THE IMPACTS OF REFLECTIVE PRACTICES ON THE DISPOSITIONS FOR CRITICAL THINKING IN UNDERGRADUATE COURSES

by

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Dedication

This thesis is dedicated to Dr. Sunny Marche, who passed away suddenly on June 8, 2012. Dr. Marche personally inspired me to enter the Interdisciplinary PhD Program. He not only played a key role on my committee, he became a friend and mentor. He commented in detail on the papers leading up to this thesis after close reading and helped me explore my motivation and the implications of my work. We planned and began writing two articles for publication that sat on hold while I finished my thesis. But we went much further than that. We also spent many hours discussing how the whole world works with mutual curiosity, humility, humor and hope. His practical wisdom and wit, his kindness, and his unbiased concern for others will not be forgotten. He has now added inspiration to my life and a deep poignancy to my work.

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Abstract

The primary objective of this research was to determine if a specific set of reflective practices enhance university undergraduate students' abilities to: 1) reflect on their thinking processes to become more aware of their own intellectual habits and how they form; 2) inquire with open-minded curiosity, including suspension of assumptions long enough for them to be challenged; and 3) generate justifiable, contextual understandings and judgments, individually and in collaboration. "Reflective practices" refers to a specific set of reflective learning activities introduced to undergraduates in two courses: mindfulness practice extended into journal writing, listening, inquiry and dialogue. The purpose of the reflective practices in this research was to support independent, critical thinking: well-reasoned, evaluative judgments based on evidence, contextual understanding, and respect for others. Students were instructed in both individual, introspective activity as well as in paired and group interaction while preserving a degree of mindfulness. Indicators of the dispositions for critical thinking were developed using grounded theory methods to study students' experiences, as well as those dispositions previously identified in the research literature. Qualitative results showed increased self-confidence, engagement with multiple points of view, and an unexpected sense of connectedness that was stronger between students who disagreed with each other than between students who found easy agreement in their interaction. Quantitative results showed statistically significant gains in the average number of indicators of critical thinking dispositions appearing in student journals comparing week 1 to week 11. There was also positive correlation between final essay exam scores graded for critical thinking skills and the total number of indicators found in students' journals.

List of Abbreviations

RA1	Research Assistant 1
RA2	Research Assistant 2
B Course	Buddhism Course
SW Course	Spirituality and Work Course

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There are many people who played essential roles, but none more crucial than my supervisor, Dr. K. Lynn Taylor. Dr. Taylor did far more than advise me on my program requirements. She worked with me sentence by sentence through two directed readings courses, two comprehensive papers, a thesis proposal, and finally my thesis. She helped me step back from the bark to see the whole tree and guided me through the forest for four and a half years.

Dr. Charles Beaupre from Saint Mary's University, where I teach, also played an essential role on my committee. He kept me close to my purposes for doing this research and we spent many hours discussing the connection of my work to embodied learning. He also taught me Tai Chi Chi Gung so that I did not ruin my health forever sitting in front of the computer.

Dr. Raewyn Bassett played an essential role teaching me to do qualitative research in the context of mixed methods, interdisciplinary work. She re-taught me the meaning of social science and led me to a methodology that was truly compatible with my purposes. Her patience was immeasurable and her good humor relieved me again and again.

Dr. Jack Duffy was technically not on my committee until Dr. Marche passed away, but actually he really was. Not only did his course on Research Methods enable me to formulate a viable thesis proposal, he enabled me to tackle quantitative research after being away from academia for many years. His daughter, Kathryn Duffy, a student in Dr. Duffy's Research Methods course, tutored me and many others after hours, explaining what is was that her dad meant when we were too shy to ask questions in class. But Professor Duffy never turned me down when I asked for help. He provided opportunities for me to present my work to faculty and students and came to one presentation with his whole family. In late June, 2012 Dr. Duffy formally accepted the role of co-supervisor of my committee. This was a selfless act of kindness to me and love for Sunny Marche.

Dr. John Lovas also accepted the challenge and selflessly joined the committee in June, 2012. He has provided mindful and constructive criticism that completes the contribution of a perfectly supportive doctoral committee.

It is no less important to acknowledge the enormous patience and inspiration I have received from my wife, Dr. Trudy Sable and my daughter, Julia Sable. Trudy's own thesis was part of my inspiration to return to research and contribute to improving the quality of independent, critical thinking in higher education. Both Trudy and Julia inspired me by using and adapting my teaching methods in their own teaching and cheerfully encouraging me each step of the way.

Finally, the foundation for this whole effort can be traced to my spiritual teachers, Chogyam Trungpa Rinpoche; his son, Sakyong Mipham Rinpoche; and Khenpo Tsultrim Gyamsto, all of whom taught me the connection between thought and feeling and the nature of mind itself. If it wasn't for them none if this would have happened. May it benefit all beings.

Chapter 1: Introduction

1.1 Background: the Inspiration for this Dissertation

The inspiration for this dissertation began many years ago when, as a graduating senior at Columbia University in 1968, I was drawn into the polarization between campus radicals and conservatives. Everyone was arguing about the war in Vietnam and university involvement in defense research contracts. I agreed with much of the criticism leveled by the radicals, but I wasn't so sure about the solutions they proposed. I was especially concerned about the willingness of some to incite violence to make their point. When the police came on campus to evict the radicals occupying university buildings there was indeed violence. I stood with the students who wore blue arm bands to signify non-violence was a pre-requisite to resolve conflict. How could such intelligent people on both sides let the bloody scene that ensued happen?

We needed to reflect on what happened and what was happening on a larger scale in society. We made assumptions about each other, argued only for sake of hearing our own point of view, and lost any dispositions for critical thinking. There was very little learning going on. We all needed to slow down and listen before we started screaming and accusing each other of being the devil incarnate. In the end, the shift in public opinion led to withdrawal from the war and university involvement in defense contracts was curtailed, at least temporarily. There were many assessments of what happened, but we never reached the heart of the matter: how to strengthen our abilities to learn from self-reflection and reflective interaction.

From that point forward I became dedicated to understanding how we lose and regain engagement with one another, particularly at the level of critical thinking in a learning environment. While I was in graduate school studying psychology and education at Columbia and NYU, I also became immersed in studying my own mind through

mindfulness meditation and the challenge of listening deeply to others. I looked for the elusive moment when learning about myself turned into learning through social interaction. I discovered the art of inquiry as an essential component of learning about myself and others.

There were many influences on me in the years following graduation from Teachers College at Columbia. Most importantly, I became a close student of Chogyam Trungpa, a Tibetan meditation master (1971, 1984). I practiced in that tradition and learned as much as I could about Buddhism and its application to living in modern society. Then I met my wife-to-be and we began a family in Washington, DC. In the years since then I have probably learned more about human communication from my family than any other source. I worked as a corporate trainer and then as an organizational development consultant. I was profoundly influenced by organizational thinkers such as Chris Argyris (1978, 1982, 1990), Peter Senge (1990, 2004, 2008), and Margaret Wheatley (2006).

After a long absence from academia, I was invited to teach part-time at Saint Mary's University in 2000. I began to notice the impacts that certain reflective classroom practices had for my students in the two undergraduate courses I teach. The practices were all based on simple principles of mindfulness and awareness applied to thinking, writing, listening, inquiry and dialogue. In a sense, the courses were particularly amenable to reflective practices: the first course was *Buddhism* and the second was *Spirituality and Work*. Perhaps the students were also more amenable than most as well; these courses were electives for most of the students taking them.

In 2002, a graduating commerce major wrote on his course evaluation: "I've been in university for four years. This was the first time I had to think." I believe he meant it both ways – it was the first time he was directed to take the time to think things through and it was the first time he felt compelled to think deeply and independently, to think for himself rather than parrot back what he was told. That was the turning point in my decision to do research on the impact of reflective practices on student learning and perhaps contribute something of value to the scholarship of teaching and learning. After

doing some informal research on my own in 2004, I attended a few inspiring conferences to see what other, more experienced, faculty were doing to enhance student learning. I then offered a presentation to faculty on my work and to my surprise it was well received. These cumulative experiences motivated me to enter the Interdisciplinary PhD program at Dalhousie University, an experience that enhanced both my understanding of the phenomena that had captured my interest as well as my ability to inquire into how contemplative practices influence the development of critical thinking dispositions.

1.2 Rationale

1.2.1 The Need to Improve Critical Thinking in Higher Education

Learning is regarded by almost half of undergraduate students as acquiring and being able to reiterate information presented by a teacher or a text (Baxter Magolda, 2004). In other words, these students know what they know on the basis of accepting authority. They do not recognize the degree to which information has been selectively chosen and interpreted, nor do they demonstrate much inclination toward reflection and independent critical thinking. By the time they are in their senior year, most students have been frequently exposed to multiple points of view within and across different domains of knowledge. However, from this experience a significant number of graduating seniors conclude that in the social sciences and humanities "knowledge claims are simply idiosyncratic to the individual," as if all viewpoints are equally valid (King & Kitchner, 1994, p. 225). Many graduates have no explicit criteria or processes for reflective thinking or critical judgment (Casner-Lotto, 2009; Cox, 2009).

Scholars have been researching critical thinking amongst undergraduates for at least three decades. In 1985, Nickerson, Perkins, and Smith documented that as many as 50% of first year university students in North America were unable to deal effectively with problems that require abstract thinking, a pre-requisite for critical thinking. In 1992, Baxter Magolda reported that 68% of students entered university believing that knowledge was something certain or absolute and conceiving their role as learners to be

limited to obtaining knowledge from the instructors -- they saw themselves as passive recipients of knowledge. Follow-up studies showed that during their university years and after graduation many students made little progress toward autonomous reasoning and reasoning in context (Baxter Magolda, 2004; King & Kitchner, 1994).

Recently, based on a sample of more than 2300 students, Arum and Roska (2011) reported at least 45 percent of undergraduates demonstrated "no statistically significant gains in critical thinking, complex reasoning, and writing skills" (p. 36) in the first two years of university, and 36 percent showed no progress in four years. For most students entering university, the greatest shock is discovering that learning is more than collecting information and reiterating it. Yet instructors continue to expect students to think, and think critically. Rote learning, memorizing new information without relating it to prior knowledge or exploring its meaning, continues to dominate much undergraduate thinking and writing, almost regardless of students' chosen fields of study.

In the U.S., improvement of critical thinking in higher education remains in the national spotlight as institutions respond to public concerns that students are failing to exhibit high level reasoning skills (American Council on Education, Business-Higher Education Forum, 2004; National Governors Association Center for Best Practices, Education Policy Division, 2007; U.S. Department of Education, 2006). There has been considerable concern that our institutions of higher learning are not preparing students with sufficient critical thinking skills or the dispositions to apply them (Facione, 2007).

In Canada, we now have the highest percentage of university and college educated people in our history, with over 45% of 25 to 64 year-olds holding a college diploma or university degree (Statistics Canada, 2008). Yet similar concerns are voiced:

> This brings us back to a major problem with the current university system… students are accustomed to being tested on their retention of material, and few have been given adequate training in writing and speaking, especially in undertaking independent analyses. In this sense

> current students have been over-structured in their education, because tests of retention involve a carrot-and-stick approach, conditioning response to the next external stimulus (reward and punishment) rather than cultivating an approach to learning material with critical analysis (Cote & Allahar, 2007).
>
> The problem never, in fact, has been too much content; it has been not enough content absorbed, synthesized, applied and understood…We have to understand what motivates students to learn and adjust how we present content to make it more accessible (Slavin, 2007).

The general challenge for educators remains to develop learning activities that encourage the active use of critical thinking across disciplines in reading, writing and oral communication. However, even when standardized tests indicate students have critical thinking skills, they do not necessarily apply them independently when working on their own writing or problem-solving (Facione, 1990; McKenzie, 1994). Students may not have the underlying *dispositions* to apply their abilities either in the classroom or outside (Baron & Sternberg, 1987; Crooks, 2005; McPeck, 1990; Paul, 1995). Getting students engaged in applying critical thinking skills remains an even deeper challenge (Angelo, 1995).

The scholars referenced in Section 2.0 attribute the lack of critical thinking to the lack of particular underlying dispositions. Facione (1990) called the collection of needed dispositions the "*critical spirit."* Other scholars have developed their own cluster of dispositions and categorical labels including: "major critical thinking dispositions" (Ennis, 1987, 1996); "traits of mind" (Paul, 1990); "critical reflection" (Brookfield, 1995); "reflective skepticism" (McPeck, 1990); and "critical attitude" (Siegel, 1990). The primary research conducted for this dissertation is directed at development of the underlying reflective dispositions that lead students to apply critical thinking, as described in further detail in Section 2.1.

1.2.2 The Consequence of Specialization

Another factor in the rationale for this study is the increasing challenge students and researchers face developing the interdisciplinary perspectives necessary to address the complex problems that reach beyond disciplines (Giannakou, 2006). According to the Organisation for Economic Co-operation and Development (OECD) Ministers of Education, the consequence of the subdivision and increasing compartmentalization of knowledge has been that many researchers pay little attention to developments outside their own niche (Komiyama, 2006). Yet scholars generally agree that

> …the ideal critical thinker is habitually inquisitive, well-informed... open-minded, flexible, fair-minded in evaluation, honest in facing personal biases, prudent in making judgments, willing to reconsider, clear about issues, orderly in complex matters, diligent in seeking relevant information, reasonable in the selection of criteria, focused in inquiry, and persistent in seeking results which are as precise as the subject and the circumstances of inquiry permit (Facione, 1990, p. 2)

The issue is not merely how merely much and how fast new knowledge can be absorbed by students and researchers (Boyer, 1987). In the digital age we do have quicker and easier access to more knowledge. In the Dalhousie University library system alone, there were 10,297 serial journals available in 1988/89, all in print. In 2007/08 there were 40,685 including 36,285 online (Council of Atlantic University Libraries (CAUL) and the Canadian Association of Research Libraries). Learning in the sense of absorbing new information into existing frameworks is necessary, but it will not likely be sufficient to address the complex problems of the 21st century. The deeper implication is that our ability to evaluate new information, our frames of reference for what counts as critical thinking within specific disciplines and the scaffolding we use to build new theories and new models must also be reconsidered more and more often to adapt to rapidly changing conditions (Boix Mansilla & Duraising, 2007).

Can students and researchers take the time to explore multiple perspectives or has that become impractical? Are the ideals of strong critical thinking possible if, out of perceived necessity, one is wearing the blinders of specialization? The limitations of specialization are being addressed in part by another trend: interdisciplinary research (Boix Mansilla & Duraising, 2007; Klein, 1996; Szostak, 2002; Repko, 2008).

1.2.3 Interdisciplinary Research

Interdisciplinary research requires explicit consideration of how to integrate frameworks, definitions and research paradigms (Alvesson & Sköldberg, 2000; Repko, 2008). Interdisciplinarity reinforces the need for critical thinking because researchers integrate disciplines in a direct effort to comprehend complex questions (Lattuca, 2001, 2002). They cannot rely on the frameworks and rubrics of one discipline alone. To follow the ideals laid down by the critical thinking movement in 80's and 90's, interdisciplinary researchers recognize and re-evaluate the assumptions of the prevailing research paradigms in their own disciplines, their own personal assumptions, as well as assumptions made by other researchers (Mackey, 2002). Researchers need to inquire about what matters from multiple points of view and to engage in "fair-minded intellectual deliberations" (Van Gyn & Ford, 2006). What are the phenomena to be studied? How do we build new theory, decide on methods, and integrate results? Finally, interdisciplinary researchers and students in interdisciplinary studies need to make evaluative judgments appropriate to changing conditions. The research described in this thesis demonstrates that these key elements of interdisciplinary thinking and research also require dispositions for critical thinking, and that the presence of these reflective dispositions makes critical thinking stronger (Endres, 1997; Facione, 2007; Paul, 1990).

1.2.4 The Inevitability of Higher Education Online

If specialization produces limitations to the scope of critical thinking and the trend toward interdisciplinary studies increases the need for deeper critical thinking, what happens when learning and research move online (National Research Council, 2002)?

The concern with developing better critical thinking skills and the dispositions to apply them should take into account the growing use of online learning formats. Can online formats be used effectively for this purpose? Students' use of the Internet as a source of information for virtually all types of course research is now standard. Given that general searches on the Internet can generate false, misleading and contradictory claims, the need for critical thinking skills and the disposition to apply them are even greater than when students' research was carefully guided by faculty resource lists (Browne, Freeman, & Williamson, 2000).

Almost ten years ago, a U.S. Congressional committee reported it was a foregone conclusion that the Internet would reshape higher education.

> The question is no longer if the Internet can be used to transform learning in new and powerful ways. The Commission has found that it can. Nor is the question should we invest the time, the energy, and the money necessary to fulfill its promise in defining and shaping new learning opportunity. The Commission believes that we should (Tamburri, 2004).

The Sloan Survey of Online Learning (Allen & Seaman, 2011, 2010), including 2,500 colleges and universities in the U.S., reported over 6.1 million students were taking at least one online course during the fall 2010 term, an increase of 560,000 students over the previous year. "Thirty-one percent of all higher education students now take at least one course online" and the number is growing (Allen & Seaman, 2011, p. 4).

Consequently, it was decided that a secondary objective of the research would be to explore the potential effects of these reflective practices on the dispositions for critical thinking when they are delivered in the same course across different modes of delivery to students participating:

1. in a standard classroom setting; or

2. in an online class in which students review recordings of the class online, interact with each other in pairs or teams on their own schedule, and interact periodically with the instructor e-mail, phone, or office visits.

1.2.5 Beyond Academia

The public concern with improving critical thinking is not driven simply by the desire to advance knowledge for its own sake. The need to improve critical thinking is driven by the requirements of a knowledge-based economy: innovation, efficiency, sustainability, and accountability (Chapnick, 2010). It is not much of leap to suggest that university graduates should be capable of critically examining assumptions about how and why things are done in contemporary organizations. Just the complexity and the pace of change within many workplaces require graduates to be life-long learners capable of adapting to new circumstances (Canadian Council on Learning, 2007). Learning to manage change requires critical thinking at the personal and organizational levels (Mintzberg, 2004; Senge, Smith, Kruschwitz, Laur, & Schely, 2008).

Since the time of Plato's Academy the need for more graduates with the skills and the dispositions to think critically has been with us, but the need has never been greater. We can no longer rely on a society with a small elite leadership who are educated to think critically and guard the welfare of the rest of us. The current world financial crisis is a case in point:

> Markets tend toward efficiency. People respond in pretty straightforward ways to incentives. The invisible hand forms a spontaneous, dynamic order. Economic behavior can be accurately predicted through elegant models.
>
> This view explains a lot, but not the current financial crisis — how so many people could be so stupid, incompetent and self-destructive all at once. The crisis has delivered a blow to classical economics and taken a

> body of psychological work that was at the edge of public policy thought and brought it front and center (Brooks, 2009, A29).

What happened to all those university-educated graduates in the financial sector? Were they capable of thinking critically? Did they ever develop the dispositions to think critically about the consequences of their actions? What "positive intellectual habits" (Van Gyn & Ford, 2006) might have made things different? How well are we preparing graduates to be future leaders of society? Although such questions arise in relation to the financial crisis beginning in 2007-2008, similar questions have been asked before (Bloom, 1987; Boyer, 1987; Piper, Gentile, & Daloz Parks, 2003).

The financial crisis is only one example outside the classroom pointing to the need to improve critical thinking amongst our university graduates. For university students, the cacophony of views about how to address the volatile economy and environmental crises, increasing healthcare costs, growing poverty, and the weakening social safety net cannot become coherent unless they have the skills and dispositions for critical thinking. Ultimately, the need for improving critical thinking extends beyond higher education to citizenship in multi-cultural, democratic societies where the abilities and the dispositions to think critically should permeate across boundaries of privilege and power (Belenky, Clinchy, Goldberger & Tarule, 1986; Brookfield, 2005; Mezirow, 1991).

1.3 Objectives

The primary objective of this research was to determine if a specific set of secular, reflective practices enhance students' abilities to:

1. Reflect, in the sense of becoming more aware of one's own intellectual habits and how they form;
2. Inquire, in the sense of open-minded curiosity, including suspension of one's own assumptions long enough to allow them to be challenged;

3. Generate justifiable, contextual understanding and judgments individually and in dialogic collaboration; and
4. Make explicit the connections between reflection, inquiry, understanding and judgments.

If these abilities are enhanced they will support critical thinking: well-reasoned, evaluative judgments and respect for others, even when the response of others may be silence (Belenky et al., 1986).

The secondary objective of this research was to explore the potential effects of these reflective practices on the dispositions for critical thinking when they are delivered in the same course across different modes of delivery to students participating:

1. in a standard classroom setting; or
2. in an online class in which students review recordings of the class online, interact with each other in pairs or teams on their own schedule, and interact periodically with the instructor e-mail, phone, or office visits.

1.4 The Contributions of this Study

1.4.1 Contribution to the Scholarship of Teaching and Learning

Is there something more we can do in higher education that could amplify the research and promising work on improving critical thinking already underway in many universities (e.g., Abrami, 2008; Facione, Facione & Giancarlo, 2001; Hedburg, 2009)? The contribution of this study is to build on the existing research and 1) develop theory on how the underlying dispositions for critical thinking may be generated, 2) suggest a set of specific classroom practices that exercise and strengthen the underlying dispositions for critical thinking, and 3) measure the impact of the specific classroom practices on the dispositions for critical thinking.

An increasing variety of reflective practices to enhance learning are being used in university classrooms (Driscoll, Sable, & van Esch, 2005; Taylor, 2005; Zajonc, 2003).

However, beyond anecdotal reports of students' increased engagement in the learning process there has been little evidence-based research on the impacts of any of these practices on learning. There has also been little research reporting students' experience of using reflective practices in the classroom. This study begins to address those gaps.

Would research on the student experience of reflective practices identify new perspectives on how to engage students in critical thinking? Is there an emphasis in language and meaning that would be more relevant, motivating and engaging? Do reflective practices enhance students' affective dispositions and develop the characteristics of a reflexive disposition, one that would carry over beyond guided classroom interaction into writing? It is a premise of this study that there is value in students' voices that may help reframe the problematic issue of the development of critical thinking dispositions and revisit the pedagogy intended to support their development.

This researcher conducted a preliminary study before entrance into this doctoral program. The impacts of the same reflective practices used in this study, applied in the classroom, indicated eight out of ten students made gains in their ability to explore questions beyond reiterating information presented in lecture notes. For the students with gains there were increasing incidents over a twelve week period of articulating their own beliefs, values, and theories, acknowledging others' beliefs, values and theories, and consequently enriching their original understanding (Sable, 2010). However, this preliminary work was done on a sample size too small to measure statistical significance (n = 10). Further, the validity of the indicators to measure gains in the underlying dispositions for critical thinking was not established. This doctoral study contributes research on a larger sample size with indicators uniquely derived from students' experience and validated by comparison with expert consensus.

1.4.2 Contribution to Interdisciplinary Methodology: Integrating Insights

Table 1 summarizes a diverse sample of contributions to the study of critical thinking and its underlying dispositions from philosophy, psychology, and education. Researchers in

each discipline have studied a different facet of critical thinking and made important contributions to the field, selecting distinct phenomena to study, distinct research paradigms, and distinct methods. Although they have brought many insights to light, no single approach addresses the improvement of critical thinking comprehensively. The challenge for educators and students remains a complex issue, ripe for interdisciplinary research that aims to integrate insights from different disciplines while respecting their distinctive approaches.

Table 1. Research requiring interdisciplinary integration.

Researcher	Discipline	Phenomena Studied	Research Paradigm	Research Methods
Richard Paul	Philosophy	Quality of arguments and reasoning; dispositions	Critical theory, interpretivist, qualitative research	Deductive and inductive reasoning
John Kabat-Zinn/ Ellen Langer	Experimental Psychology/ Social psychology	Mindfulness (psychophysical measures), cognitive behavior	Post-positivist, quantitative research	Hypothesis testing, experimental designs
Peter Facione	Philosophy/ Educational psychology	Cognitive skills and dispositions	post-positivist, quantitative research	Deductive and inductive reasoning; experimental designs (standardized tests)
William Perry	Developmental Psychology	Sources of knowledge; epistemological statements	Constructivist	Qualitative; Quasi-experimental designs
M. B. Baxter Magolda	Gender Studies	Sources of knowledge; epistemological statements	Feminist	Qualitative; Quasi-experimental designs
Stephen Brookfield	Adult Education	Assumptions and judgements, reasoning	Critical social theory	Mixed methods, critical analysis
Van Gyn and Ford	Scholarship of Teaching and Learning	Cognitive skills and dispositions	Multi-paradigm summary	Expert panel review; secondary research

Dressel and Marcus (1982) captured the challenge of integrating different disciplinary approaches to studying common phenomena through a metaphor of studying a diamond:

> For example, a diamond may be examined in terms of its beauty, its molecular structure, the problem of diamond cutting, the physical principles of light reflection, the business of producing diamonds and controlling the oversupply, or the reasons diamonds and other jewels have come to be valued so highly. The diamond conjures up all these issues. Each, to a considerable extent, could be studied separately, but the last question raised is one that could be answered only by some consideration of all the preceding issues, and then only if those issues had been examined in the context of the broader question (pp. 102-103).

The phenomena studied noted in Table 1 show issues studied separately. The research objectives for this study permit consideration of all these issues. The objectives can apply across all the disciplines of Table 1, establish a common ground, and enrich our understanding of the dispositions for critical thinking. The question that integrates consideration of these issues and guides the research is: what are the impacts of reflective practices on the dispositions for critical thinking?

1.4.3 Contribution to Qualitative Research Methods

This study also contributes to qualitative research methodology. As explained further in Section 3.3.7, the reflective practices used by students in class were also enfolded into the grounded theory methods used in the qualitative research. This is an unorthodox iteration of thematic concepts with the research participants. The process suggests a kind of "action research" approach in the tradition of Chris Argyris (1982) that can be effectively integrated with the constructivist approach to grounded theory (Charmaz, 2006) to provide additional context, as described in the ethnographic method of "thick description" (Geertz, 1983).

1.5 Organization of the Dissertation

Section 1.0 forms the Introduction to this dissertation including the Background, the Rationale for this research, the Objectives, Contributions of this Study, and the Organization of the Dissertation.

Section 2.0 comprises the Literature Review and is divided into three areas: 1) Critical Thinking, 2) Reflective Practices, and 3) Online Learning and Reflexive Dispositions. This chapter presents a critical review of research in each area, aimed at situating this thesis in these three areas and creating the bridge for interdisciplinary research. It presents some alternative views particularly on the dispositions for critical thinking and justifies the position taken.

Section 3.0 describes the Methodology. It describes first the Common Ground necessary for an interdisciplinary study and the rationale for a Mixed Methods Approach. Then the more specific protocols for Phase I Qualitative Research and Phase II Quantitative Research are described. Alternative research methods are considered and the chosen methods are justified.

Section 4.0 presents the Qualitative Research Results. Included in this section is a substantive theory explaining the impact of reflective practices on the dispositions for critical thinking and the basis for indicators used in the quantitative research.

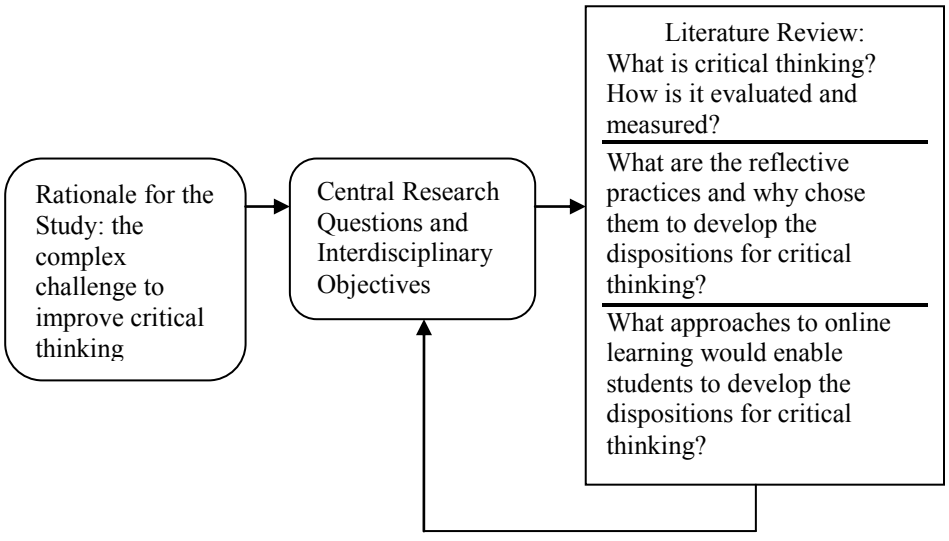
Section 5.0 presents the Quantitative Research: Analysis and Results. How the data were aggregated, the coding scheme used by the research assistants, inter-rater reliability, and validity are discussed. Justification of consensus scoring, and insights regarding confounding variables, and triangulation with final exam scores and end-of-term questionnaires are presented.

