning	2	3	67%
Class Time	0	0	0%	Clarity	2	4	50%
Acceptable Methods	0	2	0%	Instructor	2	5	40%
Incoming Skills	0	1	0%	Difficulty	1	4	25%
Self-Efficacy	0	2	0%	Familiarity with Methods	0	1	0%
Instructor	0	5	0%	Incoming Skills	0	0	0%

A summary of the top ranked barriers to engagement for those *Least Willing* to engage based on frequencies and proportions appears in Table H.5. A more detailed summary table appears in Chapter 6 (see Table 6.5). These barriers were given primary consideration in the revision of the conceptual framework and model and the discussion of key barriers in Chapter 7.

Table H.5: Summary of Top Barriers to Engagement

	Start of Term	End of Term
Most Frequent Codes	Methods Preferences (n=14)	Peers (n=25)
	Effect on Grades (n=13)	Class Time (n=21)
	Time (n=10)	Autonomy (n=19)
	Clarity (n=9)	Time (n=15)
Highest Proportion Codes	Clarity (31%)	Acceptable Methods (82%)
	Peers (27%)	Methods Preferences (75%)
	Openness to Change (25%)	Effect on Learning (67%)

Comparing Student and Instructor Perceptions of Barriers

In Section 6.4, the faculty member's and students' perceptions about possible barriers to engaging with innovative instructional methods are compared. The comparisons are based on the data analysis presented in Table H.6.

Table H.6: Comparative Summary of Student and Instructor Perceptions

Combined Students' Questionnaire Responses Ranked by Discourage			Combined Instructor's Interview Responses	
	Total	Disc	Presence of Code to Discourage (Y/N)	Presence of Code to Encourage (Y/N)
Time	125	94	Y	N
Effect on Grades	286	92	Y	N
Methods Preferences	140	80	Y	Y
Peers	134	78	Y	Y
Emotional Risk	77	59	Y	Y
Autonomy	74	50	N	N
Class Time	43	42	Y	N
Interest	142	39	N	Y
Effect on Learning	157	37	N	Y
Tolerance for Ambiguity	37	37	N	N
Clarity	63	33	Y	Y
Difficulty	47	28	N	N
Openness to Change	151	21	N	N
Acceptable Methods	29	13	N	N
Class Size	11	11	Y	N
Instructor	46	10	N	Y
Self-Efficacy	27	7	N	N
Familiarity with Methods	15	6	Y	N
Incoming Skills	1	1	Y	N

Appendix I: Reasons to Encourage Engagement

Table I.1: Conceptual Framework of Reasons to Encourage Engagement

Themes	Codes	Properties
Experience with Methods	Methods Preferences	Preference for interactive instructional methods
		Preference for conventional methods
		Preference for specific methods beyond conventional methods
		General satisfaction with past methods experienced [n=1]
	Familiarity with Innovative Method(s)	Previous experience with instructional method
		No previous experience with instructional method [= an opportunity]
		Lots of variety in methods in general [n=1]
Instructional Conceptions	Acceptable Methods	Appropriateness of the method based on beliefs about course content
		Appropriateness of the method based on beliefs about roles of students and instructors
Incoming Skills	Insufficient data	
Context-Specific Motivation	Interest	Interest in instructional method
		Interest in course subject matter
	Autonomy	Control over learning environment
	Self-efficacy	Confidence connected to background content knowledge
Influence of Others	Influence of Instructor	Immediacy behaviors and attitudes
	Influence of Course Peers	Positive responses of peers
		Functional peer performance with method
		Responsibility to group
Perceived Workload	Difficulty	Easy methods to learn from
	Clarity	Clearly explained methods
		Support given to use method
	Time	Little time needed to learn or use method
		Ample adaptation time
		Convenience
Perceived Risks	Effect on Grades	Positively affects grades
		Neutral effect on grades
		Incentives
		Importance of grades
		Fairness in grading
		High weighting of method (80% group work)
	Effect on Learning	Positively affects learning
		Relevant to course goals
		Relevant to real life
	Emotional Risk	Limit discomfort in front of others
		Limit feelings of stress/anxiety
		No fear of being incorrect

Table I.1 (continued)

Themes	Codes	Properties
Environmental Constraints	Class Size	Insufficient data
	Class Time	Class is not too early [n=1]
Risk Tolerance	Openness to Change	Likes change
		Wants change [TM only]
		Willingness to experience a new method
	Tolerance for Ambiguity	Insufficient data