Section 6.0 presents the Conclusion. This section includes a summary, a note on the online students, and suggestions for a platform for further research.

Chapter 2: Literature Review

A critical review of different areas of scholarly literature was required to support an interdisciplinary investigation of the impacts of reflective practices on the dispositions for critical thinking. Consequently, the literature review is divided into three sections: 1) Critical Thinking, 2) Reflective Practices, and 3) Online Learning. These three areas of investigation flow from the rationale for this study, the central research questions, and objectives of this study. Figure 1 shows the iterative process of the literature review and refinement of the central research questions and objectives. The thesis must define what is meant by critical thinking, justify and explain the reflective practices as classroom interventions, and, in regard to the secondary objective, explore whether online formats could support reflective practices and the development of the dispositions for critical thinking. The literature in each of these areas is vast. Therefore the literature review was critically selected to be broad, yet focused enough to prepare the ground sufficiently for an interdisciplinary study.

Figure 1. Literature review as an iterative process.



Fortunately, comprehensive survey studies of research on critical thinking have been completed (Brunt, 2005; Facione, 1990; Kurfiss, 1988; Van Gyn & Ford, 2006). This enabled the reviewer to focus on identifying what phenomena required further study and justifying the particular interventions in classroom learning based on existing literature.

2.1 Definitions of Critical Thinking

Although it is not difficult to find passionate and urgent calls to improve students' critical thinking, actual definitions of critical thinking vary. In this section a representative sample of definitions of critical thinking are examined, highlighting what they uniquely emphasize and what dimensions form conceptual common ground. From these points of emphasis and the common ground the review explores the major types of underlying dispositions for critical thinking and sets the stage for the unique contribution of a particular set of reflective practices.

2.1.1 The Delphi Report Model: Cognitive Skills and Dispositions

The critical thinking movement that began in response to widespread criticism of the American educational system resulted in over 2000 academic articles by 1987 aimed at defining and improving critical thinking (Hay, 1987). Shortly after, an expert panel of 46 American and Canadian faculty members from a cross-section of academic disciplines took part in a highly collaborative Delphi method, based on the assumption that a group process definition of critical thinking would be more valid than individual judgments. They achieved significant progress in creating a consensus definition of critical thinking (Facione, 1990, 2007). The consensus conceptualization of critical thinking comprises two dimensions: *cognitive skills* and underlying *dispositions*. The present study was informed in fundamental ways by the results of this collaborative work, published in a 20 page summary as *Critical Thinking: A Statement of Expert Consensus for Purposes of Educational Assessment and Instruction: the Delphi Report, Executive Summary* (Facione, 1990).

2.1.1.1 Cognitive Skills

With respect to cognitive skills, the Delphi Report states: "We understand critical thinking to be purposeful, self-regulatory judgment that results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based" (Facione, 2007, p. 5).

The panel of experts identified six cognitive skills and their requisite sub-skills, shown in Table 2.

Table 2. Consensus list of critical thinking cognitive skills and skills.
(Facione, 1990, p. 6)

Skill	**Sub-skill**
Interpretation	Categorization Decoding significance Clarifying meaning
Analysis	Examining idea Identifying arguments Analyzing arguments
Evaluation	Assessing claims Assessing arguments
Inference	Querying evidence Conjecturing alternatives Drawing conclusions
Explanation	Stating results Justifying procedures Presenting arguments
Self-Regulation	Self-examination Self-correction

This consensus definition of critical thinking provided by the Delphi report serves as a broad definition of critical thinking for this research. The executive summary version of this report elaborates on the cognitive skills and sub-skills. These skills and sub-skills remain the core of classroom assessments of critical thinking today. Yet in establishing

the detailed definition many of the experts acknowledged that the application and practice of the cognitive skills often rested on underlying dispositions. To be useful, the description of critical thinking needs to address the underlying dispositions of the critical thinker.

For example, one of the sub-skills of interpretation is clarifying meaning: to be able to "restate what a person said using different words or expressions while preserving that person's intended meanings" (Facione, 1990, p. 7). To be able to do this, a critical thinker must first be willing to listen to another's point of view carefully and sometimes to be inquisitive enough to clarify that view through inquiry. This willingness, and the attendant openness to alternatives, was recognized by most of the Delphi report experts as having an affective component. An effective critical thinker has the motivation and inclination to openly explore, to be flexible in consideration of alternatives, even to suspend one's initial view long enough to recognize "one's own biases, prejudices, stereotypes, and egocentric or sociocentric tendencies," as noted in Table 3 below. Although other accounts of the cognitive skills continued to develop, much of the academic debate moved on to explore these underlying dispositions (Brookfield, 1995; Paul & Bartlett, 1997; Perkins, Jay, & Tishman, 1993).

2.1.1.2 Dispositions for Critical Thinking

The majority of experts in the Delphi study identified underlying dispositions for critical thinking as part of the conceptualization of critical thinking. These dispositions are considered primarily *affective* as opposed to primarily *cognitive* in that they are the essential motivation for students to apply the cognitive skills and sub-skills. The dispositions, listed in Table 3, become essential to the continuing debate on how critical thinking can be cultivated:

Table 3. Reflective dispositions for critical thinking
(excerpted and re-sequenced from Facione, 1990, p. 13).

- Open-mindedness regarding divergent world views
- Prudence in suspending, making, or altering judgments
- Inquisitiveness with regard to a wide range of issues
- Honesty in facing one's own biases, prejudices, stereotypes, and egocentric or sociocentric tendencies; trust in the processes of reasoned inquiry
- Willingness to reconsider and revise views where honest reflection suggests that change is warranted
- Flexibility in considering alternatives and opinions
- Understanding of the opinions of other people
- Fair-mindedness in appraising reasoning
- Self-confidence in one's own ability to reason
- Concern to become and remain generally well-informed

The Delphi Report leaves no doubt about the importance of these primarily affective dispositions:

> Just as with the cognitive dimension of CT [critical thinking], when conceiving of the education or assessment of critical thinkers, it is important to consider ways of developing materials, pedagogies, and assessment tools that are effective and equitable in their focus on these affective dispositions. The cultivation of these dispositions is particularly important to insure the use of CT skills outside the narrow instructional setting. Persons who have developed these affective dispositions are much more likely to apply their CT skills appropriately in both their personal life and their civic life than are those who have mastered the skills but are not disposed to use them (Facione, 1990, p. 13).

2.1.1.3 Dissenting Views

Respected dissenting views emerged in response to inclusion of affective variables in the conceptualization of critical thinking. Almost a third of the Delphi group supported the view that "critical thinking should be defined as a skilled set of cognitive processes" (Fisher & Scriven, 1997, p. 81). Fisher and Scriven claimed that Facione and the majority of the Delphi group were defining the "critical thinker" and not "critical

thinking." The Delphi model definition was too inclusive and turned the evaluation of critical thinking into "character assessment." The model was too difficult to measure and without measurement teachers cannot know if they are teaching effectively. Fisher (2001) proposed his own model emphasizing more measurable reasoning skills and decision-making.

In response, Facione proceeded to develop two inventories, the California Critical Thinking Skills Test and the California Critical Thinking Dispositions Inventory, but their correlation has been questioned (Leppa, 1997). With respect to measurement, the complexity of measuring critical thinking that takes into account the underlying dispositions does remain a challenge. Other standardized tests dedicated primarily to cognitive skill testing (taking Fisher's perspective) have also been criticized for low reliability, validity issues, and gender bias (U.S. Department of Education, 2006). In this study, the research aims to contribute to the development of measurable indicators that reflect expert definitions (e.g., Facione, 1990) and student's experience.

The basic question then remains: can we sensibly divorce critical thinking cognitive skills from the affective domain? The issue is a "straw man." In his own model, Fisher (2001) emphasized looking carefully at assumptions, others' as well as our own, and not getting caught in the unreasonable preservation of existing beliefs and confirmation bias. Looking carefully requires inquisitiveness, willingness, and openness to being challenged. These dispositions, as well as the concern for truth, are all desires, all affective dispositions whether they are explicitly labeled as such or not.

Van Gelder (2005) summarized the key lessons from cognitive science in teaching critical thinking and also made no explicit mention of the affective domain. Yet he summarized the ideal critical thinker as someone who:

- puts extra effort into searching for and attending to evidence that contradicts what she currently believes;
- when "weighing up" the arguments for and against, gives some "extra credit" for those arguments that go against her position; and
- cultivates a willingness to change her mind when the evidence starts mounting against her (p. 46).

Either explicitly or implicitly, critical thinking cannot be separated from the critical thinker, a thinking and feeling being. That would be an example of "Descartes error." Antonio Damasio, the noted neurologist and author of *Descartes Error: Emotion, Reason and the Human Brain* (1994a), said

> ..the rationality required for humans to prevail and endure should be informed by the emotion and feeling that stem from the core of every one of us…my research has persuaded me that emotion is integral to the process of reasoning….I am saying only that new neurological evidence suggests that no emotion at all is an even greater problem. Emotion may well be the support system without which the edifice of reason cannot function properly and may even collapse (Damasio, 1994b, p. 144).

The essential role of affect in the development of cognitive skills and critical thinking received further empirical support before and since Damasio dramatically counterbalanced the view that the bastion of logic should not be contaminated by affect (Belenky, et al., 1986; Davidson, 2012; Forgas, 2006, 2008; Goleman, 1997, 2003). In this study, reflective practices are therefore intended to bring awareness of affective experience into the process of critical thinking.

2.1.2 Exploring the Dispositions

As introduced in Section 1.2.1, Facione called this collection of dispositions the "*critical spirit*" (1990, p. 11), but many scholars of critical thinking developed their own clusters of underlying dispositions independently, for example: "major critical thinking

dispositions" (Ennis, 1996, p. 368); "traits of mind" (Paul, 1990, p. 54); "reflective skepticism" (McPeck, 1990, p. 42); "critical reflection" (Brookfield, 1995, pp. 2-15); and "critical attitude" (Siegel, 1990, p. 79). These terms overlap and each is elaborated in more detail below to provide depth and distinctions relevant to the choice of reflective practices in this study.

2.1.2.1 Caring for Truth, Honesty, and Others' Points of View

Robert H. Ennis is credited as the scholar who popularized the general concept of critical thinking in the Harvard Educational Review in 1962 (Ennis, 1962). He was one of the expert panelists participating in the Delphi Report (Facione, 1990) noted above. Ennis (1996) states simply that "Critical thinking is a process, the goal of which is to make reasonable decisions about what to believe and what to do" (p. xvii). Ennis begins his own six element approach to critical thinking (FRISCO: Focus, Reasons, Inference, Situation, Clarity, and Overview) with one or more general questions such as "What is going on here?", "What is this all about?", "What is this person trying to prove?" and "What am I trying to prove?" Such questions focus the student on the present situation, the context, and underlying assumptions. The remaining elements of Ennis' approach follow naturally from these questions.

Ennis strongly supports the notion that the application of critical thinking rests on a cluster of dispositions. Ennis expands on his six elements with three "major critical thinking dispositions" (p. 368). Ideally, critical thinkers:

1) care that their beliefs are true and their decisions are justified, including considering points of view other than their own;
2) represent a position honestly and clearly (theirs as well as others') including being reflectively aware of their own basic beliefs; and
3) care about the dignity and worth of every person, including listening to and discovering others' views and reasons.

Without these dispositions students may be capable of critical thinking, but they do not necessarily apply it. They do not become critical thinkers in the sense that it actively

shapes their beliefs, judgments, and actions. The critical thinker is motivated by caring about truth, being aware of their own basic beliefs, and caring enough about others to listen and discover their views and reasons. Ennis clearly acknowledges the entwined relationship of the cognitive and affective domains. He also explicitly calls our attention to "awareness of our own basic beliefs." This looking inward as well as outward is further elaborated by other experts.

2.1.2.2 Developing Strong vs. Weak Critical Thinking

Richard Paul (1990), another of the expert panelists participating in the Delphi Report, defines critical thinking with a crucial distinction:

> Critical thinking is disciplined, self-directed thinking which exemplifies the perfections of thinking appropriate to a particular mode or domain of thinking. It comes in two forms. If thinking is disciplined to serve the interests of a particular individual or group, to the exclusion of other relevant persons or groups, I call it sophistic or weak sense critical thinking. If the thinking is disciplined to take into account the interests of diverse persons or groups, I call it fair-minded or strong sense critical thinking… (p. 33)

If critical thinking is co-opted by an individual or group, it may be argued that it is weak or not critical thinking at all. Paul (1990) identifies and counsels against the possible one-sided use of critical thinking skills. He maintains that critical thinking in the "strong sense" comes with interdependent dispositions or "special traits of mind." As we come to think critically in the strong sense we develop these special traits of mind: intellectual humility, intellectual courage, intellectual empathy, intellectual integrity, intellectual perseverance, confidence in reason, and an intellectual sense of justice (Paul, 1990). A sophistic or weak sense critical thinker develops these traits only in a restricted way, consistent with egocentric and sociocentric commitments. These traits are demonstrated in the strong sense by the following:

> Willingness to entertain all viewpoints sympathetically and to assess them with the same intellectual standards, without reference to one's feelings or vested interests, or the feelings or vested interests of one's friends, community or nation. (Paul, 1990, p. 54)

Paul notes the tendency for the human mind to "believe what it wants to believe" and not do the hard work of critical thinking. Therefore his sense of strong critical thinking requires these dispositions as a counterbalance to the "confirmation bias" prevalent in many students (Langer, 1989; Scriven, 1976; Stanovich & West, 1997; Wason, 1960). Paul argues extensively that critical thinking is therefore far more than argument skills; it is developing an underlying *attitude* committed to mulitlogical investigation and suspending judgment in the thinking process. It includes the humility to recognize that "you don't know," at least with certainty, and the confidence to admit it. It includes a kind of morality "to feel there is something wrong in acting as if you know when you don't" (p. iii).

Like Ennis, Paul also strongly acknowledges the relationship of the affective and cognitive domains, highlighting personal, moral values and empathy as part of the learning process in strong critical thinking. Paul also calls attention to suspending judgment in the thinking process – something perhaps implied by other experts, but here made explicit.

2.1.2.3 Examining Assumptions

According to Ennis, Paul and others (Argyris, 1982; Endres, 1997; McPeck, 1990), critical thinking dispositions defend against a fundamental weakness in people's reasoning: their tendency to maintain existing beliefs based on undefended bias. Assumptions form the internal context from which we are guided to seek or explore certain data and ignore other data. McPeck's cluster of dispositions (1990), called "reflective skepticism," is what we engage in when we have reason to suspect that normal procedures, or beliefs, leave something to be desired: "…on such occasions it is right and proper to start questioning some of our fundamental assumptions, or beliefs, and to try alternatives…" (p. 42).

Assumptions need to be made explicit and reasonably supported. If we take assumptions to mean undefended starting points in an argument (Ennis, 1996) then the examination of assumptions should be an imperative in all critical thinking.

With respect to becoming aware of and examining assumptions, Stephen Brookfield holds that the most distinctive feature of the reflective process in critical thinking is its focus on hunting assumptions (Brookfield, 1995). Brookfield describes the deepest layer of assumptions as "paradigmatic" axioms we use to order the world into categories. For example, Brookfield discloses that at different stages of his life he firmly believed "that good adult educational processes are inherently democratic," and "that education always has a political dimension." He stepped back (reflected), observed outcomes produced from these axioms, listened carefully and without bias to students and other teachers, inquired, and engaged in dialogues. Over time he developed new contextual understanding that relaxed the dogmatic, axiomatic aspects of his beliefs. His reflective process has served him well as a teacher and teacher educator. He became able to model for students what he calls *critical reflection* by looking inward and outward, and he encourages teachers to model this kind of reflective disposition for students as well.

Brookfield exemplifies the humility necessary to explore one's own assumptions and deepens the understanding of critical thinking as a reflective process. In addition to the common ground of having an affective component and motivating students to apply cognitive skills, all underlying dispositions for critical thinking can be described as *reflective processes* in the sense that "the process of reflection is the core difference between whether a person repeats the same experience several times, becoming proficient in one behavior [whether it is technically correct or effective or not] or learns from experience in a way that he or she is cognitively or affectively changed" (Boyd, 1983, p. 100).

2.1.2.4 Reflective and Reflexive Dispositions

Van Gyn and Ford (2006) delve further into the description of dispositions in a multi-disciplinary collaboration to explore the nature of critical thinking. While supporting the Delphi Report and the other models noted above, they elaborated on how critical thinking manifests within and across academic disciplines and then reformed their definition of critical thinking. Their initial definition describes critical thinking as

> a quality of thinking that is characterized by self-regulated deliberations on a challenge situation or task that involve exploring and generating alternatives, and making evaluative judgments. These judgments are based on criteria, which provide justification for that conclusion, and are applied to meaning, relational, empirical, or value claims (p. 11).

Van Gyn and Ford then updated their definition of critical thinking with new emphasis on what they term a *reflexive disposition*: "a quality of thinking that is characterized by a reflexive disposition that guides the mindful application of intellectual habits and intellectual resources during intellectual deliberations towards an evaluative judgment on a challenge, situation or task" (Van Gyn, 2007, p. 13). Based on their collaborative inquiry, the context for critical thinking is a model characterized by three dimensions: intellectual deliberations, intellectual habits and a reflexive disposition.

Intellectual deliberations include identifying the task for inquiry (focus), interpreting background information and other evidence, applying relevant thinking strategies, making judgments based on relevant criteria, and constructing justification for judgments. Intellectual deliberations correspond well to the core critical thinking skills and sub-skills in the Delphi report as well as the other definitions of critical thinking noted in this section.

Intellectual habits include intellectual curiosity, respect for truth and reason, fair and open mindedness, tolerance for ambiguity and complexity, courage to take a position, and willingness to engage in collaborative inquiry. These intellectual habits correspond well

with the general dispositions articulated in the Delphi report as well as the other sets of dispositions for critical thinking noted earlier in this section. Although they are identified by Van Gyn and Ford as "intellectual habits" they all have an affective component and could be equally described as attitudes that motivate application of intellectual deliberations.

A *reflexive disposition* is a particular type of reflective process that warrants special attention. Van Gyn and Ford (2006) distinguish a reflexive disposition from other reflective processes:

> …a third dimension, a reflexive disposition, is needed for students to fully engage in critical thinking. This dimension includes the self-regulated capability to… reflect on the strengths and limitations of intellectual deliberations and the use of intellectual habits in making a judgment. A reflexive disposition involves stepping back or "decentring" (Habermas, 1990) from personal requirements, disciplinary or social norms, and personal and disciplinary assumptions. Endres (1997) states that nearly all critical thinking theorists, either explicitly or implicitly, include this dimension in their models (Van Gyn & Ford, p. 30).

Endres' claim is supported by Siegel (1990), who goes so far as to say critical thinkers must be disinterested inquirers, "ignoring" (or at least suspending) their personal needs in a given situation. Seibert and Daudelin (1990) refer to "proactive" reflection: "the process of stepping back from an experience to carefully and persistently ponder its meaning to the self" (p. xvii). Paul (1990) refers to the capability that enables the critical thinker to "see things as they are, beyond egocentric and ethnocentric thinking, and beyond mere habitual thinking (p.65)." In other words, novel patterns then emerge, new relationships not bound by conventional, habitual patterns of seeing, when one is primarily open to the present moment -- being mindful.

Educator Arthur Zajonc describes this fresh seeing as "*aperçu*," or "insight" (Seamon & Zajonc, 1998; Zajonc, 2008). Philosopher David Bohm (1996) called this "seeing from the whole," in a larger or at least a different context, rather than seeing purely from the habitual patterns of intellectual deliberation. Bohm (1996) and Varela and Shear (1999) argue forcefully that the most accurate term to describe the "stepping back" process is "suspending" because nothing is actually lost from memory. Egocentric and habitual patterns are accessible, our whole knowledge base remains accessible, but some or all of it may now appear in a new context. One consciously suspends habitual reference points from controlling what one believes or decides in order to explore the current situation openly. In simple terms, one "takes a fresh look."

Reflexivity in thinking can be understood in the sense of "bending back on itself" (Steier, 1991, p. 2). A *reflexive disposition* is a disposition that opens awareness and permits attention both ways, outwardly and inwardly. Thus, the inquisitiveness, trust, honesty, flexibility, and fair-mindedness described by the experts in the Delphi Report can be directed not only externally but internally to take into account all of one's experience. Trust in one's own abilities, honesty with oneself about own biases, prejudices, stereotypes, and egocentric or sociocentric tendencies and so on, are as important as outer-directed inquisitiveness about others' views and external conditions. Charmaz (2006) notes "[*W]hat* we define as data and *how* we look at them matters because these acts shape what we can see and learn" (italics in the original) (p. 132).

A reflexive disposition is also implied in the work on reflective thinking by Schön (1987) and Beauchamp (2006). Both make a distinction between *reflection-on-action* and *reflection-in-action*. These two interpretations of more general reflective thinking are seen as a continuum, rather than an absolute either/or state of mind.

Reflection-on-action is the sense of looking back at what has already occurred; one is to some degree removed in time from what has happened. Reflection-in-action is open attention to a present situation, combined with tacit knowledge, or unarticulated knowledge. Although the thinker is focused on the present, it does not preclude thoughts

that arise based on habitual patterns or memory. They may arise, but they are not dominant, they are in suspension (Varela & Shear, 1999). This tacit or unarticulated knowledge can refer to experience of a professional – the diplomat, the carpenter, the nurse – or just someone who has extensive experience in a particular domain but can remain acutely aware of each situation as unique. It can also refer to "intuitive knowing" (Castillo, 2002; Polanyi, 1967; Schön, 1987). The main theme in all these versions is that theories one may hold consciously are not as dominant as theory that is being developed (or reformed) in action. There is a kind of mental flexibility going on, a curiosity and a clarity that is the signal feature of a reflexive disposition. These distinguishing characteristics of a reflexive disposition also describe mindfulness and its extension into the classroom-based reflective practices discussed in Section 2.2.

2.1.3 Developmental Approaches to Critical Thinking

Before turning to the classroom reflective practices themselves, it is valuable to situate the skills and dispositions for critical thinking in a developmental model in order to understand critical thinking as students experience it. In general, this perspective proposes stages and levels of thinking that follow in sequence. Based on a series of open-ended interviews Perry (1970) developed a scheme of nine sequential "positions" from which students view their world. (Perry terms them "positions" because he did not want to claim rigid, formal development stages. Instead, the positions are presented in a sequence with some flexibility for partial progression.)

Perry's scheme was condensed by later researchers but the basic scheme has influenced and informed researchers and curriculum developers since the original research (Baxter Magolda, 1992; Belenky et al., 1986; Elder, 2008; 1986; Kurfiss, 1988). Four phases of development that emerge from this research have implications for discussion of a reflexive disposition and reflective practices (Belenky et al., 1986):

1) Dualism/received knowledge

Learning is regarded by students as acquiring and being able to reiterate information presented by a teacher or a text. What has been "learned" is either correct or it is not

(dualism). Students "know" on the epistemological basis of authority. They do not recognize the degree to which information has been selectively chosen and interpreted.

2) Multiplicity/subjective knowledge

Students gradually acknowledge the existence of multiple views that may have varying degrees of validity. They recognize the value of entertaining doubt, uncertainty, and unknowns, but develop the position that one "opinion" is as good as another, "nobody really knows." Bloom (1987) characterized this as the "openness of indifference" and maintained that it has become the dominant mode of thinking in American higher education. However, in this context it is a position on a progressive path to critical thinking.

3) Relativism/procedural knowledge

Students begin to recognize opinions differ in quality. The value of reasoning and evidence appears in their arguments and they begin to appreciate the procedures and intellectual operations taught in various disciplines. What counts as "true" begins to depend on context and relative reference points. Here the cognitive skills of critical thinking are emerging. However, researchers acknowledge that learning to reason with traditional academic objectivity as the goal may not be applied outside of the particular context it has been learned in. In other words, the students are not yet critical thinkers and in different contexts may take other developmental positions. Again, the notion that these are inviolable developmental stages is not claimed by developmental researchers.

4) Commitment in relativism/constructed knowledge (reflective judgment)

Belenky et al. (1986) described this phase as "integrating knowledge learned from others with the 'inner truth' of experience and personal reflection" (p. 101). Students at this stage begin to understand the knower and known are intimately intertwined and exist in a cultural context. Kurfiss (1988) regards constructed knowledge as "the interplay of rationality, caring, and commitment that is the ultimate goal of education" (p. 56). Relativism and mulitlogical arguments enrich understanding rather than prove absolute right or wrong. Scientific models can be seen as simplifications of complex truth, created

so that people can begin to work effectively with their situation or problem. The ground for appreciating critical theory is established. This final stage is called "reflective judgment."

In this four-fold frame of reference, resistance to learning critical thinking arises from one of the two basic epistemological belief systems: dualism/received knowledge and multiplicity/subjective knowledge. Progress is achieved when students are engaged, ask questions, and think about the course materials until they understand well-established knowledge and competing approaches. This becomes more significant when students develop their own processes of active inquiry, which they can employ in new situations, beyond the bounds of our particular classes, indeed, beyond their time as students (Taylor, 2005).

The developmental model reveals the experiential path to the integration of knowledge learned from others with personal experience. It supports instructors seeking to engage students progressively to help them find their own voice, communicate, and reflect on the quality of arguments and multiple perspectives. Yet there seems to be a "black box" between the stages of dualism/received knowledge and multiplicity/subjective knowledge. Talking students through the transition is necessary, and progressive, student-centered approaches help, but they may not be sufficient or sustainable in many situations. What specific kinds of learning experiences enable students to see a situation in the present, beyond habitual pattern? What would stabilize those moments of open awareness? Mindfulness and reflective practices can be applied to address these questions.

2.1.4 Summary

In this section the definition of critical thinking was reviewed with particular attention to the underlying affective dispositions. All the affective dispositions for critical thinking are considered "reflective" dispositions, in the sense that Schön described reflective thinking (1987). They encourage looking back and reconsidering what has occurred (reflection-on-action) and they encourage mindfulness, being aware of the present,

suspending intellectual habits and looking freshly at the present (reflection-in-action). This later quality of mindfulness, including the willingness to suspend judgment, further defines a particular kind of reflective disposition: a *reflexive* disposition. A *reflexive disposition* is a disposition that opens awareness and permits attention to present experience that may be directed outwardly and inwardly.

The working definition of critical thinking for this study is aligned with the Delphi Model ("...purposeful, self-regulatory judgment that results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based" (Facione, 2007, p. 5) and elaborated to include "a quality of thinking that is characterized by a reflexive disposition that guides the mindful application of intellectual habits and intellectual resources during intellectual deliberations" (van Gyn, 2007, p.13).

Some attention was also given to the evaluation and measurement of critical thinking. In philosophy and the humanities, teachers and scholars have traditionally focused on the quality of arguments and whether they meet the criteria of specific definitions. In psychology, researchers have focused on measurement of more discrete cognitive skills and development of standardized tests. Other psychologists have added developmental context and proposed a sequence of positions that students may move through. The methodology of this study combines the qualitative investigation of students' experience with specific reflective practices and uses that as a basis for expanded definition of indicators for reflective dispositions for critical thinking. The indicators are then applied to quantitative analysis of the impacts of the reflective practices.

2.2 The Reflective Practices

2.2.1 Overview

The term "reflective practices" is used in this study as an umbrella term to designate a particular set of learning activities. These particular practices were chosen because it is

hypothesized that they create the conditions for students to establish and strengthen the dispositions for critical thinking. In this context, the purpose of these practices is to support development of well reasoned, evaluative judgments and respect for others, even when others' response may be silence (Belenky et al., 1986). The choices are justified based on the research summarized in this section related to mindfulness meditation, structured contemplation, journal writing, mindful listening, reflective inquiry, and dialogue. The practices and their relationships to critical thinking are elaborated in Table 4 (below). The instructions for doing the reflective practices are in Appendix A.

Table 4. Critical thinking and reflective practices based on mindfulness.

Core Critical Thinking (CT) **Skills** (based on Facione (2007, 1990)	**Related Dispositions for CT** (based on Facione (2007, 1990)	**Related Reflective Practices** (see Appendix A)
Interpretation: categorizing data, decoding significance, clarifying meaning; recognizing and avoiding the possible one-sided use of critical thinking skills	Open-mindedness, flexibility in considering alternatives and opinions	Structured reflection; mindfulness and journal writing
Analysis: examining ideas, identifying arguments, analyzing arguments	Belief in arguments based on evidential, conceptual, methodological, criteriological, or contextual considerations	Paired interaction: reading, listening, paraphrasing
Evaluation: Assessing claims, assessing arguments	Fair-mindedness in appraising reasoning	Dialogue and facilitated discussion
Inference: Querying evidence, conjecturing alternatives, drawing conclusions	Concern to become and remain generally well-informed, general inquisitiveness; trust in the process of reasoned inquiry	Reflective inquiry
Explanation: stating results, justifying procedures, presenting arguments	Willingness to articulate evidential, conceptual, methodological, criteriological, or contextual considerations	Revision of journal writing; dialogue and facilitated discussion
Self-regulation; self-examination, self-correction (pervades all CT skills)	Inclination toward truth seeking; believing truth emerges from thinking strategies; willingness to apply heuristics, using multi-logical perspectives	Mindfulness (mindfulness pervades all the above reflective practices)

It is further hypothesized that the reflective practices aimed at developing reflective dispositions, and a reflexive disposition in particular, improve critical thinking in general.

Taken together, the reflective practices encourage individual and interactive examination of assumptions and the metacognitive abilities (thinking about one's thinking) that are essential to critical thinking (Kuhn, 2000; Nelson, 1996; Nelson & Rey, 2000).

2.2.2 Previous Research on the Reflective Practices

In this section each of the reflective practices is described with reference to the related research literature and its relationship to development of reflective dispositions for critical thinking.

2.2.2.1 Mindfulness Meditation

> The faculty of voluntarily bringing back a wandering attention, over and over again, is the very root of judgment, character, and will. An education which should improve this faculty would be the education par excellence. But it is easier to define this ideal than to give practical directions for bringing it about. (James, 2007, p. 454).

William James, the pioneering American psychologist and philosopher, offered this observation around the turn of the 20th century. Fortunately, practical directions for bringing back "wandering attention" are now available (Kabat-Zinn, 2005; Mipham, 2003). (See Appendix B.) Over the past several decades, a growing body of empirical research has reported the positive effects of mindfulness meditation and related contemplative practices. The work began in the fields of health and stress management (Beddoe & Murphy, 2004; Benson, 1976, 1980; Kabat-Zinn, 2005; Santorelli, 1999), expanded to psychology (Davidson, 2010; Germer, Siegel, & Fulton, 2005; Goleman, 1997; Langer, 1989, 2000, 2005) and also focused on education (Buchmann, 1988; Shapiro, Brown & Astin, 2008; Zajonc, 2003, 2008). Networks of educators and researchers now exist for promoting and researching the impact of mindfulness meditation and related practices in higher education (e.g., The Association for Contemplative Mind in Higher Education and the Mindfulness in Education network).

Mindfulness meditation is training one's attention to be focused in the present yet open (Kabat-Zinn, 2005; Langer, 1989). An increasingly common approach to contemplative education begins with some form of mindfulness meditation in class (Zajonc, 2003). Mindfulness meditation in the context of education is a complement to discursive analysis, an unbiased investigation of experience – qualities, images, feelings, thoughts – without rejecting, fixating on or creating a storyline. The intention is be curious about whatever arises but with suspended judgment, key ingredients in preparation for independent, critical thinking. One effect of the practice is to gradually become familiar with the field in which experience arises, the clear inner space of the mind itself. Equally important, the mindfulness practitioner becomes familiar with how the mind functions: with projections, filters, and habitual patterns mediating between direct experiences and judgment (Argyris & Schön, 1978; Kabat-Zinn, 2005).

In basic mindfulness meditation there is no specific situation to focus on, only the natural breathing, the sense of body, and whatever arises without provocation. The insights come as the mind settles and notices what is not usually noticed. These insights that may seem to arise incidentally provide perspectives that may remain after the meditation session.

Relationship of Mindfulness Meditation to Reflective Dispositions

Mindfulness meditation practice is training by noticing whatever arises in consciousness and gently returning attention to the breath without judgment. Langer (1989) further describes the outcomes of mindfulness as: "(1) creation of new categories; (2) openness to new information; and (3) awareness of more than one perspective" (p. 62). These outcomes are the same as a reflexive disposition: to "take a fresh look" while suspending judgment and thus open the door to new insight. Langer's work is further supported by Shapiro et al. (2008), who summarized empirical studies showing significant relationships between mindfulness meditation and "self-knowledge," including the dispositions of facing one's own biases, habitual patterns of thinking, egocentric or sociocentric tendencies, and maintaining openness to divergent points of view and willingness to reconsider and revise views where honest reflection suggests that change is warranted (Paul, 1990).

Mindfulness meditation is the foundation for the reflective practices that follow. It supports the basic "stepping back or 'decentring' from personal requirements, disciplinary or social norms, and personal and disciplinary assumptions" described by Habermas (1990) and Van Gyn and Ford (2006). Each of the succeeding practices is an extension or an elaboration of mindfulness.

At the same time, Nosich (1990) points out that ordinarily, "suspending judgment… is an awkward, uncomfortable, almost unnatural response. It is far more immediately satisfying to plump down for some answer, however unexamined; it is more gratifying to be unreasonable" (p. iii). Indeed, not all students gain the advantages of mindfulness because they cannot manage the discipline of regular practice. Classroom meditation sessions are limited by necessity to short periods. For many students more structured contemplation exercises with specific content to focus their attention are more engaging than mindfulness meditation using the breath alone.

2.2.2.2 Structured Contemplation: Holding the Question, an Image, or a Statement

While the foundation practice for training attention and being present is mindfulness meditation, other structured contemplation exercises also train the attention. Mindfulness meditation has no intended object of thought other than the experience of breathing. In contrast, structured contemplation is distinctly focused on a particular question, statement or image. As described by Buchmann (1988), Chickering, Dalton and Stamm (2006), Seamon and Zajonc (1998) and Zajonc (2008), the learning objective of structured contemplation is to take the student's awareness past data noticed only from habitual patterns of thinking to fresh, direct experience.

There are two steps to the structured reflection practice referred to in Appendix A: 1) holding the object of contemplation and 2) deepening understanding. First, one trains the attention on the object of contemplation *without analyzing or manipulating it in any way*, following the classroom practices described by Seamon and Zajonc (1998) and Zajonc (2008). The object of contemplation can be a question, an image, or a statement. The

contemplation can be in virtually any dimension of thought: social, ethical, scientific, political, or spiritual.

Relationship of Holding the Question to Reflective Dispositions

The purpose of holding the object is to develop a sense of discipline free from distraction and less confined to habitual patterns of perception and conceptualization. As intellectual deliberations are noticed, students are instructed not to become committed too quickly, but to remain open and come back to the question as the anchor to being present. Structured contemplation supports focused attention, being able to suspend judgment, and looking more deeply at the questions.

2.2.2.3 Structured Contemplation: Deepening Understanding

Following Seamon and Zajonc (1998) and Gendlin (1978), in the second step of contemplation one begins to open the attention beyond the questions themselves and allow deeper awareness to emerge. Students open to the meaning that the contemplation has for them. Open-ended contemplation questions require more than recall of information. The interim ambiguity of an open-ended question is what permits students to develop meaning from current context (Frisson, 2009). In this case, the student is directed to the present moment, not only to memory.

Rather than remain entirely intellectual, one may also notice an internal "felt sense" or perceive something previously unnoticed or unformed in words at first (Gendlin, 2000, 1978; Jaison, 2007). This introspective side of contemplation has also been termed *focusing* by Gendlin. "Focusing is spending time sensing something as yet undefined that comes 'in one's body' in connection with some specific problem" (Gendlin, 2000, p. 11). In this application the specific "problem" is to understand the object of contemplation, the open-ended question.

By slowing down the thinking process, the student opens the mental space for fresh perspective to emerge. New dimensions of meaning can appear to come from either side: something new about the questions may emerge or something new inside oneself in

response to the questions may emerge (Gendlin, 1978; Gendlin & Levin, 1997). In other words, *something new may appear to emerge within the perceived or something new may emerge in the perceiver, or both.*

Relationship of Deepening Understanding to Reflexive Dispositions

The deeper awareness encouraged by exploring the felt sense relates first to the cognitive skill of self-regulation, or metacognition (Brown, 1987; Flavell, 1976, 1979; Garner, 1989; Nickerson, Perkins, & Smith, 1985). This "monitoring of one's thinking" is extended to the affective domain and the subtle or as yet unarticulated meanings of the contemplation question, image, or statement can be brought to conscious attention.

From structured contemplation exercises students begin to find their own view that may be distinct from what they imagine the instructor wants to hear. As they articulate what was not articulated before they "find their own voice" (Belenky et al., 1986). This kind of reflection corresponds in some respects to Schön's (1983) distinction between *reflection-on-action* and *reflection-in-action*. Rather than looking back and relying on memory (reflection-on-action), here the student is oriented and open to a fresh look at present experience (reflection-in-action). Students develop fresh language to describe what they experience. Rather than simply reiterate lecture or resource material, they integrate given material their own experience.

What students may gain from the two steps of structured contemplation is encouragement and familiarity with the Delphi model dispositions *open-mindedness*, *flexibility in considering alternatives and opinions, "honesty in facing one's own biases, prejudices, stereotypes, egocentric or sociocentric tendencies"(Facione, 1990, p. 13)*, and *prudence in suspending, making or altering judgments*. In turn, these dispositions support the self-regulatory judgments in interpretation and inference, core components of critical thinking skills as described by Endres (1997).

2.2.2.4 Journals

Immediately after structured contemplation students are asked to articulate their response to the contemplation questions in writing. The purpose is in part to continue the introspective inquiry and find the words that best convey what they themselves really think. It is more of a challenge to write than to think one's response and the intention here is to add a sense of commitment to their responses (Goldberg, 1986). Students are given the time to write their journal entries in class and are advised to write a few paragraphs, but not more than a page. Students are also asked to post what they write after class (via course management software) so that the instructor can see how students are thinking before the next class. In general, such narrative journals have become a common pedagogical tool to encourage students to reflect on questions, "explore reactions, discuss relationships, and connect new meaning to past experiences" (Brunt, 2005, p. 257).

Kennison and Misselwitz (2002) and Niedringhaus (2001) developed evaluation criteria for reflective writing and reported positive changes in critical thinking skills after appropriate feedback. The instructor offers feedback that strengthens a reflexive disposition. Lee (2004) reports journal writing helps to build confidence in one's own ability to reason, one of the key reflective dispositions.

Relationship of Journals to Reflective Dispositions

With respect to critical thinking skills, the core component practiced in writing journal entries is the personal, articulate explanation of what the student has learned and experienced from the contemplation process to this point. Evidential, conceptual, methodological, criteriological, and contextual considerations may come into play (Driscoll et al., 2005). Along with the outcomes described above, journal writing is intended to build two key reflexive dispositions: *confidence in one's own ability to reason* and *inquisitiveness.* Journal writing experience may contribute directly to the cognitive skill identified as *explanation*.

2.2.2.5 Journal Reading in Pairs

The next stages of the reflective learning process move students from introspection to reflective interaction. Ordinarily, reflective practices are regarded as individual and introspective. However, many of the same principles found in individual mindfulness practice can be applied to interactive activities: listening, inquiry and dialogue (Sable, 2010). From this point forward students construct what they know as a collaborative process. This occurs between the students in pairs and in later steps with the whole class led by the instructor. These interactive processes are well supported as effective pedagogical methods in the research literature on the social construction of meaning (Belenky et al, 1986; Bruffee, 1999; Gergen, 1999, 2001; Palinscar, 1998).

In particular, students may notice that meaning derived from shared experience in the present is personally relevant. The interaction may help them understand themselves, the subject matter and each other. It may help establish relationships of mutual recognition, respect for each other's point of view and trust that their own point of view may matter to someone else. Shared meaning actively derived from present experience gives life to the course content and naturally increases engagement with the whole learning process. It may give the students a sense of connection to each other and even shift some of their underlying assumptions and paradigms for what higher education is about. Reflective interaction may shift the initial assumption that learning is merely reiterating information provided by authority to an appreciation of how knowledge can be socially constructed and transmitted. Ultimately, reflective interaction is aimed at establishing an atmosphere of respect and dialogue where students themselves can apply independent critical thinking. The challenge of reflective interaction begins with reading out loud and listening.

2.2.2.6 Reading, Listening and Reflecting Back (Paraphrasing)

First, the listener is instructed to listen, absorb what is said, and to notice any tendency to compare with his or her own journal and make judgments about what is said by the reader. Langer (1989) calls this tendency a "premature cognitive commitment" (p. 19). By simply calling attention to this possible habitual pattern of thinking, the listener is

alerted and can suspend judgments for the moment, just listening openly. Listening in pairs allows students who are reading to each other to feel less rushed and pressured than speaking to the instructor in a classroom discussion (Sable, 2010).

The listener then paraphrases or reflects back what has been said, trying to communicate just what the first person said without adding to or interpreting their meaning. The first person confirms, corrects, or fills in if something important to them is missing. The intention of this step is two-fold: 1) the listener may notice that a significant amount of what they hear, even from someone sitting close in paired interaction, is forgotten, and 2) the reader may notice that a significant amount of what they said is not retained. Once the process is complete, the reader may have greater trust that the listener did hear what was said. After the process is reversed and both parties have made the effort to listen with care and accuracy, there may be a new-found respect for each other. However, Gendlin reported that it was often necessary to give participants permission to clarify what was said several times, ensuring them it was "normal" to need clarification, and creating some humor and humility by offering examples of his own lapses and mistakes (Gendlin, 1978).

Students trade roles so that each has the experience of reading, listening, and then "reflecting back," or paraphrasing, what they heard. In related exercises that make the distinction between unreflective and mindful listening, both the speaker and the listener often report that it is instructive to discover how much more was retained and understood with mindful listening and how much projection and missed content can go on in unreflective listening (Gendlin, 1978; Rogers, 1969). Over time listeners can train themselves to become more aware of their assumptions and projections as they listen and may retain more accurately what was said (Brown & Palincsar, 1985).

Reflecting back (paraphrasing) what is heard without interpretation is sometimes called active listening. The process originated with psychologist Carl Rogers (1951) and was elaborated by Gendlin (1978). More recently, Fassaert, van Dulmen, Schellevis, & Bensing (2007) developed an Active Listening Observation Scale (ALOS-global) to

quantify this kind of mindfulness skill. In the context of reflective interaction, it is a continuation of mindfulness, suspending judgment, cultivating openness and training one's attention during interaction.

While there is a tendency for some students to return to a more typical unstructured conversation during the interaction, even moderate attention to the instructions may establish the respect and trust needed to slow down the premature tendencies toward persuasion or advocacy. The process leaves more space for each person to reconsider for themselves what they have written in their contemplation response.

Relationship of Reading, Listening and Reflecting Back to Reflective Dispositions
Mindful listening in pairs is intended to be directly supportive of *prudence in suspending making or altering judgments* and *"honesty in facing one's own biases, prejudices, stereotypes, and egocentric or sociocentric tendencies"*(Facione, 1990, p.13) because the inherent openness of the practice makes it easier *to reconsider and revise views where honest reflection suggests that change is warranted.* Likewise mindful listening in pairs may lead to *flexibility in considering alternatives and opinions, open-mindedness regarding divergent world views, understanding of the opinions of other people,* and *fair-mindedness in appraising reasoning.*

With respect to cognitive skills in critical thinking, interpretation, inference and evaluation may all be affected by reflecting back what was heard in paired interaction. As one's projections, imagination, lapses and mistakes are revealed, interpretation, inferences and evaluations may shift and become more refined and clarified.

2.2.2.7 Reflective Inquiry

Having read, listened and reflected back what was said, the next interactive stage is reflective inquiry. Reflective inquiry is the expression of open-minded curiosity by the listener, including suspension of one's initial assumptions about what the reader meant long enough for the assumptions to be challenged. Critical thinking scholars and

researchers agree this kind of recognition and suspension is a key element to effective critical dialogue (Facione & Facione, 2007; Lee, 2004; Paul, 1995).

In general, the two-fold objective of reflective inquiry is 1) to help the person reading what they wrote to explore further and discover what meaning was actually communicated and 2) to help the person asking questions understand more deeply what was said. Along the way, the reader may discover the meaning conveyed was not what was intended (Gendlin, 1978). A second objective is to help the listener to explore his or her understanding of the reader's journal entry through genuine inquisitiveness: asking "innocent" rather than leading questions (Isaacs, 1999; Rosenberg, 2005). For example, leading questions are of the form "Did you mean to say….," Would "____" be a better word?" Reflective inquiry is intended to correct mistaken assumptions of the inquirer and increase depth of understanding; however to do it without the inquirer projecting assumptions and preferences is generally challenging for students, especially in the early weeks of practice.

From inquiry, students begin to generate new meaning derived from the interaction. For the listener, inquiry is intended to reveal further what assumptions were made and how well the listener understood what was read (Isaacs, 1992, 1999). For the reader, inquiry reveals what was actually communicated, whether the written contemplation was clear or ambiguous (Driscoll et al., 2005; Lee, 2004).

Relationship of Reflective Inquiry to Reflective Dispositions

Reflective inquiry is first an expression of two essential dispositions for critical thinking: general *inquisitiveness* and *concern to become and remain generally well-informed*. Brookfield (2005) reported that this kind of open-minded inquiry helps create more eagerness for new information and perspectives. These dispositions may be clouded by the tendency toward confirmation bias (Nickerson, 1988) that leads to leading questions or no inquiry at all. Development of these dispositions through practice with reflective inquiry may positively affect all of the cognitive critical thinking skills, but in particular *understanding of the opinions of other people.*

At this point in the reflective interaction process the instructor signals the pairs to switch roles, so that the first readers become the listeners and the process is repeated with equal time for the new reader.

2.2.2.8 Dialogue

Dialogue is a generative interchange or "stream of meaning between" participants (Bohm, 1996, p. 6) as opposed to an exchange of views where individuals simply advocate for their positions. All the practices to this point, from mindfulness meditation through reflective inquiry, strengthen the possibility that students will explore each other's point of view rather than merely defend against each other's point of view. What Bohm describes as dialogue is an interchange where new understanding and insight is developed from the present experience between the partners or within a group. If the interaction moves to dialogue, students cannot only choose from their existing positions, they may generate a third point of view, a synthesis or transcending alternative. "The most important parts of any conversation are those that neither party could have imagined before starting" (Isaacs, 1999, p. 7). Scharmer (2009) and Senge et al. (2008) refer to the conditions that lead to this generative space as *presencing,* emphasizing a similar, preliminary process of recognizing habitual patterns and assumptions leading up to fresh insight and creative dialogue.

The notion that new meaning is more likely to emerge from dialogic collaboration has been advanced since the time of Plato and is supported by much constructivist research (Bruffee, 1999, Gergen, 1999; Palinscar, 1998; Steier, 1991). Once students have become familiar with the reflective interaction process up to this stage, they are more likely to engage and respond to each other with genuine and respectful *critical thinking*.

Relationship of Dialogue to Reflective Dispositions

Dialogue is the stage where *trust in the processes of reasoned inquiry* and *self-confidence in one's own ability to reason* emerge. Dialogue in this context is summative and generative. It becomes practice for all the reflective dispositions, especially *fair-*

mindedness in appraising reasoning. What students are learning is more than distant or abstract information; it has emerged from interaction and is grounded in experience. At this point, all the dispositions for critical thinking should be primed.

2.2.2.9 Facilitated Class Discussions and Critical Thinking

When paired interactions are finished, the instructor reassembles the whole class and may begin with a brief period of silence so that students can settle their minds again and refer back to what they originally wrote. The instructor may ask, "is there anything you would change?" "Has anything shifted now that you have interacted about this question with a partner?" This enables students to "take a fresh look" and reconsider what they wrote.

The purpose of facilitated class discussion is to explore the meaning and implications of the whole contemplation exercise by integrating the fresh language in students' journal entries, their paired interaction, and the course content. The point is not necessarily to arrive at preconceived conclusions, although within defined contexts there may be certain conclusions to draw. Rather, the facilitated discussion is an extension of dialogue to the whole group. The "received wisdom" has now been explored and linked to personal meaning. Personal meanings have been shared in pairs. The range of interpretations and insights can now be solicited from the whole group in an atmosphere prepared for all the reflective dispositions, especially *inquisitiveness with regard to a wide range of issues* and *concern to become and remain generally well-informed.* It is here that students are most likely to recognize that they are participating in the construction of meaning.

Even an unstructured, open discussion at this point may be qualitatively different than ordinary post-lecture discussion. Students are more prone to respond to each other rather than direct all their attention to the instructor. Students begin to appreciate that they can learn from each other or help each other, as well as learn from the instructor. In this final stage, the instructor encourages the students to explore their own language further by paraphrasing, inquiry and dialogue. The cognitive skills and sub-skills may now appear in collaboration aimed at enriched meaning and validity established within contexts, rather than simple competition to win a point or demonstrate skepticism.

2.2.3 Summary

As Taylor (2005) describes, based on related approaches to the development of critical thinking, one's development as a critical thinker is like a personal journey into unfamiliar or unknown areas. The process often involves a sense of personal risk, opens up questions, creates more experiences than can be integrated at first sight, requires support, yields personal change, and so on. This "journey" metaphor differs from some conventional views of critical thinking as a competition, scrutinizing the reasoning, assumptions, and evidence behind claims and arguing to win a point as in formal debate (Ennis, 1987). For many students the usual connotations of "critical" include finding fault in others (Williams, 1983). "Journeying" draws attention to the inter- and intra-personal dimensions of people developing their thinking. It draws attention to contemplation and reflective interaction as a collaborative vehicle to critical thinking, powered by deeper and more committed reflective dispositions.

The reflective dispositions that support critical thinking, well-defined by a panel of scholars and researchers, may be strengthened by introducing reflective practices in the classroom. The common link between reflective dispositions for critical thinking and reflective practices is the experience of mindfulness.

2.3 Online Learning and Development of Critical Thinking

What are the principles and approaches to online learning that will enable students to develop reflective dispositions for critical thinking and apply critical thinking skills? What considerations are unique to online learning? What evidence is there that the new technologies can be used to enable more than access to information? The focus of this section is on the literature that addresses these questions.

2.3.1 Principles and Approaches

Garrison and Anderson (2003) begin their framework for *E-Learning in the 21st Century*[1] with a foundational perspective: a collaborative and constructivist view of teaching and learning. They present a model for building "communities of inquiry" online aimed at enabling students to be independent thinkers and interdependent, collaborative learners. Their goal is not only to ensure that e-learning promotes higher-order cognitive skills, but realizes its potential to improve upon traditional classroom methods.

E-learning can be used to precipitate private reflection as well as class-wide discourse (Conrad & Donaldson, 2004; Garrison, Anderson, & Archer, 2001; Garrison & Anderson, 2003). The community of inquiry approach corresponds well with the reflective practices described in the previous section and there is evidence it can promote "higher order learning" (Fox & MacKeogh, 2003). The ideal of blending and balancing private reflection and class-wide discourse is also naturally in keeping with inquiry-based learning models (Lee, 2004; Lipman, 1991; Paul, 1990) and brings into the picture related concepts such as creative thinking (De Bono, 1976), problem-solving (Donald, 2002), intuition and insight (Garrison, Anderson, & Archer, 2000).

2.3.1.1 Cognitive Presence

Garrison and Anderson (2003) present three elements that establish a community of inquiry: cognitive presence, social presence, and teaching presence. Cognitive presence is defined as "the extent to which learners are able to construct and confirm meaning through sustained reflection and discourse in a critical community of learning" (p. 28). It is similar to the concept of student engagement and follows the same basic logic as reflective practices.

Cognitive presence is defined in broader terms than critical thinking, but it is explicitly derived by Garrison and Anderson from the skills and dispositions toward critical

[1] The terms "e-learning" and "online learning" are used synonymously in this section.

thinking described in the foundational work of Dewey (1938) and later by Kolb (1984) and Lipman (1991).

> Students transform information received and construct it into knowledge by personal application and interaction. Personal application establishes the value of the knowledge to the learner. The key to cognitive presence is sustaining and confirming meaning through "transactional learning:" interactions that take place between students and/or between students and the teacher (Sable, 2010, p. 262).

Cognitive presence then forms the ground for the dimensions of critical thinking: intellectual habits, intellectual deliberations, and a reflexive disposition (Van Gyn & Ford, 2006).

At the outset, online learning is most effective when it has an interactive component. Moreover, engagement need not, perhaps should not, be focused only between the instructor and the students, or only between self-directed learning online and the instructor. Much research supports the notion that interaction between students can help establish engagement and relevance regardless of the medium of delivery (Fabro & Garrison, 1998; Gunawardena, 1995; Lee, 2004).

Garrison and Anderson (2003) and Rourke, Anderson, Archer, & Garrison (1999) stress the need to sustain online discourse congruent with principles of critical thinking and directed toward learning outcomes. They describe a common outcome if collaboration is not well facilitated:

> Despite theoretical rumours to the contrary, students do not complain that computer conferencing is asocial, terse, hostile, etc. On the contrary, if students complain, it is that the conference as too social, too polite, not critical or challenging, and thus not a productive learning experience (Garrison & Anderson, 2003, p. 53).

Thus one of the common problems in synchronous online learning is the lack of genuine engagement with multiple points of view, reflective inquiry, and the confidence to put forth an evaluative judgment. This weakness in online collaboration is addressed through social presence and teaching presence.

2.3.1.2 Social Presence

Social presence is defined as the "*ability of participants in a community of inquiry to project themselves socially and emotionally, as 'real people' (i.e., their full personality), through the medium of communication being used*" (Garrison, et al., 2000, p. 94). Garrison and Anderson (2003) elaborated on social presence in terms of several categories and indicators relating to affective dispositions and the open communication necessary to maintain them for critical thinking. Table 5 shows the elements, categories and a sample of the indicators.

For many instructors and developers establishing the kind of social presence that supports a successful community of inquiry in online education presents a significant challenge. Summative research on 37 studies of critical thinking in threaded discussions online revealed several common weaknesses: low participation rates, disappointing collaboration (Rourke et al., 1999), and comparatively low levels of learning performance and quality of learning (Maurino, 2007).

Table 5. Community of inquiry categories and indicators
(Garrison & Anderson, 2003, p. 30)

Categories	Triggering event	Indicators (examples only)
Cognitive presence	Exploration	Sense of puzzlement/problem
	Integration	Information exchange
	Resolution	Connecting ideas
		Applying new ideas
Social presence	Affective	Expressing emotion
	Open communication	Risk-free expression
	Group cohesion	Encouraging collaboration
Teaching presence	Design and organization	Setting curriculum and methods
	Facilitating discourse	Sharing personal meaning
	Direct instruction	Focusing discussion

In brief, the necessary conditions for maintaining the dispositions for critical thinking have alternatively been described as establishing respect and trust between students and between students and the instructor (Driscoll, et al., 2005). Whether in the classroom or online, students who work with each other in pairs (in online breakout rooms or offline) and share their contemplations in a more private way before joining a facilitated discussion develop the trust and respect implied by Garrison and Anderson's indicators. They are guided by instructions (modeled by the instructor throughout the course) in active listening, paraphrasing and reflective inquiry (Driscoll, et al., 2005).

2.3.1.3 Teaching Presence

Garrison and Anderson are well aware that the use of threaded discussions online requires considerable planning and support to be effective. Teaching presence is defined as "*the design, facilitation and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes*" (Anderson, Rourke, Garrison, & Archer 2001, p. 1). Teaching presence includes modeling critical discourse and reflection by constructively critiquing contributions (Collison, Elbaum, Haavind, & Tinker, (2000; Fabro & Garrison, 1998). Social presence and teaching presence are both enabling factors to cognitive presence in any learning

environment and are deemed necessary to sustaining engagement and the dispositions for critical thinking in an online community of learning (Day, Pope, & Denicolo, 1990).

It is no surprise that students may not use their critical thinking skills unless they are challenged to do so by the instructor and given appropriate feedback. Teaching presence is as essential as social presence. Researchers have applied the Garrison and Anderson framework to different forms of threaded discussions online. Despite the potential weaknesses noted above, these studies support the assertion that successful communities of inquiry can occur online and, with appropriate planning, critical thinking skills can be developed (Boris & Hall, 2005; Hall, 2005; Meyer, 2003).

Boris & Hall (2005) applied the Practical Inquiry Model based on the four phases of Garrison and Anderson's cognitive presence categories: triggering event, exploration, integration and resolution. Using qualitative content analysis, coders analyzed text-based responses and dialogues triggered by the instructor's content-related questions. The results showed a significant change in the demonstrated critical thinking of the students after the students were introduced to the Practical Inquiry Model and guided to use it. This framework and model for assessing a community of inquiry could be applicable to both the classroom and online students in this research study and helps inform the indicators developed from the qualitative research phase.

Meyer (2003) also applied the Practical Inquiry Model and coded students' responses for comments that were exploratory, integrative, or attempting resolution. It was noted that integration and resolution required more "time for reflection." These students also met face-to-face and social presence was established. The threaded discussions online demonstrated that students were taking care in preparing written responses, perhaps because their peers would see (and judge) their writing. The evidence demonstrated the effectiveness of online threaded discussion to promote critical thinking.

In related studies by MacKnight, (2000), Mandernach (2006), and Yang (2008) teaching presence included careful attention to instructor modeling of Socratic questioning.

Questions that probe assumptions, reasons and evidence, origin of sources, implications and consequences, alternative perspectives, and ask for clarification helped students create the intellectual habits that form critical thinking skill.

Qualitative content analysis has been applied more generally to group interaction and critical thinking in online threaded discussion groups using the Discussion Analysis Tool (DAT) developed by Jeong (2003). The DAT measures incidence of "depth and mutual understanding" when students present alternative conceptions of course content. Essentially, the DAT identifies significant patterns in student interactions, particularly those associated with conflicting views and argumentation. The study found that "students rarely responded to initial arguments with evaluation of the argument's accuracy, validity, and relevancy" (Jeong, 2003, p. 37). Evaluation occurred after arguments were presented and flowed from negotiating conclusions. Although the DAT does not distinguish the underlying dispositions, it helped confirm Gunawardena's critical thinking model (Gunawardena, 1997) and shows the potential of DAT for evaluating the effectiveness of different instructional interventions and communication technologies on the cognitive skills for critical thinking.

The relevance of this last study to the present research is that it demonstrates how online learning can be tracked efficiently and hypotheses regarding interventions can be tested. For example, what if the students in the Jeong study were trained in active listening and inquiry? Would the quality of arguments change? Would new meaning be created, or created more quickly?

2.4 Summary

From the literature on critical thinking there is a clear requirement that students need to develop reflective dispositions to improve the quality and pervasiveness of critical thinking in higher education. Scholars and researchers have provided us with definitions and described the underlying dispositions of what is meant by critical thinking. They

have explored the learning processes that go into critical thinking and given us ways to measure the impact of some of the sub-skills. Developmental psychologists have identified the leverage points where we can encourage students to recognize the socially constructed nature of knowledge and integrate knowledge learned from others with the "inner truth of experience and personal reflection" (Belenky et al., 1986). Researchers in online education have formulated frameworks that support critical thinking and explored the impacts and limitations of online learning. Independently, researchers have examined the reflective practices and found evidence that they do create the characteristics defined as reflective dispositions for critical thinking, including a reflexive disposition that is open and mindful of the present.

However, the literature does not link all these independently researched areas. Moreover, the literature does not treat the reflective practices described in this chapter as a progressive pedagogical approach building on mindfulness toward reflective interaction and critical thinking. Table 6 proposes connections between the core critical thinking skills, the reflective dispositions, the reflective practices, and the unique characteristics of a reflexive disposition. It integrates the scholarship and research done independently in philosophy, psychology, and education. The impact of the reflective practices on students' experience is explored further in Section 4.0, Qualitative Research Results.

These connections are not meant as simple one-to-one causal relationships. The relationship of the reflective practices to reflective dispositions is a supporting condition. Reflective practices support the development of the dispositions, but it is not proposed that the practices cause them. The relationship of the reflective practices to the characteristics of a reflexive disposition is proposed as closer to generative, in accord with the literature reviewed above and the evidence presented later in Section 4.0.

Table 6. Critical thinking and reflective practices matrix.

Core Critical Thinking (CT) **Skills**	**Reflective Dispositions for CT**/Basic reflective thinking; reflection-on-action	**Reflective Practices** (RP)	**Reflexive Disposition for CT**/Profound reflective thinking (strengthened by RP); reflection-in-action
Self-regulation; self-examination, self-correction (pervades all CT skills)	Inclination toward truth seeking; believing truth emerges from thinking strategies; willingness to apply heuristics, using multi-logical perspectives	Mindfulness meditation (mindfulness pervades all contemplative practices)	Inclination toward focused attention as a means for truth seeking; alertness; believing insight emerges from suspended judgment, openness to what was not noticed before; new patterns
Interpretation: categorizing data, decoding significance, clarifying meaning; recognizing and avoiding the possible one-sided use of critical thinking skills	Open-mindedness, flexibility in considering alternatives and opinions	Structured contemplation	Honesty in facing one's own biases, prejudices, stereotypes, egocentric or sociocentric tendencies, prudence in suspending, making or altering judgments.
Analysis: examining ideas, identifying arguments, analyzing arguments	Belief in arguments based on evidential, conceptual, methodological, criteriological, or contextual considerations	Journal writing	Confidence in one's own ability to reason; personal, articulate explanation
Explanation: stating results, justifying procedures, presenting arguments	Willingness to articulate evidential, conceptual, methodological, criteriological, or contextual considerations	Paired interaction: reading, listening, paraphrasing	Honesty in facing one's own projections, mistakes, biases, prejudices, stereotypes, egocentric or sociocentric tendencies; confidence in presenting multiple points of view
Inference: Querying evidence, conjecturing alternatives, drawing conclusions	Concern to become and remain generally well-informed, general inquisitiveness; trust in the process of reasoned inquiry	Inquiry	Curiosity about others' positions; inquisitiveness, alertness, and open-mindedness; prudence in suspending judgment; eagerness for new information and perspectives
Evaluation: Assessing claims, assessing arguments	Fair-mindedness in appraising reasoning	Dialogue and facilitated discussion	Willingness to reconsider and revise views where honest reflection suggests that change is warranted; recognizing the socially constructed nature of knowledge and integrating knowledge learned from others with the "inner truth" of experience and personal reflection

Chapter 3: Methodology

3.1 Common Ground

What are the impacts of reflective practice on the dispositions for critical thinking in undergraduate courses? This research question requires an interdisciplinary approach because valuable insights exploring the meaning and measure of critical thinking have come from different disciplines, as noted in section 1.5.2. In order to be effective, an interdisciplinary approach must identify common language and concepts that permit communication across the disciplines and new understanding of the research problem. Kockelmans (1979) maintains "The search for a common ground is the fundamental element of all interdisciplinary investigation" (p. 123). Repko (2008) strongly agrees and draws support for the theory of common ground from a report by the Interdisciplinary Studies Project (Project Zero) at the Harvard Graduate School of Education. The report examined exemplary practices of interdisciplinary work and concluded that a common ground can be found for many complex problems when the researchers maintain the characteristics that comprise a reflexive disposition: stepping back from personal requirements, disciplinary or social norms, and personal and disciplinary assumptions; allowing novel patterns to emerge, seeing new relationships not bound by conventions (see Section 2.1.2.4 and Nikitina (2005)).

The common ground identified in the literature review for this research is a reflexive disposition. A close reading of critical thinking scholars revealed the common terms "reflection" or "reflective dispositions" would be too broad by themselves to be the common ground. For example, one can reflect on the past, recall actions and their implications, recall memories, and yet not look freshly at the present situation.

A reflexive disposition also leads to the recognition that one is participating in the construction of meaning, not simply reflecting a static or objective reality "out there," described by one's discipline. The open awareness of a reflexive disposition involves a suspension of habitual patterns in perception and conceptual labeling (Argyris, 1982;

Varela & Shear, 1999). When we recognize that we are filtering our experience based on certain assumptions, we can, at least briefly, suspend belief in the assumptions in the sense of releasing fixation on our convictions and look again, freshly at the present moment. We then come closer to seeing the situation as dynamic and subject to new interpretations. It is these conditions that set the stage for investigating critical thinking skills from multiple perspectives.

3.2 A Mixed Methods Approach

3.2.1 Background

If the concept of a reflexive disposition forms a common ground that permits integration of insights and novel patterns to emerge, the next challenge is to identify indicators of its expression in students' thinking. Three general approaches are possible: 1) indicators derived from previous research, largely drawn from quantitative studies that relied on scholars' models of critical thinking and the reflective dispositions that produce it; 2) indicators derived from the qualitative study of students' experience as they develop their critical thinking abilities; and 3) the integration of indicators from both sources. A mixed methods approach that integrates existing indicators with indicators from qualitative research offers the most comprehensive response to the research questions (Bryman, 2007; Carlile, 2004; Giddings, 2006; Tashakkori & Teddie, 1998).

Researchers have been developing standardized measures of general reflective dispositions for critical thinking abilities for several decades. For example, The California Critical Thinking Disposition Inventory (CCTDI) measures seven sub-dispositional scales: inquisitiveness, systematicity, analyticity, truth-seeking, open-mindedness, critical thinking self-confidence, and cognitive maturity (Facione, 1994). The CCDTI is a 34-item multiple choice test for these indicators and has been further refined over time (Brunt, 2005; Facione, Facione & Giancarlo, 2001). The CCTDI instrument is often used with the corresponding California Critical Thinking Skills Test (CCTST). However significant statistical relationships between these tests when applied

to students in specific disciplines or areas of professional practice (e.g., nursing) were not well demonstrated (Brunt, 2005; Daly, 2001; Leppa, 1997).

Brunt (2005) maintained that more attention to qualitative research on students' experience as they develop their critical thinking abilities may be useful. Instead of relying only on the experts' indicators, Brunt also encouraged future researchers to add indicators that are more context-based and related to students' experience. The research design of this study is aligned with this view.

Brunt's survey study (2005) acknowledged the value of measurement tools to help design outcome-based curricula, but called for both qualitative and quantitative research to better capture the complexity of critical thinking in practice. Brunt, Greenwood (2000) and Ruth-Sahd (2003) argued that in the end what gets measured as critical reasoning skills fails to take into account the complexity of human cognition which centrally includes unconscious or tacit processes that are tied to situational or professional context. Greenwood (2000) proposed more qualitative research to reveal the "scripts," or narratives that students develop in their practice contexts. Ruth-Sahd (2003) called for acknowledgement that intuition, or non-analytic ways of knowing, influence the data selected for reasoned judgment, analysis, inference, and decision-making. Context influences performance; what shows up on formal tests may not show up in practice and what shows up in practice may not show up on formal tests.

In addition, Brunt (2005) noted that "little research was found evaluating the effectiveness of various teaching strategies…used to develop [critical thinking] skills" (p. 261). The research in this study evaluates the effectiveness of a particular set of classroom-based reflective practices that constitute a multifaceted teaching strategy. Effectiveness is measured by indicators derived from qualitative research on students' experience with this teaching strategy integrated with previously determined indicators to form a framework for quantitative analysis. This mixed methods research begins with qualitative methods to explore students' experience and define indicators for a reflexive

disposition. A second phase then looks for evidence of significant statistical relationships between indicators of reflective dispositions and the set of reflective practices.

3.2.1.1 Mixing Methods in the Same Study

Section 2.2 presented an array of disciplines and a variety of methods that have been employed in higher education to support clear, creative, independent critical thinking and its underlying dispositions. It also showed strong contributions from both quantitative and qualitative studies. In general, the goal of mixed methods research is to draw on the strengths of both qualitative and quantitative research so that they complement each other within the same study. Mixed methods permit the deeper exploration of the phenomena before deciding what and how the dispositions should be measured (Johnson & Onwuegbuzie, 2004).

However, for generations, scholars and researchers debated whether qualitative research can be counted as "objective science." The traditional quantitative "purists" looked for generalizations about real causes of social phenomena with standards of validity and reliability common to the natural sciences (Johnson & Onwuegbuzie, 2004). On the other hand, the qualitative purists looked for depth of understanding, meaning and context. The qualitative researchers did not necessarily start out with a hypothesis to validate; they were (and are) more likely to explore a situation or problem with the intention of generating extensive description and explanatory theory. In the past, much qualitative work was rejected by mainstream quantitative researchers as vague, insufficiently substantiated by evidence, and non-systematic in approach. Here, mixed methods research focuses on generating theory grounded in the data; theory that is traceable back to the data and systematically developed. Grounded theory lends itself well to mixed methods research (Onwuegbuzie & Leech, 2005) because it is grounded in data, systematic, and does not make sweeping claims to be predictive (although it may be indicative).

3.2.1.2 Quantitative Versus Qualitative

The quantitative versus qualitative debate is in one sense another "straw man": when we look closely quantitative approaches do not necessarily lead to objective results. The

dichotomy often portrayed is that quantitative research leads to a more objective view of reality because it is more "scientific" in the classic sense of advancing falsifiabile hypotheses and producing quantifiable results that are replicable (Popper, 1959). Yet, a subjective element always exists in the choice of phenomena to be studied, the choices and definitions of indicators and units used to measure effects, and in the interpretation of data (Giddings, 2006; Smythe, 2005). All researchers are involved in making judgments that are choices made according to values, assumptions, and predilections that they may or may not be fully aware of or willing to question. They may hold the values and assumptions of dominant cultures without being aware that their perspectives do not hold for the social groups and individuals they study (Alvesson & Sköldberg, 2000; Gadamer, 1989; Rabinow & Rose, 2003).

A prominent example is research done on standardized intelligence tests (Fischer, 1996; Sacks, 1999), leading many educators to question the enormous weight given to such predictive test instruments. Results cannot be absolutely objective and should be seen in the context they were created. Depending on the acknowledgement and reporting of assumptions, the position of the researcher, and the context of the research, it is quite possible to have qualitative research with less hidden bias than quantitative research (Onwuegbuzie & Leech, 2005). The mixed methods approach for this study is therefore also guided by an iterative approach to uncovering bias that can pervade both the qualitative and quantitative phases.

3.2.1.3 Quantitative and Qualitative: Different Premises

In another sense, the differences in the approaches between quantitative and qualitative research do rest on different premises. Ontologically, quantitative researchers traditionally take a positivist position. As Myers (2002) stated, "Positivists generally assume reality is objectively given and can be described by measurable properties which are independent of the observer (researcher) and his or her instruments" (p. 6). By contrast, constructivist schools of qualitative research maintain reality is not independently given (or that it cannot be determined) and do not maintain the subjective-objective polarity. Philosophically, these qualitative researchers come to the conclusion

that “the polarization between a thinking subject and an object is a dubious secondary construction” (Alvesson & Sköldberg, 2000, p. 80).

Today, theorists from various fields are taking more seriously that learning cannot be separated from the contexts in which it occurs. They are re-conceptualizing cognition and learning as activities that occur through social interaction. Following Heidegger’s phenomenology (Heidegger, 1962) these theorists assert reality, as well as meaning, is constructed as a result of interaction (Gergen & Gergen, 1991; Gergen, 2001; Ricoeur, 1978; Rorty, 1991; Schutz, 1962). Many quantitative researchers, regarded as “post-positivists,” recognize the limitations of claims to objectivity and have adopted a more inclusive approach (Bruner, 1990; Mertens, 2005). The post-positivists are not “so quick to claim that all measures (or even most of them) are completely objective and independent of the observer” (Marche, 2005). Even with respect to the natural sciences, they are approaching Einstein’s view that "as far as the laws of mathematics refer to reality, they are not certain; and as far as they are certain, they do not refer to reality" (Wigner, 1960, p. 28). Instead, they acknowledge observers must work at making measures as valid and replicable as possible and their protocols and procedures should be transparent and well-described, including their limitations. Further, the post-positivists recognize that establishing proof of causality between independent and dependent variables is problematic -- descriptive statistics may establish relationships (e.g., co-variance) and provide levels of predictive confidence, but these are not “proof” in the mathematical sense.

The differences in ontological premises do not preclude quantitative and qualitative research from enriching each other. Increasingly, post-positivists have come to value the contribution of qualitative research in generating theory and accept that mixed methods can provide more semantically rich understanding of research problems (Johnson & Onwuegbuzie, 2004; Mitchell & Pilkington, 1999; Onwuegbuzie & Leech, 2005).

The qualitative research in this study stands on its own and is intended to be a contribution to qualitative methods research. It attempts to break new ground with

respect to content validity -- "the notion that a test should sample the range of the behavior that is represented by the theoretical concept being measured" (McBurney & White, 2007, p. 130). To date, the theoretical descriptions of the dispositions for critical thinking have not been described from the students' perspective. There is a gap in the literature regarding measures or any evaluative criteria derived from students' experiences of what enhances critical thinking. The recommendations of Brunt (2005), Greenwood (2000), McMillan (1987), and Ruth-Sahd (2003) call for a more phenomenological account of critical thinking.

However, focusing only on pure qualitative research would not be the most comprehensive approach to an interdisciplinary study. Because the knowledge produced may not generalize beyond the people studied, it may have little predictive value and in that sense may be less useful than a mixed methods study. From the theory describing students' experience of reflective dispositions indicators are derived to serve as the dependent variables in the quantitative dimensions of the research. The quantitative approach in this research design may provide some measure of validity and reliability regarding the hypothesis that reflective practices have positive impact on the reflective dispositions for critical thinking. Quantitative methods will indicate the degree and direction of impact of the set of reflective practices introduced over an 11-week period (the independent variable). Quantitative methods will also help identify confounding variables and test assumptions.

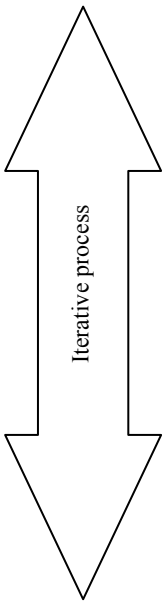
It is mixed methods that give us depth and breadth combined to contribute something new and something of value to educators and students.

3.2.2 Eyes Wide Open: A Reflexive Methodology

The framework for conducting this mixed methods study is a *reflexive methodology*. A reflexive methodology is an iterative process of defining and managing empirical data, interpretation, critical interpretation, and reflections on language and authority (Alvesson & Sköldberg, 2000). Table 7 provides examples of four levels of inquiry and the

corresponding foci of data gathering. Each level is explored further on the following pages.

Table 7. Reflexive methodology: an iterative process of interpretation.



Aspect/dimension	Focus
Interaction with empirical data (What questions were asked and what did the participants say?)	Accounts from student interviews (audio and text), written reflections, term papers, researchers' memos
Interpretation (What was the context for the interviews and contemplative interaction? What do participants' responses mean?)	Underlying concepts, categories, relationships, and theory emergent from the data (personal, interpersonal, cultural)
Critical interpretation (What assumptions and dispositions guided the data collection and interpretation?)	Ideologies, normative views from established disciplines, examination of political purpose and assumed values
Reflection on language use, learning styles, and power; self-reflection	The researcher's own text, claims to authority, selectivity of voices represented in the text

Based on Alvesson& Sköldberg, 2000, p.250

In addition to its iterative process, there are two basic characteristics of reflexive interpretation: *careful interpretation* and *reflection*. Careful interpretation takes into account that all empirical data to be studied are the results of interpretation (Fosnot, 1996). This brings a skeptical approach to the notion of objective, theory-neutral, "facts" as representations of an objective reality. However constructed reality may be, the data provide the basis for generating knowledge, enriching understanding, and providing information that has utility in addressing problems. Reflection, in the context of reflexive methodology, turns the researcher's attention to the alternating levels of interpretation summarized in Table 7 above.

Each aspect or dimension of a reflexive methodology can be applied to the entire research design. For example, the research question and reflective practices in the classroom can be explored from the point of view of critical social theory. In the process of training students in mindfulness, journal writing, active listening, inquiry and dialogue what

values are implicitly introduced and for what purpose? What normative views of how an educated person should think do the reflective practices reinforce in students? Is there an emancipatory function to this approach to learning and to research; what is it empowering students to do? How are the students' dispositions and critical thinking affected? With regard to results of the research, including any theory generated, for what purposes will the results be used and by whom? These questions are not answered once and for all. They are part of formative research during and after the whole research process.

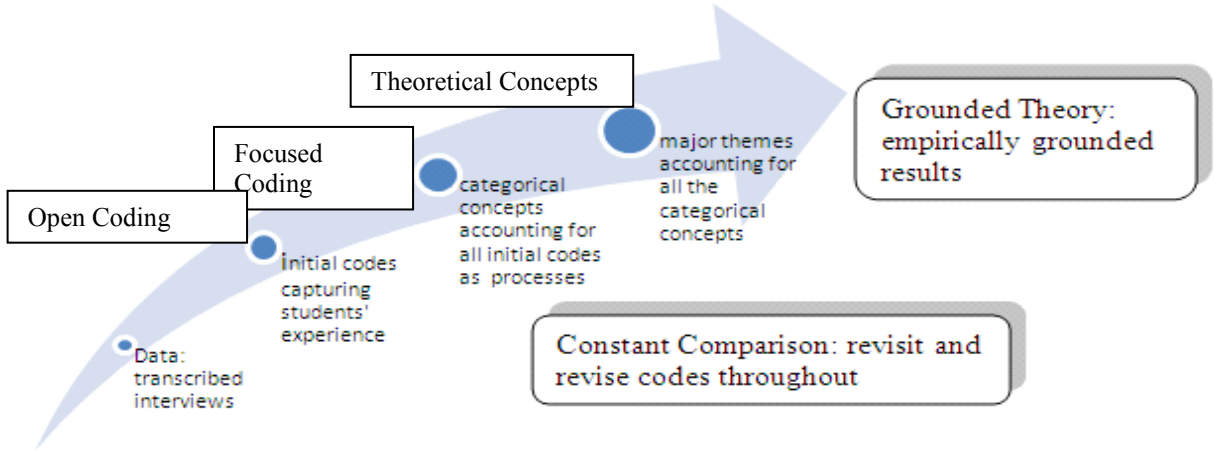
Alvesson and Sköldberg (2000) point out that there is nothing fixed in the choice of aspects or levels of interpretation that must be included in a reflexive methodology. Their criteria are that the process must be iterative and engage the researcher in careful consideration and reflection. Being more inclusive should establish greater transparency and encourage careful consideration of the research question and objectives. However, given the variety of methodological critiques that have emerged in the social sciences over the past half-century, practical limitations force choices. Four broad areas were considered for this study based on Alvesson and Sköldberg's reflexive methodology (2000): working from empirical data, developing interpretation and insight, using critical theory, and self-reflection on language and the power of authority.

3.2.2.1 Working from Empirical Data: Grounded Theory

Grounded theory methods were chosen as the primary qualitative approach for Phase I because the approach is empirical, data-oriented, and systematic. They were chosen for Phase I to generate theory and indicators of reflexive dispositions so that the results that would be well grounded in the data on students' experience rather confirming or disconfirming preconceptions of the researcher (Charmaz, 2006; Glaser, 1978). The data are the transcripts of one-to-one interviews and the interactive, audio recorded, one-to-one sessions that yielded the transcripts. Grounded theory develops from a systematic, interpretive coding process that progressively abstracts data to build a theory. Figure 2 (below) shows how the process works from the "ground up:" each initial code captures the experience of participants in active verbs. Constant comparison of the data with the

codes and continuing review throughout the process helps insure that the theory emerges inductively from the data, not the presumptions of the researcher doing the coding (Smith & Short, 2001). Consequently, grounded theory is theory grounded in the data.

Figure 2. The structure of grounded theory.



While constant comparison means looking back over the transcripts again and again, the overall coding process remains systematic as shown in Figure 2 (above). Initial codes defined in Open Coding enabled the researcher to construct the categorical concepts in Focused Coding. The researcher then analyzes the categorical concepts to form Theoretical Concepts and re-engages the participants to refine them. Theoretical concepts are the major themes of the resulting grounded theory (Charmaz, 2006; Smith & Short, 2001). Derived in this way, the new indicators for a reflexive disposition can be integrated with previously established indicators from other empirical, data-oriented research sources in preparation for Phase II (Johnson & Onwuegbuzie, 2004; Onwuegbuzie & Leech, 2005). Grounded theory methods fit well in this study because they can fill a gap in the evidence collected to understand and measure reflective dispositions for critical thinking from students' experience.

Yet grounded theory has its critics. Some qualitative researchers who emphasize discourse analysis focus on the discursive level of a social text and do not consider language as mirroring external or internal (mental) conditions (Potter & Wetherell, 1987).

They regard interpretations of underlying meaning and categorization as too unstable (in the sense that participants asked the same question twice may not say the same thing both times) and too context dependent (Ricoeur, 1978). Potter and Wetherell (1987) question whether the study of language can mirror extra-linguistic reality. Instead they focus on variations in the empirical data, the text and the explicit attitudes expressed. The central subject of study for them is the constructed and flexible ways the explicit language is varied. They address *how* the text is constructed, what occasions prompt different attitudes, and what functions the texts fill.

Based on this criticism, the researcher in this study takes into account the tendency of some researchers to overlook variations and ambiguity in the effort to create synthesizing relationships from codes, concepts, categories and theory. However, for the context of this research at least, the strict view of text-as-data is too reductionist and could inhibit the power of the whole constructionist/interpretivist paradigm to generate useful theory about the development of dispositions for critical thinking (Bowers, 1988; Parker, 1994). Instead, the present research holds to the roots of grounded theory which support the successive induction of ideas from the empirical data and the ideational analysis inherent in interpretation (Alvesson & Sköldberg, 2000).

In line with the social constructivists, social reality in this research is not viewed as external to the consciousness and the language of the participants. However, social reality is not viewed as synonymous with the consciousness and the language of people either. Instead social reality is seen as inseparable from consciousness, the language of people, *and the underlying dispositions which may not be conscious* (Argyris, 1982; Gadamer, 1989; Schön, 1983). Even more fundamentally, social reality includes the capacity (which may lay dormant) that people have for new ways of seeing that are pre-linguistic or non-linguistic (Gendlin, 1978; Seamon & Zajonc, 1998; Senge, 2004).

> "Nobody proceeds from a tabula rasa and that includes the one seeking to understand…to understand presupposes preunderstanding, but at the same time preunderstanding is an obstacle to understanding. To prevent this

> from developing into a vicious circle, the existential hermeneuticians advocate a constant alternation between merging into another world [empathy] and linking back into our own reference system…there is "a fusion of horizons" (Gadamer, 1989, pp. 306-307).

The implication taken from Gadamer's view (1989) for the present research is that each participant has an ontologically valid experience when they follow given instructions for reflective practices. Their attention is directed at one point to their underlying dispositions and their as yet unarticulated "felt sense" (Gendlin, 1978). The felt sense is our present experience at the interface between what we can feel or sense in our body and what we think in our mind. It is also the door between what we are conscious of and what we are not (Kabat-Zinn, 1990). The felt sense is ontologically valid by virtue of its presence, but we don't always focus our attention there and know it. Whether we focus on it or not, the felt sense shapes how meaning and narratives are generated internally (Gendlin, 1962). When we do focus on the felt sense we gain clarity about the causes and conditions producing the narratives we tell ourselves. This attention to an empirical level of experience can be a distinct discipline, sometimes referred to as mindfulness. It is integral to a reflexive disposition and a component of the particular reflective practices employed in this research. When students articulate their felt sense and integrate it with intellectual deliberations they create a generous ground for others' empathy as well as intellectual understanding of their social reality.

3.2.2.2 Developing Interpretation and Insight

The characteristic of language and non-linguistic communication to be ambiguous, context-based, and nuanced in innumerable ways is embraced in this study as fertile ground rather than dismissed as confusing or meaningless. Insight develops through the rigor of constant comparison. For example, coding and recoding interview data after initial phases helps the researcher develop theoretical sensitivity and stay close to the data. As categories and subcategories are constructed, one may ask new relational and variational questions of the data after comparing occurrences of certain codes. The process may call for repeat interviews to verify the "storyline" being developed; one is

comparing tentative hypotheses against the reality of participants' experience (Charmaz, 2006). This is testing the representativeness of concepts, unlike testing in traditional quantitative research where the researcher focuses on the representativeness of a test population (the number and characteristics of the participants representing a larger population). In grounded theory methods the researcher is not testing in the statistical sense. The researcher samples the data or seeks additional data until theoretical "saturation" of each category is reached: until nothing new seems to emerge regarding a category.

Glaser and Strauss (1967) focused on the idea that theory is "discovered," as if is there as a theory unearthed separate from the observer. At the same time, they invited researchers to adopt and adapt grounded theory strategies as they needed to in order to accommodate diverse studies. Charmaz (2006) and Clarke (2005) accepted the challenge and took the more constructivist/ interpretivist position that researchers construct grounded theories "through our past and present involvements and interactions with people, perspectives and research practices" (Charmaz, 2006, p. 10). Charmaz and Clarke took the view that we "construct" grounded theory rather than "discover" it. This ontologically different position is more in keeping with a reflexive methodology and a reflexive disposition in general; it questions further the positivist claims to an objective truth without sacrificing rigor and systematic method. This turn toward a more constructivist/interpretivist position guides the qualitative phase of this study.

The constructivist approach to grounded theory acknowledges that meaning is socially constructed rather than inherent in experience. Meanings arise co-emergently as the researcher interacts with the participants and with the data. Constructivist theory is interpretive understanding focusing on what mattered and how it influenced actions and beliefs rather than representing or validating an objective reality. Grounded theorists offer an explanatory, grounded "plausible account" and acknowledge that "the theory depends on the researcher's view; it does not and cannot stand outside of it" (Charmaz, 2006, p. 130).

In addition, Glaser and Strauss (1967) contended that once grounded theory is finally developed there is no need to check it further with the participants who were the source. It is the researcher who has developed greater and greater perspective, the "aerial view" over all the empirical data, and "discovers" theory. Participants only have their close up view. In this study there are conditions that warrant another view: these participants can appreciate the abstraction of theory from the data and critique the researcher's involvement in its construction. Therefore the research design adds a round of "existential grounding" to the traditional iterative steps of grounded theory method: data collection, coding, integration and drafting theory. Existential grounding re-engages the participants to develop theory further through the same reflective practices that are being investigated for their impact on critical thinking. Here the reflective practices are called into service as tools of constructing grounded theory (described further below).

3.2.2.3 Using Critical Theory

> The aim of social science is to serve the emancipatory project, but without providing any given formulaic solution and without making critical interpretations from rigid frames of reference… Critical theory can offset the innate tendency of empirical research to provide seemingly neutral descriptions of that which exists, and the reproduction of taken-for-granted institutionalized relationships of domination. (Alvesson & Sköldberg, 2000, pp. 110-111)

Critical theory's purpose is emancipatory in that it attempts to wake up our intelligence to the possible repressive power of those who control social and political discourse, whether they know they are doing it or not (Freire, 1993). Further, critical theorists maintain that no matter what efforts are made to counteract bias and value suppositions it is impossible to produce "observer-free" portraits of social phenomena (Adorno & Horkheimer, 1979). Both theory and "fact" are always shaped by the predilections of the researcher and all social phenomena can be seen in their historical and social context.

However, the aspects of critical theory that have value in this research are not focused on arguing the view that our education system sees students in an objectified, passive and conformist role subject to social engineering and the dominant rules of knowledge production (Adorno & Horkheimer, 1979; Ingram & Simon-Ingram, 1992;Marcuse, 1964). Rather, the positive contribution of critical theorists is recognition of students as potentially autonomous, capable of self-reflection and critical thinking (Alvesson & Sköldberg, 2000; Castoriadas, 1992; Cranton, 1994; Habermas, 1990; Kitchenbaum, 2008).

Throughout the iterative process of constructing grounded theory, the researcher attempts to make transparent his assumptions and predilections. Especially in the final added step of existential grounding, participants are encouraged to realize their potential and give voice to their own reflective and critical thinking. It is not a question of reaching the ideal, but of making transparent and explicit, as much as possible, what is implicit through careful consideration and reflection.

To strengthen this function existential grounding re-engages the participants on a new level. The reflective practices (mindfulness meditation, journal writing, listening, reflective inquiry, and dialogue) are aimed at enabling participants to review questions or statements framed by the researcher. The qualitative research participants first work individually and then interactively in pairs without the researcher participating. Then in summary for the whole group (now including the researcher) they may shift the thinking of the researcher. Any critique or new meaning they construct in dialogue would be as relevant as the original data. Moreover, and most importantly, these practices are present-oriented; they become reflection-in-action rather than reflection on the past. In that sense, the process is closer to what is always dynamic and contextual, the reality that can never quite be pinned down but can be a recognized, shared experience.

3.2.2.4 Reflecting on Language, Ways of Knowing, and Power

In the research methods advanced below, the qualitative work produces language describing students' experience "as it is," with recognition that their experience is

dynamic and to some extent uncertain. Although there is no assumption of a separate, objective reality to be discovered in the traditional positivist sense, this view is grounded in students' experience in that the language developed is traceable to their experience. The language can be developed and expressed as an explanatory theory of the impacts of reflective practice on students' dispositions for critical thinking and learning in general. In that sense it is meaningful and useful. However, it remains imperative to shed light on the conditioning and habitual ways of thinking that shape the expression of theory for the researcher and communication with the participants. In that way bias is made as transparent as possible.

The concern with bias is addressed by employing mindfulness and its application to active listening and inquiry. The reflective practices used in the classroom are used here as aspects of research discipline. Mindfulness helps the researcher and the participants recognize perceptual filters and suspend judgments drawn from habitual patterns of thinking (Langer, 1989). The mindfulness and awareness that is the foundation of all the reflective practices allows one to see the current situation more openly. It supports the on-going concern of critical theory with conditioning and historical influence. Neither the researcher nor the participants are trying to forget or ignore anything – quite the opposite – it is recognition of our "preunderstanding" (Gadamer, 1989), or "the revelation of something hidden" (Heidegger, 1959), that makes the influence of the past apparent and engages us more fully in the present (Varela & Shear, 1999). Engaged more fully in the present, something not previously or otherwise noticed in what was said or experienced can be cognized and articulated. With respect to language, awareness of both variation as well as commonality in participants' responses can lead to insight.

Variation in Ways of Knowing

One way in which language may vary depends on students' ways of knowing and learning. Baxter Magolda (2004), Belenky et al. (1986), and Clinchy (1989) have explored ways of knowing and learning that are relevant to the development of a reflexive disposition. Clinchy (1989) conducted quasi-experimental research distinguishing "separate knowing" (critical, detached) from "connected knowing"

(empathetic) as independent epistemological positions. Male and female students demonstrated both ways of knowing, although females consistently rated connected knowing as more valuable. The relevance of these ways of knowing to this research is that both ways may influence characteristics of a reflexive disposition and consequently influence critical thinking.

It is important for the researcher not to miss variation in participants' ways of knowing and to invite the expression of alternative perspectives. Mindful listening and inquiry in the classroom may strengthen and balance both these ways of knowing for students. In the context of research discipline, the researcher may notice his own bias toward "separate" or "connected" knowing.

The Power of Authority

The final dimension to be taken into account in a reflexive methodology is the power of authority.

> "Not only openly repressive knowledge but to a large extent even 'helping' and 'progressive' knowledge is linked to power and functions in a disciplinary way." (Alvesson & Sköldberg, 2000, p. 227)

There are two intertwined aspects to the discussion of power relevant to the present research: social and personal. Foucault established the all-pervasiveness of power in both aspects (Rabinow & Rose, 2003). In the university classroom, the mere presence of a teacher/researcher, regardless of rank in the academy, projects authority both intellectually and in practice. The faculty member creates grades, criticizes students' performance, and is assumed to represent greater authorities beyond the classroom. A question asked of a student raises potential for confirmation, embarrassment, competition and a host of other consequences. The role does not automatically inspire in students a reflexive disposition for critical thinking, confidence, autonomy, curiosity, engagement or any expression at all. The person in power may unknowingly inhibit these desirable qualities in favor of reinforcing student tendencies to respond with prescribed "right"

answers. Therefore the researcher with the ambitions set out above is hardly in a neutral position interviewing students, even if there is some degree of mindfulness and self-knowledge.

Authenticity can be an important mitigating factor as all-pervasive as power. A person in a power position can inspire in participants the positive qualities described above by genuinely exemplifying them with a good dose of humility. Thus ambitious qualitative research requires more of the researcher than the participants. Given such a challenge to the researcher, it is also good to have something in the structure of the methodology that mitigates the dampening effect of power.

Just as in the classroom paired interaction, in the qualitative research step described as Existential Grounding the researcher is absent for most of the activity. First students are working on their own, and then in pairs. Moreover, the participants have all worked with these practices for at least 12 weeks (some for 24 weeks). They know that in paired interaction they are working with a peer in reciprocal roles, that they will not be pressured to disclose what they don't want to disclose, and that their responses are not graded. As described below, they have been chosen because they wanted to contribute to this research and had some kind of positive experience with reflective practices already. When the researcher re-enters the activity they know their responses will not be judged right or wrong. Just as trust and respect are two common qualities that students report at the end of the term, it is reasonable to assume these factors will help to mitigate the inhibiting aspect of power in the research process.

The time to reflect on one's own and then reflect one-to-one with a peer is a crucial check on the data that will come from the interviews. If the researcher abstracts too much from the data, a neutral or critical response from the participants will be far more telling than the researcher's efforts at self-criticism.

> A critique is not a matter of saying that things are not right as they are. It is a matter of pointing out on what kinds of assumptions, what kinds of

> familiar, unchallenged, unconsidered modes of thought the practices we accept rest…We must free ourselves from the sacralization [sic] of the social as the only reality and stop regarding as superfluous something so essential in human life and human relations as thought (Foucault in Rabinow & Rose, 2003, p. vii)

This would be true for the researcher just as Foucault meant it for all power roles in society.

3.2.3 Overview of the Two Phases

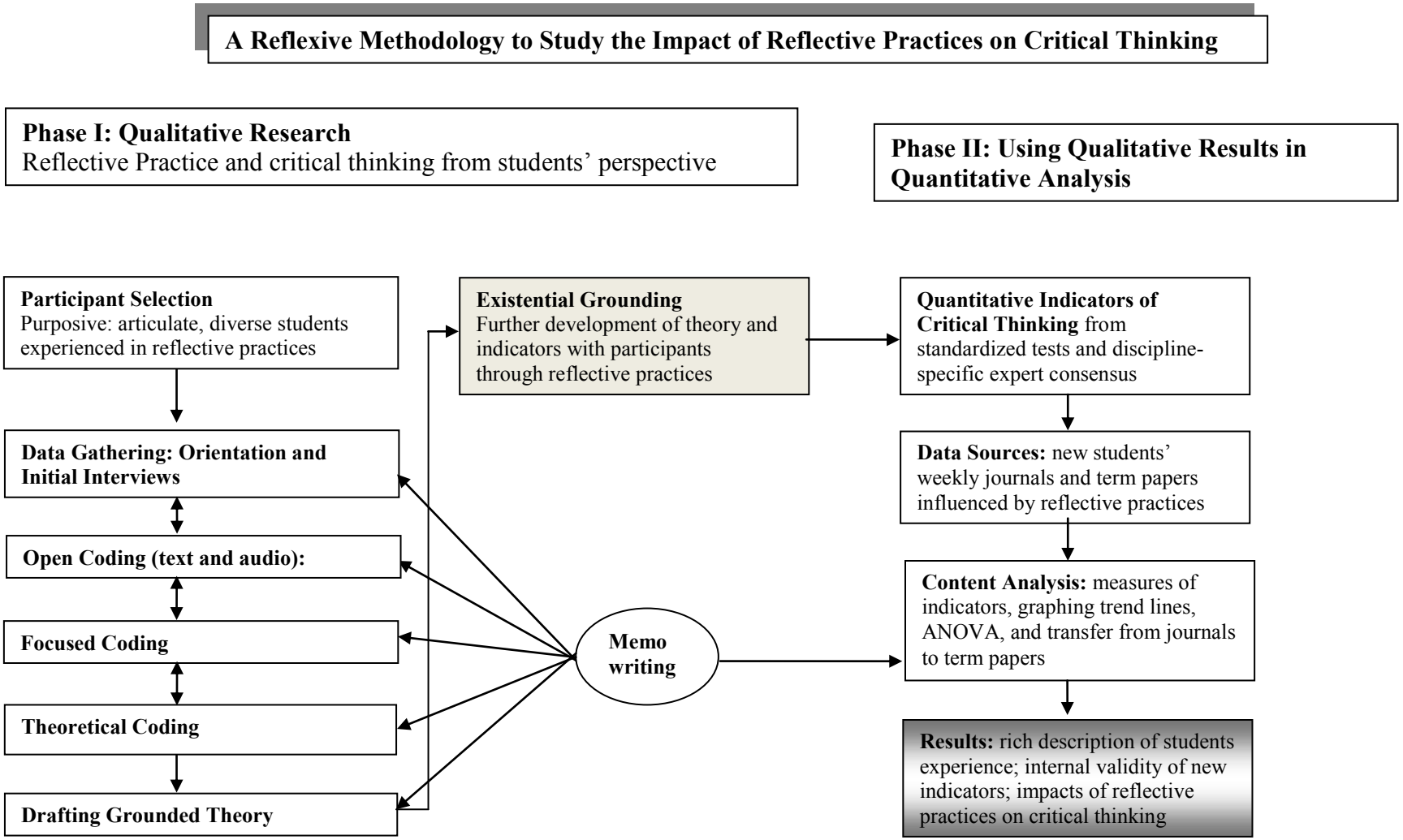
A reflexive methodology requires the same reflexive awareness that is taken as the common ground for this interdisciplinary study. The researcher is not only looking back at what has been done so far, but also suspending judgment and looking within for underlying assumptions that may limit seeing the data freshly. It applies across the entire research process.

Figure 3 (below) illustrates the research process explained in detail in the following sections. In summary, the research design is in two phases. Phase I Qualitative Research delved into the experience and meaning that the reflective practices have for students. In particular, Phase I focused on how students experience a reflexive disposition from their side of the learning process. The initial interview data in Phase I generated grounded theory to be further anchored by participants' interaction with the results. Phase I enabled the researcher to inductively generate a tentative, explanatory theory with indicators applied as dependent variables in quantitative research (Phase II).

Phase II tested the hypothesis that a particular set of reflective practices enhanced the students' reflective dispositions and critical thinking, as demonstrated in their written work. Within-methods triangulation of data sources provided additional evidence of impacts of reflective practices on the dispositions for critical thinking as well as the cognitive skills described in section 2.1.1.1. The research findings set the stage for

refinement of the indicators, replication on a larger scale, longitudinal studies, and tests of transferability.

Figure 3. Diagram of Methodology.



3.2.4 Ethics Approval

In October, 2010, ethics approval was granted by the Ethics Review Boards at Dalhousie University, where the researcher is registered as a doctoral student, and at Saint Mary's University (SMU) where the researcher has been a part-time faculty member since 2000. The participants in this research were all former undergraduate students of the researcher at SMU.

3.3 Phase I Qualitative Research

3.3.1 Participant Selection

Students who participated in the reflective practices for at least one term volunteered to be part of the research group. Eight former students who informally expressed interest in learning more about reflective practices were selected from old class lists. They were selected from two types of courses taught by the researcher. The first type was interdisciplinary: *Spirituality and Work* and *Spirituality in the Workplace*. These courses draw on the fields of organizational development, cultural anthropology, history, and religious studies. They cover topics such as meanings of spirituality in the workplace, what motivated various trends and movements historically, and the relationship of modern interpretations of spirituality to corporate social responsibility and leadership development. Four of the students were from these courses.

> The second type of course is from within religious studies: *Buddhism* and the *Buddhist Path.* These courses present the classical teachings of Buddhism in a manner relevant to contemporary society and cover topics such as the ontology of being, the development of ego, and the development of compassion. Four of the students were from these courses. Three of the eight had taken courses in both categories.

> Selection was purposive, aimed at gaining rich in-depth information rather than random sampling for quantitative research purposes. This kind of selection process was appropriate because the central research question was focused on the meaning of the "lived experience" of the students. It was important to first "get at the heart of the matter" (Van Manen, 1990, p. 62) and so a small number of participants who were keen and familiar with the contemplative practices was desirable.

An even number allowed for paired interactions in the group process activity (described below). Eight participants provided a range allowing some comparison for patterns across the participants. Eight also allowed for depth, variation and difference in individual responses, gender balance, and natural diversity in backgrounds and fields of interest.

The point at which no new properties of categorical codes emerged from sampling more data (theoretical saturation) determined that the number of participants was sufficient (Charmaz, 2006). However, none of the volunteers had taken the online mode of *Spirituality and Work* or *Spirituality in the Workplace*. Thus a limitation of this study is that the theory and indicators were derived from students in a traditional classroom mode only.

3.3.2 Orientation

The participants were gathered as a group to review and refresh their experience of the reflective practices (Appendix A). This two-hour session enabled them to recall and practice mindfulness, individual reflection, journal writing, mindful listening, inquiry and dialogue with added attention to the *process* as opposed to the intellectual content of the exercise. It also helped build rapport within the group and prepare them to work together later in the Existential Grounding exercise (described below).

3.3.3 Initial Interviews

Beginning with a semi-structured interview, the researcher started the process of engaging participants individually to solicit their own description of the impact of reflective practices on their learning. Interviews took one to one and a half hours.

The interview began with open-ended questions such as: What was your experience of mindfulness meditation? …journal writing in class? …active listening? …inquiry? …facilitated dialogue? To what extent did the instructions for the individual part of the exercise shift your initial response to the contemplated question? To what extent did the interactive part of the exercise shift your thinking from what was expressed in your initial written reflection? To what extent was there a difference between ordinary class discussions and what happened after work in pairs? After the whole exercise, how did your thinking about the contemplated topic change? Can you recall any examples? (See Appendix C.)

These sample questions opened the door to more spontaneous inquiries and responses. Thus the data from the initial interviews did not simply consist of answers to predetermined questions; the data also included new questions, related themes, and descriptions of what mattered to the student participants.

3.3.3.1 The Role of the Researcher

An important aspect of any interview is the attitude and the discipline of the listener. In this stage the researcher guided participants to accessing and articulating their experience without expressing judgments (Marton, 1986; Marton & Booth, 1987; Varela & Shear, 1999). To the extent possible, at this stage the researcher was merely supporting participants' exploration and expression. Varela (1999) describes the role of the researcher as if there are three people present. The first person is the person whose experience we wish to understand; the second person takes an empathetic role with the first person and helps guide them to accessing and articulating their experience without judgment; and the third person makes note of and later interprets and analyses the

experience of the first person. The second person becomes a partner or social meditator in the process of exploration. Varela likens this to the anthropological concept of participant/observer but notes that the "position here is not that of a neutral anthropologist; it rather one of a coach or midwife" (p. 10). There is some similarity here to the phenomenological research methodology of Schutz (1962) and T. Sable (2005).

3.3.4 Open Coding

The researcher reviewed transcriptions of the interviews done by an independent third party and listened to portions of audio recordings to verify the transcripts. The first step of open coding the transcripts began the gradual process of abstracting concepts from the data (see Appendix D for a sample of a coding page). Each code is "a short name that simultaneously summarizes and accounts for each piece of data" (Charmaz, 2006, p. 43). Using the analytic procedure of constant comparison (asking questions about what the data represent and making comparisons for similarities and differences), open coding allowed the researcher to stay close to the data and maintain a systematic approach to developing hypotheses later on (Smith & Short, 2001). The level of granularity at this early stage enabled the research to trace back abstractions developed later to students' experience.

Initial codes were provisional, comparative and grounded in the data. They were provisional because the process needed to be iterative. The researcher returned to initial codes and refined them as more data was compared to the first coding efforts. The coding was grounded in the data, the text and the recording, so that it remained easy to see what prompted an initial code. Given that these are well-informed and articulate participants, their own words and phrases sometimes served as initial codes and even categories. Glaser and Strauss (1967) and Strauss and Corbin (1990) call these contributions *in vivo* codes.

3.3.5 Memo-Writing

Some initial codes yielded informal analytic notes, commonly called memos in grounded theory research. Memos may raise codes to tentative categories and inform *focused coding* and later, *theoretical coding*.

For example, in the responses of one participant the core message was centered on frequently recognizing the impermanence of everything she experiences and seeing the ego "acting out" according to past experience rather than the present moment. The researcher's memo elaborated on the process at issue and termed the code *mindfulness*: attention to the present in the face of tendencies to react only according to associations with the past. The participant reported this process develops "100 times a day" (not only in formal meditation practice, as the researcher might have projected) but whenever "a light comes on!" (Her comment was in response to further inquiry by the researcher.)

3.3.6 Focused Coding

Focused coding is a process to refine the initial concepts and select codes that synthesize and explain segments of the data. Although this phase was iterative with open coding, it was more focused on synthesis, identifying context, conditions and relationships for and between concepts, and developing categories and subcategories. Focused coding entailed inductive and deductive reasoning, proposing and reviewing statements of relationships within the data developed in open coding so that patterns (repeated relationships) emerged. The researcher built substantive codes, codes that "weave the fractured story back together" (Glaser, 1978, p.72) and formed categories. The researcher went back to six of the participants to expand the data and explore meanings further.

3.3.7 Theoretical Coding

In theoretical coding, the researcher began the gradual development of a story line that linked the core categories into relationships. The initial descriptive story shifted to an analytic story that remained grounded in the data. In this process there was room for

"theoretical sampling," or seeking specific new data from the participants to confirm, refine or reject concepts, refining conceptual categories through reviewing and sorting memos, and finally integrating memos. The researcher then diagramed the concepts.

3.3.7.1 Existential Grounding (or Telling the Story Back to the Horse)

At this point the researcher broke from traditional grounded theory methods for a few reasons. Given that the participants shared an interest in wanting to tell their story (part of the purposive selection process) the first reason to depart from the traditional grounded theory approach was that it would be both appropriate to students' interests and more revealing to the researcher to "try out" rudimentary theory developed from the one-to-one interviews with the students in a group.

Second, the interview data are, after all, static: transcripts and recordings that reflect the students' remembered experience. Grounding the theory in the data is laudable, but it could be made even more robust to develop the theory further as a fresh subject for reflection and take the students through the entire set of reflective practices that they commented on in the one-to-one interviews. The research now became grounded in the students' current, lived experience: an "existential" grounding. Students used the same individual and interactive reflective practices introduced in class: mindfulness, guided reflection of the explanatory theoretical concepts, individual journal responses, mindful listening to each other's journal entries, mindful inquiry of each other's journal entries and dialogue to generate collective insight about the substantive theory and indicators. Refinements by the researcher were based on the individual and collective responses.

3.3.7.2 The Role of the Researcher

Through the experience of existential grounding, the initial analysis by the researcher was revealed to participants in explanatory theoretical concepts. This refinement process engaged the participants first by themselves and then in paired interaction, before the researcher stepped into dialogue with them. The intention was to let the participants find their own perspectives and diminish the "white coat effect," the possible tendency to concur with authority. The researcher then worked with the resulting critique from the

participants and accepted their refinements. Here the role of the researcher can and did shift from withholding conscious but suspended judgments to interactively exploring judgments. There was room for a "flow of meaning" between participants and the researcher, as described by Bohm (1996) and Rorty (1991) in their definitions of genuine dialogue. Sensitivity and a spirit of genuine inquiry were essential at this stage and made more possible by the high level of respect and engagement established in the earlier phases.

3.3.8 Refining the Theory

Throughout the memo-writing in the qualitative research phase the researcher posed questions to himself to expose underlying ideology, the use of power embedded in the institutional setting, gender bias, claims to authority, and the selectivity of perspectives represented in the resulting theory. The reflexive methodology matched a "quadri-hermeneutic movement…the open play of reflection across various levels of interpretation" (Alvesson & Sköldberg, 2000, p. 248). The intention of exposing the theory to varied concerns of a reflexive methodology is that the results will stand up better to scrutiny when they are carried over to further research (qualitative or quantitative). The lived meaning, generated from the shared experience of the researcher and participants was taken as never final or fixed, but valid within the socially constructed context (Onwuegbuzie, 2006).

3.3.9 Limitations of the Qualitative Research

The resulting grounded theory and draft indicators of a reflexive disposition appear in the next section. The qualitative research methods permitted emergence of unstudied relationships and the development of theory that emerged from the data. It is substantive theory in that it explains the impact of reflective practices on eight people. But it is not formal theory. How transferable are these results? Can the theory be generalized beyond participants' experience? Unless further research is conducted with other audiences no greater generalized theory is established.

In general it is sometimes possible to support greater generalization of substantive theories through a kind of criterion validity: does the theory correlate with independent research on the same subject? However, the present research was conducted because there is no independent body of research on students' experience of reflective practices and their impact on critical thinking.

For most qualitative researchers the question is how useful the resulting theory may be in enriching understanding of a situation or experience. The theory in the next section provides some value to educators interested in understanding students' experience with reflective practices. The immediate utility of this emergent theory is to suggest measurable indicators of a reflexive disposition for critical thinking based on students' experience.

3.4 Phase II Quantitative Research

3.4.1 Hypothesis and Overview

Phase II of the research was designed to test the hypothesis that the application of a particular set of classroom reflective practices (Appendix A) produce significant increases in the indicators for reflective dispositions over the duration of two one-term, eleven-week, undergraduate courses. The reflective practices were introduced in the first class and used each week in class. The indicators were developed from expert consensus as well as previous students' experience so that the results will have content validity – the indicators should measure the extrapolated range of behaviors that experts describe including the range of behaviors that students describe as the characteristic of reflective dispositions. The primary quantitative research methods used are content analysis of students' written work, data reduction, data analysis through descriptive statistics, and interpretation of results.

The aim of the design is to look for a pattern of increase, decrease or null effect of the indicators within the participants over 11 weeks. Week 1 is regarded as the baseline for

each student and change over time is measured by observation of indicators in students' weekly assignments. Using a minimum of 40 participants creates the potential to demonstrate that differences over time are not due to chance and are statistically significant. This with-in subjects design establishes some degree of control over independent variables: students had the same teacher instructing them in the same reflective practices each week and results were collected at weekly intervals for each student.

3.4.1.1 Why Not a Randomized Control Trial?

A randomized control trial would be the "gold standard" research design because it could produce the most conclusive evidence that the intervention is the actual change agent. However, a randomized control trial was not chosen because in higher education such studies are justified only when it is clear what measures will work. In this study, the measurable indicators are not yet proven. The new indicators for reflective dispositions integrate expert-derived indicators with indicators derived from students experience using reflective practices. This study could be regarded as a pilot refining and testing measurable indicators. "Only when a program has enough evidence to show promise that a full randomized control study is warranted and the costs are justified, should one be planned" (Jennings, 2012).

3.4.2 Participants

The participants were volunteers from two upper level undergraduate courses taught by the researcher at Saint Mary's University in Halifax: (1) Buddhism and (2) Spirituality and Work. As described in the ethics approved protocol, all students were informed of the general purpose of the research when participation was solicited at the start of the term, but there was no special activity or time required of participants, only their permission for the researcher to use course assignments during the term as data for the research. Volunteers were recruited to participate in the study by the researcher's thesis supervisor and a committee member during class periods early in the courses. The students were informed in writing that their academic performance evaluation in this or any course with the researcher would not be affected by whether or not they participated.

The researcher had no knowledge of who volunteered until after final grades were submitted.

All students used the same reflective practices on a weekly basis for eleven weeks, guided by the researcher. To prepare files for scoring by research assistants, student names were removed from participants' work and only an alphanumeric identifier was used. (See Appendix E.)

The desired number of participants for statistical analysis was at least 40. There were 40 students registered in the Spirituality and Work course (32 in the classroom mode and eight in the online mode). Twenty-one students from that course volunteered to be participants, including two from the online mode. Given the low number of online students, a further limitation of this study is that no statistical comparison of online and classroom student performance was possible.

There were 41 students registered in the Buddhism course (delivered only in classroom mode) and 22 volunteered to be participants, bringing the total number of participants in the study to 43.

It is difficult to determine why more students did not volunteer to be participants. It is possible that a number of the international students were concerned that their language proficiency would be a major factor in their performance and they did not want to be compared with Canadian students even though they would remain anonymous. The most plausible reason that approximately half the students did volunteer is that they wanted to help the researcher accomplish his objectives. It was clearly explained there could be no other benefits and the recruiters were carefully scripted to put no pressure on students to participate.

3.4.3 Data Sources and Data Preparation

There were four data sources collected from the participants:

1) 410 written journal entries (allowing for a two missed assignments per student) filed each week electronically over eleven weeks (from a few sentences to a whole page when first handwritten in class). Following Angelo (1995), weekly journal entries allowed the researcher to review the development of dispositions throughout the term, not just at midterm and final exams.

2) 43 term papers (evidence from work outside the context of the classroom)

3) 56 end-of-term questionnaires (anonymous)[2] designed to assess the value of reflective practices and other pedagogical features from students' perspectives (Appendix F); and

4) Five twenty-minute interview transcripts with six students after the term was over. (One interview was with two students who asked to be interviewed together.)

The journals (1) provide evidence of in-class reflective practice outcomes and provide data on the immediate impact of the reflective practices each week. Comparison of results from the journals (1) and term papers (2) provide opportunities for triangulation of data sources produced from in-class and independent learning activities. The end-of-term questionnaires (3) provide some degree of triangulation with qualitative research results and also help to identify confounding variables – what may have been influencing the students' learning experiences besides the reflective practices. The instructor's memos (4) reveal what the instructor has learned in the process about the topic being researched, the research design, and his own thinking processes. The interview transcripts (5) provide insight into confounding variables and triangulate with the end-of-term questionnaires.

[2] The end-of-term questionnaires were voluntary and anonymous. All students in the two courses were offered the questionnaires as a part of normal course evaluation. These data are from a population exposed to exactly the same content and practices as the 43 students who formally gave permission to use their writing samples and is only used for triangulation purposes. Their identity remains unknown to the researcher.

Each week during the term students addressed questions designed to provoke reflective dispositions. The questions were 1) open-ended, 2) open to multiple interpretations, and 3) derived from course content. The questions changed each week, but all the students addressed the same question in each session.

Sample questions included:

- Do you need to find the basic truths about life and reality for yourself, or can you rely on some authority outside yourself?
- Are you something more than your ego? If so, what?
- What does spirituality mean to you?
- What does the following statement mean to you: "the experience of our interdependence is compassion"?
- "Spirituality in the workplace is about individuals and organizations seeing work as a spiritual path, as an opportunity to grow and to contribute to society in a meaningful way. It is about care, compassion and support of others; about integrity and people being true to themselves and others. It means individuals and organizations attempting to live their values more fully in the work they do." Is this working definition of spirituality in the workplace acceptable to you? What concerns do you have?
- Could greed, defined as "the pursuit of profit as an end in itself," be good?

The complete sets of questions for each course appear in Appendix G.

3.4.4 Validity

Indicators that reflected the range of behaviors identified as reflective dispositions for critical thinking were developed to establish content validity. Measures were based on characteristics that define reflective dispositions for critical thinking based on 1) expert consensus (See Section 2.1.1.2) and 2) students' experience of reflective practices derived from qualitative research (See Section 4.0). Table 8 (below) shows the result of these two sources and their synthesis. The synthesis incorporates the experts' consensus

indicators with the experience of students who have worked with the reflective practices. It forms the basis for measurable indicators in Table 9 (following page).

The synthesis of reflective dispositions in Table 8 only forms the basis for what can be measured and cannot be regarded as measurable indicators itself because the presence of the dispositions would be difficult to judge from student writing (contemplation responses posted after class online). For example, "being focused and present," a disposition predominantly derived from students' experience reported in interviews, would be difficult to identify in writing. However, student written contemplation responses do sometimes make reference to "when I think about this more carefully," or "when I think about this after focusing on the question for a while" and report a kind of journey they take when they are slowing down the usual habit of mentally grasping for quick answers. Therefore the measurable indicator becomes "Does the contemplation response demonstrate that the student is slowing down; giving more time to understand one's own thoughts and the underlying felt sense?" The development of the other measurable indicators follows the same logic and enables the research assistants to make judgments on written responses.

Table 8. The synthesis of reflective dispositions from expert consensus and student experience.

Expert Consensus of Reflective Dispositions for Critical Thinking (based on Facione, 1990. p.13)	Reflective Dispositions from Students' Experience of Reflective Practice (Section 4.7.2)	Synthesis of Reflective Dispositions
Open-mindedness regarding divergent world views; prudence in suspending, making, or altering judgments	Being Present: being mindful of what you are doing or thinking; letting thinking slow down; giving more time to understand your thoughts; allowing openness; letting something come without searching; regarding the reflective practices as more than an intellectual process, a different way of thinking	1) focused and present 2) open to what was not noticed before 3) exploring the underlying and previously un-noticed "felt sense" 4) integrating knowledge learned from others and texts with experience and personal reflection
Inquisitiveness with regard to a wide range of issues; honesty in facing one's own biases, prejudices, stereotypes, and egocentric or sociocentric tendencies; trust in the processes of reasoned inquiry	Engagement with Learning: exploring what you really think; identifying with the material, meaningfulness of course content; identifying with the process of contemplation	5) aware of one's assumptions and habitual thought patterns 6) expressing confidence by articulating multiple points of view including one's own
Willingness to reconsider and revise views where honest reflection suggests that change is warranted;	Engagement with Others: feeling the courage to speak; increasing understanding of others' perspectives	7) finding connectedness with others through exploring others' points of view
Flexibility in considering alternatives and opinions; understanding of the opinions of other people; fair-mindedness in appraising reasoning;	feeling connected with others; respecting and learning from differences: generating meaning together: dialogue	8) willing to feel challenged; to work with obstacles to understanding
Self-confidence in one's own ability to reason	Confidence: willingness to feel challenged and to work with obstacles	(see item 6 above)
Concern to become and remain generally well-informed	Carryover Beyond the Classroom: reading texts critically; applying the reflective practices beyond the course	9) expressing appreciation for diversity as enriching experience and adding meaning

Table 9. Measurable indicators of reflective dispositions.

Synthesis of Reflective Dispositions (see Table 8)	Measurable Indicators **Does the contemplation response demonstrate that the student is:**
1) focused and present	1) slowing down; giving more time to understand one's own thoughts and the underlying felt sense?
2) open to what was not noticed before;	2) allowing openness: letting something come without searching or trying to make it happen?
3) exploring the underlying and previously un-noticed "felt sense;"	3) exploring what he or she really thinks?
4) integrating knowledge learned from others and texts with experience and personal reflection;	4) finding personal meaning in course content?
5) aware of one's assumptions and habitual thought patterns;	5) identifying one's own assumptions, tendencies, habits of thought and feelings?
6) expressing confidence by articulating multiple points of view including one's own;	6) understanding others' perspectives (intellectual)?
7) finding connectedness with others through exploring others' points of view	7) feeling connected with others (affective, knowing others better)?
8) willing to feel challenged; to work with obstacles to understanding	8) feeling challenged but willing to work with obstacles?
9) expressing appreciation for diversity as enriching experience and adding meaning	9) applying the techniques from the reflective practices (e.g., listening, inquiry, dialogue) beyond the classroom exercise (e.g., in listening to students in other courses, reading texts critically, learning a language)?

3.4.5 Reliability of Observations

To minimize bias of the principal researcher, two graduates were chosen who had experience with the reflective practices as Research Assistants to score the weekly journal entries of students' work. The Research Assistants were oriented together after receiving the qualitative research report in advance, including the information in Table 8 and Table 9 above. Trial scoring exercises were given to the Research Assistants to

practice. The primary researcher met with them after their trial scoring, discussed their results, and gave general feedback on recognizing occurrences of the nine indicators in students' writing (see Section 5.1.2). A week later, the Research Assistants were asked to begin scoring the students' journals independently by counting occurrences of the indicators for each participant's weekly journal entry. The journal entries for each participant were presented to the Research Assistants in a random order; the Research Assistants did not know which week's journal entry they were scoring.

The Research Assistants were initially independent "raters," as they would be for traditional studies including inter-rater reliability measures. However, to simplify the judgment needed for scoring, they were asked only to score the presence of the indicators in binary form: an indicator was either present or not. They did not "rate" occurrences on an interval scale. Therefore the analysis for inter-rater reliability employed measures appropriate to a binary, categorical scoring scheme.

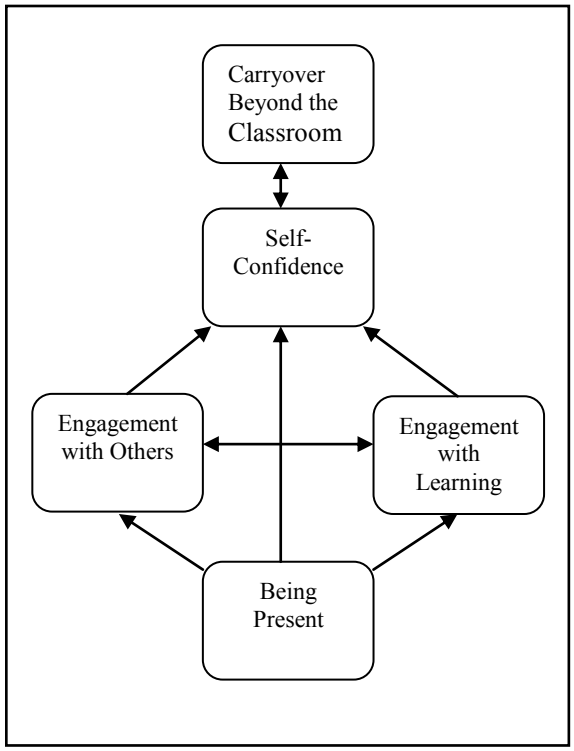
It was understood from the beginning that discriminating which indicators were present could be challenging, given that the indicators were qualitatively defined and in some instances might appear to overlap. Therefore, after scoring all participants' journal entries independently, the Research Assistants were asked to work together and develop a consensus score for each participant for each weekly journal entry. This alternative method of scoring was designed to 1) take advantage of the Research Assistants ability to use the reflective dispositions themselves and learn from each other how the indicators could be discriminated, and 2) balance out personal bias of individual raters. The entries were still in a random order to negate the possibility that the raters might develop a bias toward finding a positive trend over time in support of the hypothesis.

Chapter 4: Qualitative Research Results

This section presents the qualitative research results and integrates references to domain specific research on critical thinking and reflective practices from philosophy, experimental psychology, social psychology, developmental psychology, and the scholarship of learning and teaching.

4.1 Overview[3]

Figure 4. Major themes in students' experience of reflective practices



When sunlight passes through a diamond different facets appear to have different colors. In the same way, students' experiences of reflective practices in the classroom appear distinct but agree at the source: being present. Being Present is the foundational theme or process explaining how students experience the impact of reflective practices on their thinking. Figure 4 maps the major themes that emerge.

Three more themes emerge from the foundation as the effects of being present: Engagement with Others, Engagement With Learning, and Self-Confidence. There was no evidence to suggest a developmental sequence for Engagement with Others and Engagement with Learning. Although these two themes are distinct, they are interrelated and create a "virtuous cycle" with Self-Confidence, supporting and increasing each other over time.

[3] In this section student participants are identified only by participant codes, A1 to A4 and B1 to B4, and page numbers refer to the transcripts of their interviews. Due to scheduling conflicts there were two initial orientation sessions, "A" and "B," but both groups of four were given the same instructions and review of the reflective practices.

One final theme emerges as a kind of fruition: Carryover Beyond the Classroom. The influences of reflective practices are clearly not limited to the immediate conditions of guided exercises or the familiar cohort of students who are practicing in the same way. What is learned or realized is applicable in other courses, in workplaces, and in personal relationships.

The reflective practices positively affect students' dispositions for critical thinking and consequently critical thinking itself. As the excerpts from the data below show, the reflective practices also affect students' communication skills, understanding of themselves, and understanding others.

One unanticipated outcome is that some students feel more connected to people in the class that they disagree with than to people they quickly agree with. The mutual exploration of different views, through listening and inquiry, gives individuals an unexpected feeling of being heard and hearing others, of being enriched and seeing the world through someone else's eyes. For some, finding quick and easy agreement with classmates is a more neutral experience or even a disappointment compared to feeling connected through reflective interaction.

Such outcomes do not develop instantly in the first session of the course. On the contrary, students feel challenged because most have not encountered this type of learning activity before. For some it took the whole term before they felt they were really "getting it" -- following the instructions to the point where they were confident they were really present:

> The difference between the first week and the last week was enormous, because the first week—especially with the night class, it was like, "Oh, I skipped supper", or you know, thinking of my classes during the day, and I have to get up early tomorrow, I want to go home. But the last week, it was easy to kind of get back into that quiet space and then it's a place

where I was really just focused on what I was engaging with or the topic at hand. … It is something I have worked on throughout my time here. – B2 p. 2

4.1.1 The Students

Eight former students who participated in the reflective practices for at least one term volunteered to be part of the grounded theory research process. They had all informally expressed interest in learning more about reflective practices. All were undergraduate liberal arts majors in their third or fourth year (see Section 3.3.1 for more detail on participant selection). There were two men and six women. Their comments comprise the empirical evidence for the substantive theory developed in this section. Selected quotations are grouped according to themes and sub-themes that emerged from the iterative coding process described in Section 3.3.

Each of the sub-themes rests on a cluster of processes described in the students' own words.

4.2 Being Present

Being Present is foundational to the other four core themes. It gives students the space to think for themselves, to feel less rushed, less pressured, to explore because they are genuinely curious and not searching for the response expected by the instructor. It gives students a feeling of knowing from a different place, something more than knowing through intellectual habits, but informing their cognitive understanding.

Being Present is generally the first thing recalled when students are asked what impact reflective practices had on their thinking. They describe and explain it in terms of four processes:

1) being mindful of what you are doing or thinking
2) letting thinking slow down; giving more time to understand your thoughts

3) allowing openness; letting something come without searching or trying to make it happen
4) regarding the reflective practices as more than an intellectual process; learning in a different way; knowing from a different place

Being present is initially cultivated by introducing mindfulness meditation practice for five minutes at the start of the contemplation exercise in each class. The instructions are brief, simple and directed at the ever-present anchor to the present moment of one's experience: breathing. By training in this way, students gradually learn that they can slow down their mental chatter and focus on what is happening right now. It makes possible all that follows.

4.2.1 Being Mindful of What You Are Doing or Thinking

All the students reported that one benefit of mindfulness meditation was improved focus of attention in class. Being mindful of what you are doing or thinking, even for five minutes, allows thinking to slow down and permits attention to the current situation. Beyond the five minutes of silence the instructions carry the focus of attention from the breath to a contemplative question, and then into listening and inquiry. Consequently, students are being reminded and intermittently guided to remain attentive for 45 minutes. Students typically describe an impact that goes beyond the initial five minutes of mindfulness meditation:

> The thing that's changed is being present and not always worrying about future moments… if I'm in class, then be present and do my work rather than stressing out about an assignment I have to do when I leave, because I used to do that a lot, and then now, it's like -- just be present. And you do, you get so much more out of that hour, than if during that whole hour you're just freaking out about how you have to do another assignment when you're done with this class -- you're not taking it in… When you're there, be present and do it, and don't worry about other things. – A2 p. 16

> …to be in my class and to be present there and not be always focused on other things—that I can bring that focus into other classes. And if I found myself being distracted, I would just think, "Well, this is what I need to be thinking about right now", and I then quiet myself and then remember… and say, "I can get more out of this class when I'm in this class, I am really in this class." – B2 p. 3

A2 and B2 are noticing the contrast of being present and being anxious about things later on. The benefit of being present leads to "getting more out of that hour."

> Putting space around a subject can be better than thinking hard about something. It helps on focus… helps cut down on the chatter and distraction… I think about one thing at a time more than I normally would. And I'm not worried about it… it helps with the listening skills, to not impose your perspective on other people. -- B3 pp. 10-11

B3 also associates being focused with less worry, but describes being present as "putting space around a subject." The acknowledgement of space in contrast to concentration (thinking hard) is another important facet of being present. B3 then associates being mindful with better listening skills and the sensitivity "to not impose your perspective on other people." This association demonstrates the foundational aspect of Being Present that appears in many student comments.

4.2.2 Letting Thinking Slow Down; Giving More Time To Understand Your Thoughts

The mindfulness practice gets extended in the two-part instruction about how to contemplate an open-ended question (see Appendix A). As students break the habitual pattern of trying to get the right answer as fast as possible they notice new possibilities.

> I think the mindfulness practice in the beginning allows the mind to settle a little bit, to get a little space around the contemplation, or at least preparing oneself for the contemplation.
> – B1 p. 3

> The meditation gives you the space you need to not jump into it right away—and to understand it [the contemplation question] deeper. – B4 p. 3

B1 and B4 are noticing that there is more to the contemplation questions than may be initially apparent.

> it [mindfulness meditation] gave you the time to understand your thinking… so you are able to see how you see the question, and then you can interpret the question… one word can change the meaning of the sentence. So you can understand the question differently, you can interpret it differently… If I can take my time to think about it, then it sticks, because it is not just in and out. – B4 p. 2

B4 goes on to notice that as thinking slows down, more possibilities of meaning and interpretation are possible.

> I find it [mindfulness meditation] clears your thoughts… I find a lot of times you're taking things in, but for some reason … you're always

> pushing them to the side, waiting, okay, "I'll come back to that, I'll come back to that," and you're organizing things but… you're not ever really focusing on the thing you're always pushing ahead… you don't really take the time to actually process things silently, calmly. Like, how you say at first [in contemplation instruction], "don't even answer the question, just stay with it." …Slowing it down, it helps. – A2 p. 4

A2 is engaging in reflection-on-action, in that she is acutely aware of how she usually pushes thoughts aside that need consideration and how "slowing it down, it helps;" giving more time to understand her thoughts.

Students here are seeing how mindfulness meditation leads to deeper understanding of the contemplation question. It is empowering them to open their awareness. The inclination toward focused attention becomes a means for truth-seeking not as a matter of finding objective fact, but as a matter of exploring possible meanings. This inclination toward truth-seeking, a primary disposition for critical thinking according to scholars (Facione, 1990; Paul, 1990), is explained in students' experience as a matter of exploring possible meanings and making alternative interpretations.

4.2.3 Allowing Openness; Letting Something Come without Searching

Langer (1989, 2000) pointed out that a central characteristic of mindfulness is allowing oneself to see something novel in each situation. Below the students are addressing the second part of the contemplation guidelines that direct students' attention to the deeper awareness possible with mindfulness:

> Once you do take the question up and you're allowed to just sit with the question and let the words kind of sit, you start to pay attention to things that are happening in your body, and once you do actually start thinking about it, you think about it in a much different way than if you had just delved right into it. – A3 p.2

> …the more you sit in the present and think about something [contemplation] the more that things come to surface. So, in that way… if you just sit there looking at it, and looking at it, and thinking about it, more things are going to pop into your head rather than immediately saying, "Okay, I'll just write down the answer and add in a few extra things to make it a bit longer." … but if you're not really taking it in, then it doesn't have much purpose. To be present and clear, then yeah, that would help for sure. A2 p. 20

A3 and A2 are recognizing that openness, rather than quick associations, can be creative and associate this with being present and clear. Such insights support the extensive work by De Bono (1970, 1976) on creativity in thinking.

> I would usually have a question and an answer right away, rather than reviewing the question, and [now] I'm waiting for the answer for a bit… reviewing the question over and over again has far more value than just hearing the question and coming out with an answer… whatever the question is, it kind of seeps in deeper before the answer is given. …there are more connections to it the more you sit with the same questions. – B3 pp. 6-7

Similarly, B3 is recognizing openness can bring deeper engagement and unforeseen connections arise with the question.

> I find that the words flow so much easier if you've given yourself time to have the contemplative practice and think on the question for a while without trying to think up an answer. When you do let that come in, it comes much more easily than if I had tried to just leap into it and write something down at the beginning.… It has certainly made me take a step back in discussions in other areas before really jumping into the conversation, and taking that step back to think, "what did they mean by

> this?" And how can I question them in a more gentle manner, and get to what they're really trying to say? – A4 p. 7-8

A4 is referring to the openness that can be extended to listening and inquiry with others. For most of these students the extension of mindfulness into interaction produces a gentle inquisitiveness rather than an attitude of defeating an opponent through questioning. Students are experiencing genuine curiosity, inquisitiveness, rather than trying to find out what the instructor wants for the "correct" answer. This process also corresponds to scholars' recognition of "open-mindedness and flexibility in considering alternatives" as key dispositions for critical thinking (Facione, 1990).

4.2.4 Regarding the Reflective Practices as More Than an Intellectual Process; a Different Way of Thinking

Students here are beginning to take into account something underneath intellectual strategies for thinking: what they are feeling. Rather than dismissing this experience, it becomes something further to explore. This inclination, explored further in later themes, is not often mentioned by scholars as an underlying disposition for critical thinking, but it appears early in the experiences of students engaged in reflective practices. It can add a visceral component that makes the contemplation process a way of thinking that is different from the usual.

> I did find, especially toward the end of the classes that it got easier and more familiar; it did change the way I was engaging with the topic. It was a different way of thinking. I noticed even last week [during the research orientation session] when I was really reacting and how I was feeling, it was not so much an intellectual process… My actual response ended up being something completely different, and it ended up regarding how I responded emotionally and viscerally to the question. – B2 p. 2

> [with respect to journal writing in class] Well, you're now taking what was in your mind, and doing something with it physically, so it's turning your thoughts almost into action even though it's just putting them on paper… In your mind, it's not tangible… Your thoughts are still going on, and the exercise of writing it out kind of pushes the thought pattern further. -- A1 p. 12

A1 is making an observation that was not common in the initial interviews: the physical act of responding to the question in writing "pushes the thought pattern further." In the research step of testing initial themes with the students as a group, some of them confirmed this was true for them as well, although they had not spoken about it in their individual interviews.

> Things seemed very straightforward and you wouldn't expect to feel any level of discomfort with, and something would come up and you really had to put a bit of thought into, "why am I feeling like this?" – A4 p. 3

The positive response of students to mindfulness practice in higher education has been documented by Shapiro et al. (2008) and Zajonc (2003, 2008). For some, being present in these ways leads directly to deeper engagement with the material they were learning in the course, for others it leads to deeper engagement with their peers first and then to the content of the course.

4.3 Engagement with Learning

Engagement occurs when learning becomes personally meaningful. Students begin to identify with their interpretation of the content. "It sticks." For some students this occurs first through individual engagement with the learning content. They demonstrate metacognitive thinking; first noticing what they were thinking and feeling about a question, and then becoming aware of assumptions and tendencies that come from

habitual thoughts and biases (reflexivity). Once such reflexive awareness emerges, so does the possibility that underlying assumptions and habitual patterns of thinking can be questioned and changed.

In the Broadway play, *Into the Woods*, the protagonists regarded the mysterious forest as a place where the normal and the usual can change. As one student said with regard to her emerging reflexive awareness, "maybe I'll just take a step into the woods a little bit." Reflective practices reveal to the students that "the language of habit is silent" (Charmaz, 2002). We do not understand the influence of habitual thoughts and assumptions until we reflect on them.

Three processes can be identified from students' experiences in this theme:

1) exploring what you really think
2) identifying with the material; meaningfulness of course content
3) identifying with the core process of contemplation: becoming aware of your own assumptions, tendencies, habits of thought, and feelings

4.3.1 Exploring What You Really Think

Exploring what you really think can be an individual process; it does always involve others. Some of the students described the impact of the reflective practices as an internal exploration, at least at first. There are initial quick responses or no responses to open ended questions and then reflective practices lead them to take a deeper look.

> A pool of these surface answers are already coming up, and when you suggest deepening it [your awareness], it just tends to sweep those to the side and look under them… and then you increase it with the question, reviewing the question. And there were all these things that bubbled up… what is underneath those questions… it is most like peeking under the rock a little more, or like the edge of the forest -- maybe I'll just take a step into the woods a little bit. – B3 pp. 7-8

> [with respect to the reflective practices in general]… they were very helpful for critical thinking because I found that when you put topics up, some of them I would have instant opinions about, other ones I wouldn't have ever thought about it. But every time I did the reflective practice ones that I had instant opinions about I suddenly had to think more about why I had that opinion. And if was I was really opinionated that would kind of ease up a little bit, because I'd have to think it through a little more. And then for things I didn't think I really had any opinion on, suddenly exploring it, and exploring that in a deeper way made me realize that I could think about it and process it to come up with an opinion, or to have an opinion. – A3 p.1

B3 and A3 are looking inward and shifting their initial responses. They are demonstrating reflective dispositions identified by critical thinking experts such as being 1) inquisitive and honest in facing one's own habitual patterns and egocentric tendencies and 2) recognizing and suspending one's own judgments (see Table 8).

> You are asked a question, and you have been taught the response—so the response is what arises immediately. By separating yourself or giving yourself space, it is almost a way to prepare yourself -- to answer what you really think, what myself as the learner thinks, rather than what I have been told to think, or what I think is the right answer... – B1 p. 3-4

B1 captures the essence of this theme: "to answer what you really think" yourself rather than the response you have been taught. "Exploring what *you* really think" marks the beginning of independent critical thinking. It is not critical thinking limited to authority's rubrics, however important they may be in teaching any particular discipline. Independent critical thinking does not necessarily contradict what it is given by authority; on the contrary it may produce the sense of coherence and identification with the material so necessary for Carryover Beyond the Classroom. It does permit, or "empower," the

student to explore within him or herself and in so doing begin identifying with the material.

4.3.2 Identifying with the Material: the Meaningfulness of Course Content

One of the most satisfying moments for any instructor occurs when students demonstrate the course content has become meaningful, that it is now part of their own thinking -- "the ideas that came up in those practices, they really stick in your mind and you're able to see them in your own life" (A3 p.10). Several students expressed this realization.

> I think that the meditation, contemplation and discussion model takes what you have learned and helps you internalize it. – B1 p. 1

> … if you haven't really quieted your mind and really thought about the question, and each word, and what impact [it has]…that's what you end up start doing. And you're like, okay, well, that word is … "wake up", as opposed "to learn," … It changes it, you know. And then you start kind of going, what does it mean for me? What does "wake up" mean for me? And you start taking it in. I started taking it in little pieces, where as if I immediately put pen to paper, I have a completely different answer. Not as thought out -- definitely not as profound. – A1 p. 6

> … look at 'your truth' and 'your truth,' and see how things can come together, or maybe one has to be rejected, to find my truth… I think just that I'm not satisfied with taking something at face value, but I really want to dig into something and find what evidence there is, if there is evidence, to back up that thinking. – A4 p.12

> it [the reflective practices] developed and I found more and more value in it every week that I did it… when I was doing them, even those topics where I would say, "I don't really have an opinion on this, I've never

> really thought about this before, it's not really important or whatever," I literally found that I would spend days thinking about it -- not brooding over it, just thinking about it more in my mind, because the concepts and the ideas that came up in those practices, they really stick in your mind and you're able to see them in your own life, and that's why I think it's so beneficial to student learning, because it's something that really resonates with you. It's not something that just comes and goes. – A3 p. 10

For B1, A1, A4, and A3 the key words and phrases for identifying with the course material – "stick in your mind," "internalize it," "what does it mean for me?" "your truth," "found more and more value" – vary, but they also converge on another process that explains what they are doing: *they are all doing some kind of work with the material, not merely accommodating it, but assimilating it.* This notion of active learning is hardly news to educators (Dewey, 1938; Piaget, 2005), but *how* to get students to do that internal work has been the challenge of modern education. These students demonstrate that the reflective practices are one way to lead them to do the work. The reflective processes lead them to identifying with the core process of contemplation itself.

4.3.3 Identifying with the Process of Contemplation

Contemplation practice moves students' attention from the breath (during mindfulness meditation) to a question or a statement to be considered. Their attention is actively directed to hold the question first, for a few minutes. In so doing, they notice their tendencies and assumptions as they come up.

> …then holding the idea [contemplation question] is another way to sort of learn what type of assumptions you are bringing into the material. Because, for example if you pose a question, I might have a reaction to the question, and my immediate response in this atmosphere is to answer the question. So asking us to hold the question I think is a better way to handle the material because you can -- almost like separate yourself from what you are learning—give yourself time to mentally prepare yourself. Mental

> preparedness is what the mindfulness practice and holding the question do for me. It just sets a space in which I can be ready to engage the material in a different way… the biggest insight for myself is just learning what type of preconceived notions I have of the subject matter. – B1 pp. 3-4
> … the idea of being able to really explore where you stand on an issue, and really understand your own assumptions to a much deeper level than you ever would have done on your own terms. – A3 p.7

B1 and A3 are developing their reflexive awareness: becoming aware of one's own assumptions, tendencies, habits of thought and feelings.

The second part of individual contemplation directs the students to relax the attention on the question and open awareness to the *felt sense*, the as yet unarticulated response that comes from body (Gendlin, 1978; Gendlin, 2000). A number of participants articulated this feeling.

> When you first used the term "felt sense" in the contemplation model, at first it is not something that anyone would really recognize is happening—that you are having a physical or even an emotional reaction to the material. But meditating and then finding that felt sense to the material helps to see that the learning process is more than just being able to repeat what you are being told. Also, it allowed me to see that there are layers to the material, and learning is taking place not just on an intellectual level, but also on a physical level. -- B1 pp. 1-2

> …what we call the felt sense part, it grows throughout, right. So at first, of course, you're just kind of getting in touch… or just being quiet… but then as I spoke my words out loud to someone else [in interaction] I felt this deepening, the felt sense is deepening, then it's deepening even more as I'm getting their perspective… and then this came up and I never

> thought about it that way… wow, I would never have thought I could have gone to that extent about this particular topic. – A1 p. 10
>
> Paying attention to what happens with your body, with the introspective, you have the time to just sit and process it in your own mind. It really helps you to get a better grasp of this [contemplation question] and look at it in a much broader way than you would if you just delved into it. If I'm forced to just take a stance on an issue or whatever, and I don't have time to process it, it's a very narrow focus. But this widens that focus a lot more which opens up room to hear other opinions and to look at it in new ways that you wouldn't have before. – A3 p.3
>
> … if someone would say something in class, and I would be instantly agitated and ready to respond about it, instead of just responding I would stop and think, "Okay, why am I so upset by this; what is this hitting on?" …you know, you have to be aware of your own biases, but you have to be aware of that felt sense and that deeper reaction that you are getting from something. – B2 p. 4-5

The contemplation process brings what the students know in their minds and their bodies together. It reveals underlying responses that they may not at first be aware of or able to articulate and in that sense it evidence of a reflexive disposition. Yet when their attention is open to the feelings and sensations in the body, it adds a quality of authenticity and creates a kind of confidence to articulate experience in fresh language.

Nothing that has been presented by a teacher or a text has been forgotten. On the contrary, *contemplation in these two stages permits an iterative comparison of what has been given and what the students really think about it.* That emerging confidence encourages students to communicate, to voice their own thoughts and to listen to others.

> Contemplation provides an opportunity for integration that is not easy to achieve…and integration is the foundation of integrity (Marche, 2011, personal communication).

The core process of contemplation is the integration of given information with the lived experience of the students. It is introspective to begin with and activates reflexive awareness. This contemplative process is then directed outward by articulating the experience and communicating with others. It becomes *reflective interaction*.

4.4 Engagement with Others

Student engagement has been studied extensively by Chickering and Gamson (1999) and Kuh (2009). Kuh notes that the National Survey of Student Engagement (NSSE) includes questions for students on whether they engage in collaborative learning – one of the key benchmarks for the survey. Similarly, the evidence below indicates learning for some students becomes most engaging when they explore what they really think about the subject with their peers.

The category Engagement with Others includes five processes described and explained by students. The specific processes identified by students as they made these shifts were: The specific processes identified by students as they made these shifts were:

1) feeling the courage to speak
2) increasing understanding of others' perspectives
3) feeling connected with others
4) respecting and learning from differences
5) dialogue: generating meaning together

The shift in the focus from what is happening for the individual, to what is happening with a partner, to what is happening with others is the result of the reflective practices carried into structured interaction: listening in pairs, reflecting back what was heard with

the partner, inquiry with the partner, and finally an instructor-facilitated dialogue with the whole class.

4.4.1 Feeling the Courage to Speak

Several participants reported that feeling the courage to speak comes from wanting to understand others as much as wanting others to understand you.

> I find that's probably the most helpful learning tool… being able to take what you feel and express that to someone else, and then have them understand what you say, because sometimes that can be hard. – A2 pp. 7-8

> …until you take into account where that other person is, it [your view] is not so obvious to them… They haven't gone through the basics of thinking about it, so it ends up being just them going with it because someone else said it – rather than realizing it… when you know that someone is completely listening to you, you start to listen to your own stuff more. "Why did I say that?" …do they have enough of the background to hear what you are saying? It makes me want to break down certain things into simpler forms, to explain it… It makes you just slow down that instant reaction thing. – B3 p. 3

> …sharing [contemplation responses] also helps you learn because you see different perspectives which make you see the whole picture better. – A2 p. 2

A2 and B3 are describing their motivation to communicate, to understand others and to be understood. In other words, feeling the courage to speak comes naturally when students have been encouraged to "find their own voice" (Baxter Magolda, 2004; Belenky et al, 1986). It adds curiosity about what thinking processes others are going through and leads to increased understanding of others' perspectives.

4.4.2 Increasing Understanding of Others' Perspectives

As trust in their own thinking led to communication, participants demonstrated an increasing understanding of others' perspectives. Using multi-logical perspectives is regarded by critical thinking scholars as a disposition for critical thinking (Table 8). The quotes below illustrate how different views began to emerge as contextual and multi-layered, but not arbitrary or merely idiosyncratic. This increasing understanding of others' perspectives corresponds to Perry's later developmental positions of critical thinking (1970).

> …that's how you get to more basic stuff behind what they are saying -- you ask them what they mean about certain things… I find that is when they give personal examples… I just feel that I can better understand where they are coming from, more personally… it tended to expand my thinking, and think about things I might have missed. – B3 p. 4-5

> I think to begin with that that the introspective part is done before the interactive part is really helpful because it puts you in a new state of mind where you're ready to hear, to hear another person's opinion. And the interactive part is extremely beneficial for everything. You're forced to look at an issue through someone else's eyes, and you can't, you're not supposed to take on your own assumptions or biases when they're presenting their case. So you're looking at it an entirely new way. And then you can usually see it from their perspective, even though you might have another perspective on it, you can see where they're coming from because of the openness that you found in the introspective part. .. that in turn influences your own perspective again because you've been able to see it in this new way. – A3 pp. 3-4

> … the interactive part also influences your reading because when you read something generally, the author has some sort of stand point on it -- even if they're technically not supposed to, they generally do. So be able to read it [critically], and to see it as they see it, is something that I think definitely came out of those reflective practices. – A3 pp. 15-16

> The language difference in one way helped them [ESL students] phrase things in ways I never would have thought of phrasing it; and saying it in ways I never would have thought of saying it. One girl said that "Compassion was a sadness in everyone's heart." I never would have thought that; it blew my mind. It was really interesting to hear that… So, yes there is a language barrier, but there is also another way of thinking about it that is completely different than I was raised… she thought of the question completely differently. I would go, "Oh wow." – A1 p.4

These quotes illuminating the theme of Engagement with Others through reflective practices supports the development of multi-logical perspectives and adds depth to another dimension of understanding: feeling connected to others.

4.4.3 Feeling Connected with Others

Although the student participants were asked open-ended questions in the research interviews, most of their responses confirmed what the researcher already suspected based on his observations over years of teaching with reflective practices. The researcher was content to clarify and ground his assumptions in the words of the students. This theme – feeling connected with others – took a turn that the researcher did not anticipate. Many of the students feel more connected to each other based on their exploration of differences than based on holding similar views.

> I'm finding it hard to find words that describe the feeling of hearing other people's perspectives and learning -- maybe "connection" is a good one… I find, in a weird way, even though you'd think that's a disconnect

> because we're all so different, it's almost a connection to people. A2 pp. 25-26

> [with respect to interaction with someone whose response doesn't agree with yours]… you have this automatic feeling, "Well, they're so different than me, I would have nothing in common with them. I could never interact with them." But if you're led into an interaction, and you're both coming at it in a genuine way, and really attempting to understand, it can really make a huge difference… I find it really facilitates the back and forth and the discussion and the inquiry a lot more, because you're attempting to understand something that you don't. Whereas if you're very much in agreement with your partner, you don't have that same sense of curiosity because you almost have that feeling of, "I know where they're coming from." -- A4 p. 14-15

When students are both "coming at it in a genuine way, and really attempting to understand," something happens that is unexpected even for the students. The sense of connection grows because of understanding how another person arrived at a different point of view. Even when the presupposition is "I could never interact with them" the shared risk of being curious "can really make a huge difference."

> Maybe in that vulnerability…feeling so unsure, finding something that backs up or supports your own response or your own beliefs, helps me to relax a little bit because I'm not so strange…. I'm just like the other person, so it is okay for me to express it in whatever way I am expressing it. – B1 p.8

B1 is describing the courage to express himself and expose what may be "strange." It is this vulnerability that becomes mutually recognized and that mutual recognition is what connects and supports the individuals. That "something that backs up or supports your own response" is more about overcoming the feeling of being strange or isolated than

conceptual agreement. It corresponds to the empathetic or "connected" way of learning documented by Clinchy (1989). The same student participant also said:

> The hardest thing is to not try to find in another person's response something that supports your own beliefs. That is the greatest challenge for me…. It felt like there was a genuine desire to help the other person find what they were trying to express clearly. – B1 pp. 9 - 10

Although this also refers to a later theme, Confidence and the willingness to feel challenged, it adds significant meaning to the description of what students experience when they say they feel connected: "a genuine desire to help the other person find what they were trying to express clearly."

> …if I ended up being paired working with somebody and we kind of thought along similar lines it was like, "Oh, we agree, that's no fun." But then there was always somebody in the class who would argue against my point [referring to the group interaction at the end of the exercise], which I think really helped me to understand both sides to an argument—which I find is important. If nobody is arguing with you, you may as well be talking to yourself. – B2 p. 9

B2 is expressing another facet of connectedness. The "arguing" that B2 is referring to occurs in an atmosphere of respect and openness to others' points of view: understanding multiple positions. Rather than whitewashing differences to maintain a superficial harmony, this kind of connectedness supports the cognitive skills of interpretation, analysis and evaluation with the underlying reflective dispositions that are essential for strong critical thinking (See Table 8 and Endres, 1997; Facione, 1990; Paul, 1990).

> I've never developed any really good friendships through these interactive exercises… but I definitely feel like they make you feel like you're connected to people… you just get a sense of your connection to that

> student and then to all the other students in the class… I think it's changed my general view of how I connect with people; even outside the class… it's hard to explain… I don't really know any better word to use than "connectedness," because that's really what it is. -- A3 p. 5-6

Feeling connected with others is a process that develops unintentionally through mindfulness, reflexive awareness, and openness. It is respect for the genuineness and vulnerability of others' that leads to understanding multiple viewpoints and the journey that people take to get there. These personal responses suggest that s*tudents feel more connected in their common search for meaning than through particular conceptual agreements.*

4.4.4 Respecting and Learning from Differences

Related to feeling connected, another sub-theme emerged: respecting and learning from differences. Here students go beyond tolerance to appreciate different points of view and look again at their own views.

> …how so many people could look at the same thing so differently, you know… the variety of responses was really quite astonishing, really… to almost completely turn off your own judgment and flip in that mindset of where they were with the question… they could be really, really different. -- A1 pp.14-15

> I find that with these facilitated discussions that class discussion is a lot less argumentative… I don't know how to say it, but you're just a little more accepting, and you don't want to step on people's feelings because you know they've put more into it than a simple knee jerk response to a question.
> – A4 p. 6-7

A4 is expressing sensitivity, but this does not squash reflective inquisitiveness or deeper learning. She goes on to say:

> the more somebody inquires about it [my contemplation response] and really makes me think about it more deeply, I find I really go further than I had been able to go on my own. – A4 p. 10

Similarly, B4 relates the appreciation of multiple viewpoints to the self-honest investigation of what and why she thinks:

> I like the company of other people. I like the different views that so many different people bring – and how that forces me to think about what I think and why I think about that. – B4 p. 13

Engagement with others joins the desire to communicate with understanding different points of view. The unintentional journey to connectedness coincides with respect for others' journeys. Students experience and respect that everyone, including themselves, has their own developmental journey. The theme of respecting and learning from differences takes students through the dialectic of self and other to generating meaning together.

4.4.5 Dialogue: Generating Meaning Together

Dialogue is a process of generating meaning together (Bohm, 1996; Elbow, 1986). It is a step beyond respecting differences that comes with feeling connected. The process of dialogue explains further how learning occurs. As several students explained, that is quite different than winning an argument.

> …the few times I was partnered with someone where we had completely opposite views, it was difficult. But it kind of forced me to create those different understandings… different interpretations… different examples

of what I mean. They [the student partner] kind of forced me to do that myself, and then explain it to them in many varieties of ways. So that also helped me to understand it myself… -- B4 p. 10

…as the process continues…it just gives you another set of ears, to be able to hear or see your own reaction through another person's eyes. It becomes less of a self-centered experience, and becomes a shared experience, because that person becomes involved in your response. And, you get to possibly see another side of the material, another side of your own response that you may not have noticed, and key words that are repeated. Then the person will ask you, "What do you mean with this word?" or "I'm feeling you are frustrated in this area." So you get to experience your own response through another person's reaction to it. – B1 p. 10

I think part of it is that you're really "getting it." Lots of times it's really easy to be in a class and hear these other opinions, and you can say, well, that's their opinion and that's fine, whatever, but you don't really understand their opinion. So there's lots of issues that seem very controversial because they seem really contradictory. But then through the interactive exercise, you realize they're not so… black and white… there is often some sort of middle ground. – A3 p.4

Usually in the discussion [facilitated dialogue] very different viewpoints would come up even if that hadn't come up before. So, even though it might have been very, very different you can still talk through it and realize the points where you are; it is sort of a collective view on the issue. – A4 p. 17

In their own words, the students have explained learning as an interactive process. This does not contradict the earlier evidence that reflective learning can occur

through the individual working directly with a question, a text, or a teacher. What is similar is the common reference to a reflexive awareness.

> I think the other thing about the dialogue and having sort of a collective sense… one thing that was really beneficial was the following week you would take contemplations [students' written responses posted online] anonymously and just put them up, and we would talk about them. And I think that was a way to bridge some of that gap that I was talking about before, of some people being shy or whatever, because it's anonymous. And by looking at the different contemplations, you see different points of view in the class and it's actually really interesting because you have no idea who wrote them and it could be anyone in the class, so it develops that sense even more. – A3 p. 18

A4 is pointing to the inclusivity of community, including and benefiting from even those who remain shy and are reluctant to speak in the facilitated discussion. In general, these responses of feeling connected suggest that students are creating a learning community: a group of people who value each other's journeys and viewpoints, not just the teacher or the textbook point of view (Anderson et al., 2001). It extends the classroom from a group of individuals who are sometimes exclusively focused on absorbing what the instructor says to students who feel they have something of value to share with each other and the instructor. With "being present" and "engagement" as described by students in these contemplation processes the evidence also suggests another theme emerges: confidence.

4.5 Confidence

As confidence in themselves individually and as a learning community develops, the reflective practices get easier to do and seem more natural. Many students find some confidence emerging just from the introspective practices of mindfulness meditation and

contemplation: being present. Confidence becomes more noticeable in interaction. Confidence with respect to critical thinking is described by scholars as "willingness to reason and articulate arguments" (Facione, 1990). Students' sense of confidence from reflective practices includes this but is broader -- a willingness to feel challenged and to work with obstacles.

4.5.1 Willingness to Feel Challenged and Work with Obstacles

The willingness to feel challenged and to work with obstacles develops gradually. Although it can at times appear to come like a switch turning on, such willingness requires sustained supporting conditions and practice.

> I remember vividly, definitely at least the first two weeks, maybe three, being really shy and holding back in class, and having trouble being quiet, and especially having trouble listening. I really wanted to speak, and kind of almost prove myself …articulate that I have a right to be here. But then by the middle of the term, I can remember the class when I was sitting there thinking, "I've got this. I can listen to him and I know what he said and I can articulate it back." It was the first class there was accomplishment, like "I did it"; "I didn't have to try so hard this week; it wasn't a struggle to listen". I didn't have to keep telling myself, "Focus, listen to him, stop waiting for your turn." Those were the things, for the first month of the class, that were really the challenge. So by the end of the first term I felt fairly comfortable with it, definitely for sure. And the second semester it was familiar practice. – B2 pp. 6-7

> And then after a little while, it [the difficulty of following the instructions for listening and inquiry] didn't matter so much because I think everyone got used to it. – A1 p. 7

> it [the reflective practices] developed and I found more and more value in it every week that I did it… when I was doing them, even those topics where I would say, "I don't really have an opinion on this, I've never really thought about this before, it's not really important or whatever." I literally found that I would spend days thinking about it -- not brooding over it, just thinking about it more in my mind, because the concepts and the ideas that came up in those practices, they really stick in your mind and you're able to see them in your own life, and that's why I think it's so beneficial to student learning, because it's something that really resonates with you. It's not something that just comes and goes. – A3 p. 10

B2, A1, and A3 are referring to the impact of the reflective practices in general. Practicing the whole sequence repeatedly brought a new confidence. This confidence sometimes comes with humbling recognition:

> …recognizing how unfocused, how busy my mind really is all the time… interacting I think what was really challenging…prejudging [others] as people were talking, as my partner was talking, I found that to be most difficult... I found it was most challenging if their point of view was different from mine. A1 p. 1

Students describe confidence in the reflective practices in terms of a sense of accomplishment, a sense of ease, and finally as something that naturally carries over beyond the classroom.

4.6 Carryover Beyond the Classroom

The final theme that emerged from students' experience was carryover beyond the classroom. The transfer of learning from the class context to other contexts is a kind of "holy grail" in academia. It shows that students are not merely reiterating formulas and ideas, but applying what they have learned to novel circumstances. Some students

showed evidence of carryover beyond the classroom in two processes: 1) reading texts critically, and 2) applying the reflective practices beyond the course.

4.6.1 Reading Texts Critically

A number of students demonstrated how the development of reflexive awareness can carry the mindfulness, openness, and inquisitiveness of strong critical thinking to reading texts.

> I found before [this course] that reading was really hard for me to hold my focus... So there was that aspect of just focusing on what I was reading. Then engaging in a sort of dialogue with the author…being aware of how I'm responding to it emotionally, physically and mentally. And then kind of trying to see where the author is coming from and how they are responding to what they are writing about, emotionally—kind of putting myself in their shoes, a kind of empathy. – B2 p. 10

> …the interactive part [of contemplation exercises in the classroom] also influences your reading. Because when you read something generally, the author has some sort of stand point on it, even if they're technically not supposed to, they generally do. So be able to read it, and to see it as they see it, is something that I think definitely came out of those reflective practices… it's a skill that you're supposed to develop in university, and you do develop it to an extent, but I think that you develop it in a much deeper and more meaningful way with these practices. – A3 p. 16

> [with respect to reading texts] …not only what is being said, but why it's being said. Also questions arising from what is said. What's being excluded, what's being included? It has a lot to do with context, contextualizing what's being said. What does the author want you to take from it, or not want you to take from it, in terms of biases showing through… there has to be a level of openness… you have to have space,

> not pass judgment. If you have your own agenda you can't see where the author is really coming from. B2 2nd Interview 1:15 [audio]

The process of reading texts critically (or close reading) is not something that was explicitly presented by the researcher in the courses using reflective practices. It is an extrapolation of the reflective practices in classroom made by some of the students on their own. It is as if these students explore what they think and project a dialogue with the authors. Such interaction with a text is of course not unique to students using the reflective classroom practices. It is often described as "critical inquiry" and explicitly taught (Crooks, 2009). Here the evidence suggests critical inquiry would be supported by reflective practices and even develops naturally for some students as an outcome of using reflective practices over time.

4.6.2 Applying the Reflective Practices Beyond the Course

Evidence of Carryover Beyond the Classroom is varied yet concretely described. Students' experiences provide evidence that the reflective practices are sufficiently assimilated to apply them in novel situations. The students are more focused; they have confidence to explore others' views before making judgments and they are more aware of their own underlying dispositions.

With respect to focus, students articulated how this process carried over into other courses and into life more generally.

> I took the class first year, and I think it really helped me in terms of later courses, being able to go in and say "This is where I am at now, this is the topic I am focusing on, I am not going to think about that test I have tomorrow – for an hour and a half – because I am in this space, and that practice really helped with that… And especially, oddly enough, in my science courses, I found that immensely helpful… because you are covering so much so quickly—especially in like 1st year Biology. There is a lot of information thrown at you. And for me personally, when I went to

> class, I was really in class, really was listening to the material, being focused on that and not thinking about…you know, just getting overwhelmed and thinking about what is going to happen later when I am tested on that. But just listening and engaging with the material and coming back into that focus, I found when it was exam time, I didn't have to study or worry the way that I had before. People I would be in class with would say, "I don't remember this", or "I'm so worried." In terms of recall, I could, because I was there…I don't know how else to phrase it. – B2 p. 3

> I found being present… and taking things in the moment and focusing on them, that whole thing to me, it slowed things down for me in other areas of my life… definitely in the way that I interact with people. – A2 pp. 2-3

The reflective practices, particularly reflective inquiry, added depth to other courses that were already in highly interactive seminar formats:

> … especially in classes where it's not really a lecture-based class, but where you really have a lot of conversation flowing between students and professors and it's more sharing ideas… it [reflective inquiry] does make you take that step back, and think a little harder on what people are saying, and you know, you do end up, I find, making more inquiry into "what do you mean by that?" Can you go further? Rather than taking what they say on face value and moving onto the point that I want to make. – A4 p. 8

One student reported how awareness of the felt sense was applied to learning a new language:

> When I was in Chile learning Spanish, I used that technique to find in English, when I say certain phrases, what is my emotional reaction—and then repeating the same words in Spanish and finding or applying the

> emotional reaction to the phrase. So the transition from English to Spanish becomes a lot easier, because I already know what my feeling is when I say, "I like this" or "I don't like this." So then just replacing the words "me gusto" or "no me gusto", becomes an easy transition—because I can already see the physical response, and then the words just sort of come as a secondary, the way I explain that physical response. So I apply that into my learning, in an academic environment—seeing the physical response and then what terms and ideas are coming with that physical response. So then it becomes a more holistic type of learning process. – B1 p. 2

Another student noticed that mindfulness helps develop a kind of emotional intelligence (Goleman, 1997):

> When I was working I was the shift manager, so I was responsible for everything that happened during that shift. If someone would complain about something like "I can't eat this hotdog, it has cheese on it," I literally took one step back because I didn't want to be that close to the frustration and anger…. But I was also more willing to be calm and instead of saying, "You are an idiot", I said, "Do you want a different hotdog?" I was more aware that I get caught up in other people's emotions. – B4 p. 14

B1 reflected on the implications of reflective practices for undergraduate education in general and saw the reflective practices as a "foundation for critical inquiry" applicable for first year students:

> Obviously any person who does a contemplation will be able to expose their own biases, and I think that is really important. I'm not sure if it would work in every class. The place I think it would be most important is for first year students, because I think it would set the foundation for critical inquiry in a group environment… If that foundation was laid in the

> very beginning, then it wouldn't be such a hard transition. I really think it would create more dialogue and it would make it easier for students to engage other students who they don't know. And, for that to be okay, for it to be okay to just say what you know and not feel stupid about your answer and not feel unsure. – B1 p. 16

The experiences of carrying the reflective practices beyond the classroom indicate there is something shifting in participants' thinking in general as well as supporting critical thinking. This shift may correspond to highest goals of education and leadership training: the development of character, respect and interest in differences, awareness of our connectedness, as well as the ability to find solutions to complex problems (Schuyler, 2010).

4.7 Conclusions to the Qualitative Research

4.7.1 Contribution to Research Methods

In general, the qualitative research methods used in this study followed a constructivist approach to developing grounded theory as outlined by Charmaz (2006). Aligned with that approach, the researcher used the same reflective practices used by his students in the classroom with the eight students participating in the qualitative research process during their orientation and during theoretical coding (see Section 3.3.7). The highly reflective and participative practices respected the constructed nature of meaning in the theoretical codes and added an emancipatory function to the methods. In this case, the researcher was using the reflective practices to overcome inhibition of independent critical thinking sometimes produced by the "white coat effect" of researchers on research participants (Langer, 1989). The participants, by their own accounts, shared ways of knowing how they construct reality, acknowledged how powerful conditioning underlies much of our day-to-day thinking, and recognized that the potential to respond to that conditioning more consciously is real and present.

In this study, the addition of using the reflective practices as part of the grounded theory methods largely confirmed what came from constant comparison of the data in different stages and the researcher's interpretation. However, the use of this additional step was perhaps used too early in the development of the substantive theory (early stages of theoretical coding). What the participants were presented with were theoretical concepts, not yet integrated. It may have proved of even greater value if the review using the reflective practices had come when the theory was more nearly in its final form, woven together with the diagram of the themes.

In any case, Glaser's position (1978) that grounded theory participants are always "too close to the bark to see the forest" did not hold in this study. The implication is that researchers must judge for themselves if their participants have the interest and capability to enter into a constructive dialogue with the researcher about the resulting theory.

4.7.2 Contribution to Research on Critical Thinking

One intention of developing a substantive theory of how reflective practices affect the dispositions for critical thinking and students' thinking in general was to derive indicators of the dispositions based on students' experience. Table 8 (Section 3.4.4) shows 1) expert consensus of reflective dispositions for critical thinking, 2) reflective dispositions from students' experience of reflective practice and 3) a synthesis of reflective dispositions that forms the basis for measurable indicators in this study. The synthesis extends the descriptions for dispositions for critical thinking taking into account students' reported experience.

Table 9 (Section 3.4.4) shows the synthesis of reflective positions and measurable indicators. These indicators can be traced back to the empirical evidence in students reported experience and the expert consensus indicators. They are turned into measurable indicators that research assistants in Phase II of this research used to track development of the impacts of reflective practice over an 11 week period with other students and to answer the question: Do the students' written contemplation responses demonstrate these dispositions?

Another intention of developing substantive theory was to deepen educators' understanding of the impact of reflective practices on learning. In particular, what impact do the reflective practices have on reflective dispositions for critical thinking? Although this qualitative research does not produce a formal predictive theory, the evidence is indicative that reflective practices do increase reflective dispositions and a reflexive disposition in particular. The theory may serve as a guide to designing a variety of pedagogical interventions that would improve students' dispositions for critical thinking.

Substantive theory is not formal theory, and the explanations and descriptions are limited by the classroom conditions of this research. However, the carryover of these practices as reported by students makes it plausible to assert that educating students for independent critical thinking is best accomplished through a multi-dimensional approach, not separating development of mindfulness, logical-deductive reasoning and affective dispositions. The researcher found valuable work in each of these domains as noted in Section 2.2.2 and throughout this section on Qualitative Research Results. Yet interdisciplinary research that integrates these perspectives has remained as a desirable "next step" rather than a reality. This study helps close the gap in integrative, interdisciplinary research on improving critical thinking as well as research on the impacts of reflective practices on learning in general.

Finally, the objectives of the research (Section 1.2) ask if a specific set of secular, reflective practices enhance students' abilities to:

1. Reflect, in the sense of becoming more aware of one's own intellectual habits and how they form;
2. Inquire, in the sense of open-minded curiosity, including suspension of one's own assumptions long enough to allow them to be challenged;
3. Generate justifiable, contextual understanding and judgments individually and in dialogic collaboration; and
4. Make explicit the connections between reflection, inquiry, understanding and judgments.

The empirical evidence prevalent in the qualitative research data permits a resounding yes with respect to the eight student participants and warrants further study to investigate a formal theory that could be generalized to other student populations.

The researcher closes this section of the thesis by giving the students the last words:

> I really think the whole thing was very important. I actually thought the sequence of it was very important. I can't say that I would mark any of them [the contemplative practices] more or less important… People do journal, people do meditate, people do communicate, but when you do it as a whole like that, I really believe the outcome of it is *soooo* much greater and so much more valuable. It's kind of like getting ready for your day. Okay, which piece can you not do? Maybe I won't go out with makeup? Maybe I won't have my shower this morning? You really have to do each piece, you know… you have to do one thing before the other. – A1 p. 8

> …it's like having a plant: planting the seed in the soil, having to water, having to weed it, having to give it fertilizer. Each step did something different to make it grow. And that's really, very much like this process. – A1 p.11

> it was introducing something new into my life that I hadn't done…A2 p. 25

> I think it's [reflective practice] really important for a university environment because I'm coming to university so that I can see the world in new ways and increase my knowledge and see things from other people's perspective. And I don't think I've really done that to the same

extent that I've done it in your classes because of those reflective practices… – A3 p.7

I feel like once you widen – once you realize everyone's sort of coming from a different perspective, that opens you to… a new way of thinking, I feel like that just increases your wealth of knowledge… For me, I felt like I was growing because of these experiences. – A2 p. 21

Chapter 5: Quantitative Research: Analysis and Results

Phase II of the research was designed to test the hypothesis that the application of a particular set of classroom reflective practices (Appendix A) produce significant increases in the indicators for reflective dispositions over the duration of two one-term, eleven-week, undergraduate courses. As noted in Section 3.1.2.3, focusing only on pure qualitative research would not be the most comprehensive approach to an interdisciplinary study. Because the knowledge produced may not generalize beyond the people studied, it may have little predictive value. In that sense it would be less useful than a mixed methods study. Therefore, from the qualitative research describing students' experience of reflective dispositions indicators were derived to serve as the dependent variables in the quantitative dimensions of the research. The quantitative approach undertaken in Phase II of this mixed methods study provided the added value of a measure of validity and reliability regarding the hypothesis that reflective practices have positive impact on the reflective dispositions for critical thinking. Quantitative methods indicated the degree and direction of impact of the set of reflective practices introduced over an 11-week period (the independent variable). Quantitative methods also helped identify confounding variables and test assumptions.

Data Analysis

As outlined in Section 3.4. the data sources for Phase II included:

1) 410 written journal entries
2) 43 term papers
3) end-of-term questionnaires
4) Five twenty-minute interview transcripts with six students after the term was over.

A complete record of the findings of the quantitative analysis of 410 students' journal entries, and their final exam scripts appears in Appendices H - J, including:

- Appendix H: Independent Observations of Indicators for Reflective Dispositions

(independent observations by two research assistants (Research Assistants) of the nine indicators for each participant each week). These observations permit analysis of indicators over time with a measure of inter-rater reliability.

- Appendix I: Consensus Observations of Indicators for Reflective Dispositions. These observations permit analysis of the nine indicators for each participant each week over time based on a shared understanding of indicators; and
- Appendix J: Summary Totals and Participants' Final Essay Exam Scores. Summary totals permit analysis of the total number of indicators per week per student. Participants' final exam scores permit triangulation of data sources and additional evidence of impacts of reflective practices on the dispositions for critical thinking.

5.1 Aggregation of Data

The number of students who volunteered as participants within each of the two courses (21 and 22) was too low for meaningful statistical analysis. However, aggregating the data across the two courses (n = 43) established a large enough population for statistical analysis. This was permissible because all the students were using the same reflective practices each week. The research is seeking the effect of those practices regardless of learning content. In both courses, the questions that were used in the reflective practices changed each week. What was being tested was the effect of the common learning process on reflective dispositions.

5.2 Coding Data for the Presence of Indicators

Table 10 repeats the measurable indicators that become the coding scheme developed from Tables 8 and 9 and explained in Section 3.4.4. This scheme, used by the research assistants used to score the students' written contemplation responses, is distinctly different from expert consensus dispositions used in standardized tests for critical thinking dispositions (Facione, Facione, & Giancarlo, 2001; Watson & Glaser, 1980). It

is grounded in empirical evidence (Section 4.0) and expands previous measures to include students' experience with reflective practices in the classroom.

Table 10. Coding scheme for reflective dispositions.

Synthesis of Reflective Dispositions (see Table 8)	Measurable Indicators **Does the contemplation response demonstrate that the student is:**
1) focused and present	1) slowing down; giving more time to understand one's own thoughts and the underlying felt sense?
2) open to what was not noticed before;	2) allowing openness: letting something come without searching or trying to make it happen?
3) exploring the underlying and previously un-noticed "felt sense;"	3) exploring what he or she really thinks?
4) integrating knowledge learned from others and texts with experience and personal reflection;	4) finding personal meaning in course content?
5) aware of one's assumptions and habitual thought patterns;	5) identifying one's own assumptions, tendencies, habits of thought and feelings?
6) expressing confidence by articulating multiple points of view including one's own;	6) understanding others' perspectives (intellectual)?
7) finding connectedness with others through exploring others' points of view	7) feeling connected with others (affective, knowing others better)?
8) willing to feel challenged; to work with obstacles to understanding	8) feeling challenged but willing to work with obstacles?
9) expressing appreciation for diversity as enriching experience and adding meaning	9) applying the techniques from the reflective practices (e.g., listening, inquiry, dialogue) beyond the classroom exercise (e.g., in listening to students in other courses, reading texts critically, learning a language)?

5.3 Inter-rater Reliability

One approach to reliability of the Research Assistants' scores is to test them for inter-rater reliability. For binary, categorical scoring (0 or 1/not present, present), Cohen's

kappa is an appropriate statistic. Comparing observations of the nine indicators across all 43 students across 11 weeks, the agreement between Research Assistant 1 and Research Assistant 2 based on kappa was .31. The weekly agreement across indicators is shown in Table 11 (below).

Table 11: Average agreement of observations across eleven weeks.

week	1	2	3	4	5	6	7	8	9	10	11
kappa	0.36	0.27	0.21	0.30	0.33	0.32	0.30	0.34	0.30	0.28	0.32

These scores are too low to establish inter-rater reliability. Another way to determine inter-rater reliability is to measure the correlation of the total number of indicators observed per week per student between the observers. To measure correlation for an interval scale of two variables (scores of Research Assistant 1 and Research Assistant 2) that are not normally distributed, Spearman's *rho* is an appropriate statistic.[4] Alternatively, the intraclass correlation (ICC) is a more general descriptive statistic that can be applied to the assessment of consistency of quantitative measurements made by different observers measuring the same quantity (Koch, 1982; Shrout & Fleiss, 1989). Table 12 (below) shows agreement between observers of the *total number of indicators per week* across all students. The correlation of Research Assistants' observations for 43 students was measured over 11 assignments collected each week in the term.

Table 12. Agreement between observers of the total number of indicators per week per student.

Week/ Measure	1	2	3	4	5	6	7	8	9	10	11
Spearman's *rho*	0.63	0.51	0.57	0.42	0.59	0.84	0.65	0.56	0.48	0.34	0.73
Intraclass coefficient	0.64	0.52	0.55	0.45	0.63	0.82	0.59	0.59	0.51	0.28	0.73

[4] The statistical measures in the quantitative research were decided in consultation with Dr. David Roach, Dr. Jack Duffy and Sam Stewart, consultant to faculty and graduate students from the Department of Mathematics and Statistics, Dalhousie University.

Table 12 (above) shows that overall there was moderate agreement on the total number of indicators per week according to both measures, but these results are still not strong enough to establish inter-rater reliability.

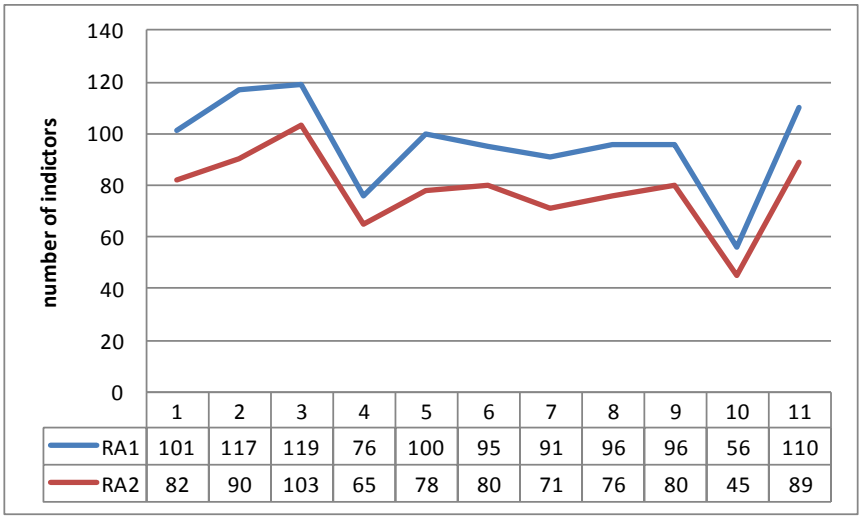
5.3.1 Discussion of Inter-rater Reliability

There are several possible reasons why inter-rater reliability at the level of the nine indicators was weak and at the level of total indicators per week was moderate.

- The indicators are qualitative, interdependent and to some extent they naturally overlap. Therefore the indicators are not precise or discrete enough for two observers to commonly agree when they are present or not. The intention of making observation simpler by allowing judgments only on a binary basis (present/not present) may have made judgment more difficult than allowing a scale judgment.
- The indicators may be of value in the qualitative analysis of student writing, but they are weak as quantitative measures. It would be necessary to define them more discretely and provide more feedback in the observer/rater orientation.
- There was stronger agreement at the level of total indicators per week because the observers were both recognizing reflective dispositions in the participants' writing, but they were not sure how to classify them.

Statistical tests are designed to measure specific relationships and by convention these relationships define terms such as inter-rater reliability. Yet they do not necessarily show all patterns of interest that may be in the data. Figure 5 (below) shows the research assistants' scores (RA 1 and RA 2) tracked over eleven weeks for the total number of indicators each week. There appears to be some consistency in research assistants' different scoring, with RA 1 finding more indicators every week than RA 2 (a range from 11 to 27 more). Most noticeable is that they consistently agree on highs and lows relative to their own scores. Although this observation does not shift the conclusion that inter-rater reliability was only moderate, it does give pause to dismissing their scores completely.

Figure 5. Weekly total indicators observed independently by RA 1 and RA 2.



	1	2	3	4	5	6	7	8	9	10	11
RA1	101	117	119	76	100	95	91	96	96	56	110
RA2	82	90	103	65	78	80	71	76	80	45	89

5.3.2 Testing the Hypothesis on Consensus Scoring

Although their inter-rater reliability was not strongly established, the observers' scores based on consensus agreement can still be analyzed to test the hypothesis. Having scored participants journal entries independently, the RAs became more experienced at making judgments. By then exploring each other's judgments and coming to agreement, the research assistants strengthened each other's understanding of the indicators.

The consensus scores for week 1 and week 11 were used to see if there was a significant difference in the number of indicators appearing between the first week of the term and the last week of the term for all 43 participants. A 2-tailed, paired t-test was appropriate because indicator totals per week per student can be considered a scale level of measurement and the same participants were in both conditions, week 1 and week 11 (a within-groups design). T-test results for weeks 1 and 11 (summarizing all participants who submitted journal entries in week 1 and week 11) are shown in Table 13 (below).

Table 13. Paired samples T-test.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Week 1	3.5161	31	1.69058	.30364
	Week 11	2.4516	31	1.33763	.24024

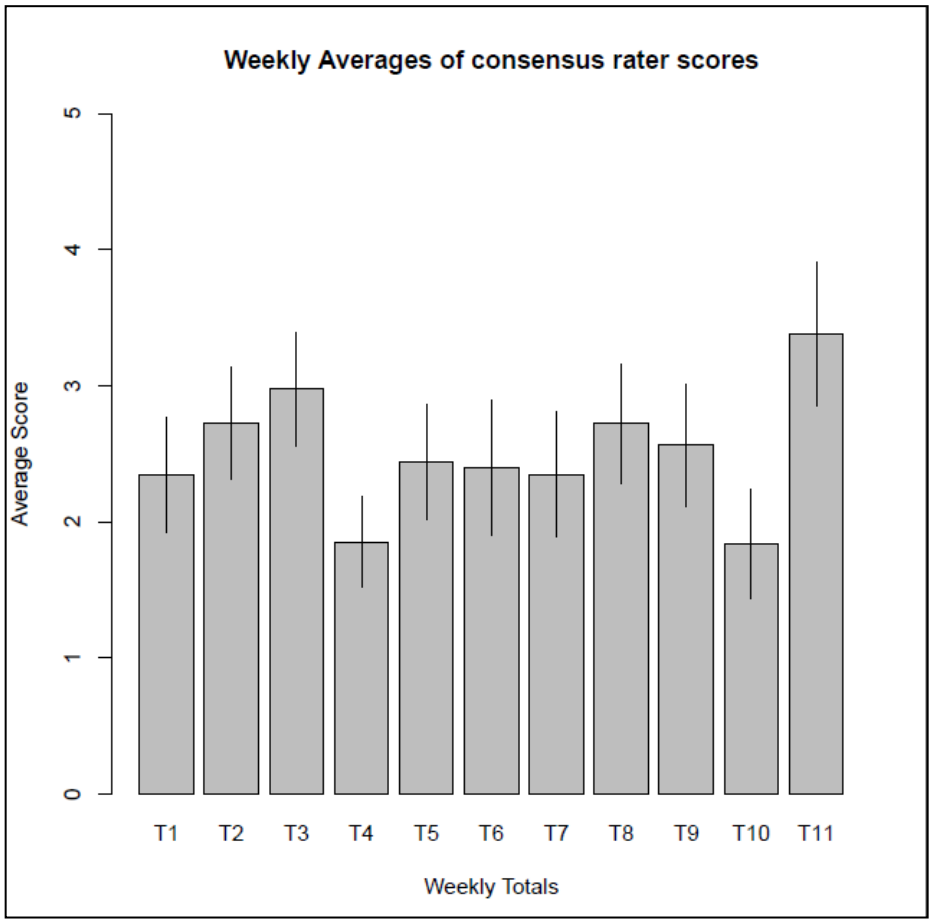
Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
Pair 1	@1 - @2	1.06452	1.56919	.28184	.48893	1.64010	3.777	30	.001

There was approximately a full point increase (1.06) in the average total of indicators per week comparing week 1 to week 11. This difference is statistically significant ($t = 3.8$, $df = 30$, $p < .01$). The t-test rejects the null hypothesis at the 99% confidence interval and provides plausible evidence that the reflective practices increased occurrences of the dispositions for critical thinking in the participants. However, the data require further analysis.

Figure 6 (below) shows the average total of indicators per week. Hash marks show the range of participants' scores at each week. There is a linear increase from week 1 through week 3. Week 11 shows the end result increase of approximately a full point. However, weeks 4 through 10 indicate there were confounding factors to the impact of the reflective practices on reflective dispositions, discussed in the next section.

Figure 6. Average of total indicators per week.



5.3.2.1 Discussion

There are several possible explanations for erratic results from weeks 4 through 10.

- The questions used in the reflective practices varied week to week and it was assumed their impact on development of the indicators over time would be negligible. The questions may have had a larger impact than anticipated.

  With respect to this assumption, post-term interviews (Appendix K) with six participants who had indicated willingness to be contacted on their consent forms provided valuable evidence. One question interviewees were asked was "Were some contemplation questions more difficult to understand than others?" All the interviewees reported that some questions were more difficult than others, and that the questions at the start of the term (in both courses) were easier to respond

to. Several students responded by adding that the questions were progressive and the earlier contemplations helped to inform their responses to later questions. However, when questions included language or experiences that were unfamiliar, the questions became too difficult to respond to with any confidence. Post-course interviewees reported that after the first few weeks, some students were not following the instructions for individual reflection and were texting or doing homework for other classes. In paired interaction, some students were not able or not motivated to follow the instruction for reflective inquiry. This may have been especially true when there was a difficult question and they lost confidence. This was true for both domestic students and international students with English as a second language.

Only some of students were able to use difficult questions to develop their own new questions that would clarify the original question. Despite explicit instructions that contemplation responses may legitimately create new, clarifying questions rather than provide answers, many students supposed that an answer was required and lost confidence. The principal researcher's memos corroborate this by recalling several conversations with students in class and after class where they would say "we don't understand the question," but they would not write that or explore it in their responses submitted online. Analysis of responses by students with higher than average total indicators per week reveals that they were able to frame their responses with new questions when they were unfamiliar with the language or experiences referred to in original questions.

- A second possible explanation for erratic results in weeks four through 10 relates to motivation. After the first few weeks some students may have felt that since contemplation responses were not graded, they were not compelled to go further. This possible confounding factor is based on the assumption that students were motivated primarily, if not entirely, by grades. Yet many contemplation responses and the end-of-term questionnaire demonstrated that students are also intrinsically motivated by learning. The increase in Week 11, when students are

most consumed by exams and papers, offers a contradiction to the assumption that students have little motivation beyond grades. A plausible explanation for the sudden increase in week 11 is that the questions (in both courses) were more general and summative of student experience over the whole term than questions 4-10. Week 11 restored confidence in their responses and their indicators showed cumulative improvement in reflective dispositions.

- A third explanation for erratic results over weeks four through 10 may relate to cultural differences. Although the issue of losing confidence was common for many students, another confounding variable may have been cultural. Many of the students in these courses were international students with English as a second language. They may have had even greater problems than domestic students with vocabulary and assumed common experiences. They may also have had even greater expectation than domestic students that learning is simply giving the instructor the answer the instructor wants. However, speculation that the reflective practices were less useful for them is not corroborated by the end-of-term questionnaire (see below). At the end of the course most students ranked the reflective practices very highly when asked what helped them learn the most. The cultural variable is beyond the scope of this study, but it is not proposed as a major confounding factor.

  The first explanation, that the questions may have had a larger impact than anticipated, is the strongest of the alternatives, but there may have been a combination of confounding factors.

5.4 Comparison of Indicators and Final Exam scores

Final exam essays were graded partially for critical thinking skills and partially for course content. Table 14 (below) shows the 15 students with higher than average total indicators for the whole term (> 25.5) and their final essay exam scores. The average final essay exam score for all participants was 86. Of the 15 students with an above average number of indicators over the term, ten scored above 86 (scores shown in bold) on the final exam ($r = .58$ at the .05 level). This shows a moderate correlation between total indicators and final exam scores. Only one of the students in that category missed more than two reflective practice sessions over the term (JeC-M3). By comparison, amongst all 43 participants, 11 missed more than two reflective practice sessions over the term. It is reasonable to conclude that participation in the reflective practices had a moderate impact on exam performance.

Table 14. Students with higher than average total indicators and their exam scores.

Student	Total Indicators over 11 wks.	Final Essay Exam Score
PaO	**60**	**95**
DiE	**45**	**90**
RyB	**44**	**100**
AlV	**44**	**95**
KaM	**43**	**95**
JeC-M3	**40**	**100**
HaY	**31**	**90**
XiX	**30**	82
SaP	**30**	**95**
BoY	**30**	75
BrW	**30**	80
QiC	**29**	75
SuC	**29**	**90**
YaL	**28**	**90**
KaL	**26**	85

Appendix L shows a parallel comparison of the total number of indicators over 11 weeks for all 43 participants and their final essay exam scores. Over all the participants there was a significant but slightly weaker correlation between total indicators and final exam scores (r = .42 at the .05 level), explained in the next section.

5.4.1 Discussion

The final essay exams had to be graded before the researcher knew whose work could be included in the research. The exams were only partially graded for critical thinking skills and grading was shared between a teaching assistant and the principal researcher. The researcher and the teaching assistant were also focusing on course content. Therefore only moderate correlation between indicators and exam scores should be expected.

Although scoring the exams separately for critical thinking dispositions after students' grades were considered was considered, there would have been no baseline for comparison of participants' development over time. However, the moderate correlation of indicators to exam score results provides plausible evidence that the reflective practices increase the dispositions for critical thinking and the application of the cognitive critical thinking skills to writing final exam essays outside of the regular classroom. In general, students with higher total indicators over the term had higher exam scores.

5.5 End-of-Term Questionnaires

The End-of-term Questionnaire (Table 15 below) provides students' views on the reflective practices in the context of all the learning activities in the course. The bold-print identifies the five reflective practices and distinguishes them from more conventional learning activities also part of the pedagogy for the two courses. Taken together, the reflective practices were regarded by 63% of the students as very helpful to their learning. An additional 26% of the students regarded the reflective practices as somewhat helpful and 11% regarded them as not helpful. Mindfulness meditation

practice, the foundation for all the reflective practices, was regarded as very helpful by 68% of the participants, second only to the instructor's class notes posted online.

When asked what learning activities they found challenging, 59% reported that the reflective practices, taken together, were somewhat challenging, second in the same category only to the assigned readings. Consistent with research literature on the positive impact of academic challenge (Svinicki, 2004), 53% of the students reported that the reflective practices taken as whole were very enjoyable and an additional 40% reported the reflective practices were somewhat enjoyable. The most enjoyable learning activity in the course was mindfulness meditation practice at 64%.

5.5.1 Discussion

These results discount the explanation that dispositions for critical thinking did not improve during weeks 4 to 10 because students weren't motivated by the reflective practices. It seems more likely that the confounding variable was difficulty in understanding contemplation questions, a corresponding decrease in confidence, and strong habitual orientation to responding in writing only with right answers rather than clarifying questions.

Table 15. End of term questionnaire.

End of Term Questionnare			
SW Course (n=27) B Course (n = 29) Both Courses (n = 56)			
Q1 : Please rate each of the class features as very helpful (1), somewhat helpful (2), or not helpful (3) to your learning in this course.			
	Percent		
	very	somewhat	not
a) Assigned readings	45%	50%	5%
b) Mindfulness meditation practice	**68%**	**20%**	**13%**
c) Individual reflection and journal writing	**61%**	**29%**	**11%**
d) Contemplative interaction in pairs after reflection	**63%**	**29%**	**9%**
e) Summaries and discussion of small group conversation in class	**61%**	**29%**	**9%**
f) Lecture	61%	32%	7%
g) Personal communication with the instructor	52%	38%	11%
h) Studying for midterm exam	52%	39%	9%
i) Discussion board online	36%	38%	27%
j) Class notes online	71%	20%	9%
k) Student reflection responses summarized at the beginning of class	**64%**	**25%**	**11%**
Q2: Please rate each of the class features as most challenging (1), somewhat challenging (2), or not challenging (3).			
	most	somewhat	not
a) Assigned readings	21%	64%	14%
b) Mindfulness meditation practice	**23%**	**50%**	**27%**
c) Individual reflection and journal writing	**27%**	**64%**	**9%**
d) Contemplative interaction in pairs after reflection	**29%**	**59%**	**13%**
e) Summaries and discussion of small group conversation in class	**20%**	**66%**	**14%**
f) Lecture	18%	57%	25%
g) Personal communication with the instructor	7%	55%	38%
h) Studying for midterm exam	32%	55%	13%
i) Discussion board online	11%	50%	39%
j) Class notes online	13%	54%	34%
k) Student reflection responses summarized at the beginning of class	**13%**	**55%**	**32%**
Q3: Please rate the class features as very enjoyable, (1) somewhat enjoyable (2), or not enjoyable (3).			
	very	somewhat	not
a) Assigned readings	34%	50%	16%
b) Mindfulness meditation practice	**64%**	**34%**	**2%**
c) Individual reflection and journal writing	**48%**	**41%**	**11%**
d) Contemplative interaction in pairs after reflection	**54%**	**41%**	**5%**
e) Summaries and discussion of small group conversation in class	**52%**	**39%**	**9%**
f) Lecture	50%	39%	11%
g) Personal communication with the instructor	52%	43%	5%
h) Studying for midterm exam	34%	45%	21%
i) Discussion board online	39%	48%	13%
j) Class notes online	41%	46%	13%
k) Student reflection responses summarized at the beginning of class	**48%**	**43%**	**9%**

5.6 Validity

Overall, there is evidence that the reflective practices had a positive influence on the reflective dispositions for critical thinking, as defined by the indicators in Table 10. T-test analysis of total indicator scores from the first to the last week of the term, triangulated with correlation of total indicators and exam scores, as well as end of term questionnaires, provides plausible evidence of a significant relationship between the reflective practices and reflective dispositions for critical thinking. Yet the evidence is not conclusive and refinements are needed.

5.6.1 Refinements Needed

The quantitative research shows that the indicators need refinement. Inter-rater reliability of research assistants using the indicators to score students' assignments was only moderately established when measuring the total number of indicators present week to week. The indicators are to some extent interdependent and may naturally overlap. Therefore the indicators are not yet discrete enough for two independent observers to strongly agree when they are present or not.

Construct validity, the property of a test that the measurements measure the constructs they are designed to measure but no others (McBurney & White, 2007), was not strongly established, and warrants further research. In addition, confounding variables likely included the relative difficulty of questions. There was a difference in responses when students did not have enough context to understand the weekly assignment questions. Although instructed that responses that asked clarifying questions were as important as declarative statements, it appeared students lost confidence in the reflective process. They did not demonstrate the dispositions for critical thinking at the same rate as they did when they understood the assignment questions.

Chapter 6: Conclusion

6.1 Summary

The literature review established that a majority of experts on critical thinking from the arts and sciences agreed that an effective definition of critical thinking includes the domain of underlying affective dispositions (Ennis, 1996; Facione, 1990; Paul, 1990). Cultivation of these dispositions is essential to establish the willingness, openness, and inquisitiveness to examine assumptions (Brookfield, 1995), "move beyond egocentric and ethnocentric thinking, and beyond mere habitual thinking" (Paul, 1990, p.65). Further examination revealed the importance of reflexivity, the open awareness that permits attention both ways, outwardly and inwardly (Habermas, 1990; Endres, 1997; Van Gyn & Ford, 2006). That led to investigating the distinction between reflective dispositions in general and reflexive awareness in particular (Steier, 1991; Schön, 1983;Van Gyn & Ford, 2006). It was here that the researcher was able to join insights from developmental psychology and social learning theory (e.g., Perry, 1970; Belenky, 1986; Baxter Magolda, 2004) with specific research in psychology and education on reflective practices (Kabat Zinn, 2005; Langer, 1989, 2000; Schön, 1983; Zajonc, 2003). A reflexive disposition that looks inward at assumptions and the subtle "felt sense" (Gendlin, 1978), as well as outward at others' reasoning and perspectives, could be strongly encouraged by integrating applications of mindfulness to individual contemplation, writing, listening, inquiry in pairs, and group dialogue.

This study contributes to the literature by addressing the gap in research on students' experience of the underlying dispositions related to independent, critical thinking (Brunt, 2005; Greenwood, 2003; Ruth-Sahd, 2003). Specifically, this study explored the impact of using a specific set of classroom-based reflective practices to increase students' dispositions for engaged, independent critical thinking. In some respects, these reflective practices had a purpose and effect similar to laboratory sections in physical science courses. They established the relevance of principles and theory through repeated, practical demonstration. Like a lab, students saw the outcome of practicing and exploring

for themselves. In this case, rather than seeing the heartbeat of a frog or a color change in a Petri dish, students began to see how their ideas formed, how others' ideas formed, and how mindfulness can lead to contextual understanding, improved communication, and a sense of connectedness. For these students, meaning begins to emerge as contextual and multi-layered – it is not arbitrary or merely idiosyncratic opinion. Critical thinking for them includes an underlying mindfulness, personal engagement with each other as well as the subject matter, self-confidence, and the transfer of these dispositions to situations beyond classroom exercises (Section 4.0).

The deeper awareness encouraged by mindfulness applied to contemplation, journal writing, listening, inquiry and dialogue relates to the cognitive skill of self-regulation, or metacognition (Flavell, 1976, 1979; Garner, 1989; Nickerson, Perkins, & Smith, 1985). This "monitoring of one's thinking" is extended to the affective domain. The subtle or unarticulated meanings of a contemplation question, image, or statement can be brought to conscious attention individually and in interaction. It is here that "honesty in facing one's own biases, prejudices, stereotypes, and egocentric or sociocentric tendencies" permits the openness and flexibility to consider alternatives (Facione, 1990, p.13).

The qualitative research established a substantive theory with five themes that explain the impact of reflective practices on students' dispositions: being present, engagement with learning, engagement with others, self-confidence, and carryover beyond the classroom. The theory is amply supported by well-articulated experiences reported by students. The development of theory led to the unexpected outcome that some students feel more connected to those who have different perspectives than those who immediately agreed with them. This kind of connection is different than mere conceptual agreement. This connection was based on students taking an uncertain journey together, risking the suspension of beliefs long enough to be challenged, and from that risk developing new meaning as well as respect for differences.

Feeling connected with others in this way is a process that develops unintentionally. It is a kind of respect, knowing that inner work must be behind everyone's journey. It supports critical thinking that is more focused on deeper and broader understanding than winning an argument.

The research results in this study strengthen the positions taken by Belenky et al. (1986), Baxter-Magolda (1992), and Clinchy (1989) by demonstrating that reflective practices using often neglected ways of knowing can improve engagement with learning course content in general, engagement and understanding their peers and multiple points of view, self-confidence, and carryover beyond the classroom. The particular set of reflective practiced applied in the classroom improved the dispositions for critical thinking and made the application of cognitive and analytic skills more likely, as shown in students' final essay exams.

Clear, directive guidelines from an instructor and modeling mindful listening and reflective inquiry in group dialogue are important. But the confidence to express reflective, independent, critical thinking publically comes when students feel connected by a challenging journey they take both individually and together.

This research provided both qualitative and quantitative evidence that a particular set of reflective practices, used over the course of a whole term, strengthens students' dispositions for critical thinking. T-test analysis of total indicator scores from the first to the last week of the term, triangulated with correlation of total indicators and exam scores, as well as end of term questionnaires, provides plausible evidence of a significant relationship between the reflective practices and reflective dispositions for critical thinking.

In sum, students generally reported that the particular reflective practices used in this study do enhance their abilities to:

1. Reflect, in the sense of becoming more aware of one's own intellectual habits and how they form;

2. Inquire, in the sense of open-minded curiosity, including suspension of one's own assumptions long enough to allow them to be challenged;
3. Generate justifiable, contextual understanding and judgments individually and in dialogic collaboration; and
4. Make explicit the connections between reflection, inquiry, understanding and judgments.

Yet, the underlying reflective dispositions for critical thinking are easier to describe qualitatively than to measure quantitatively. The quantitative research revealed how challenging it is to define reliable, measurable indicators and design an experiment without confounding the independent variable. Future research designs may benefit from continuous scale measurements rather than binary, categorical observations of discrete indicators.

Mindfulness meditation practice is a foundation for improving student engagement with course content as well as with each other. As students developed confidence, many of them reported the benefits of reflective practices beyond the course, in other courses, and in their personal relationships. From an academic perspective, high occurrence of the indicators for reflective dispositions was associated with higher marks on final essay exams that were graded in part for critical thinking.

The research contributes to the development of measurable indicators of the dispositions for critical thinking by including students' experiences of the learning journey. On a practical level, the indicators developed here could contribute to instructors' qualitative assessments of students' critical thinking. The reflective practices themselves could make valuable additions to instructors' pedagogical methods wherever critical thinking is required.

6.1.1 A Note on Online Students

Section 2.3 presented principles and approaches to online learning and the development of critical thinking. The literature review indicates that development of independent critical thinking is possible in online modes. It pointed out that a strong teaching presence to model reflective dispositions is necessary. In an asynchronous mode, where students are only viewing recordings, students would need some separately timed contact with the instructor (or a trained teaching assistant) either individually or in groups.

The two students in this study in an asynchronous online mode were not available to be interviewed. They did have one-to-one contact with the instructor several times during the term to supplement the recordings and it is assumed that they engaged in the paired, interactive reflection exercises off-line as instructed. Their performance was in the middle range compared with classroom students, but no statistical significance can be attached to that. Their contemplation responses and exam scores indicate it is possible that by following the recorded interactions during facilitated discussion at the end of each class the online students were inspired to follow the guidelines, at least for individual contemplation, and there was evidence of development of their reflective dispositions.

6.2 A Platform for Further Research

The research conducted also creates a platform for further research.

- Effectiveness: what would improve the effectiveness of these or related reflective practices in the classroom and through online delivery?
- Longitudinal studies: if there are benefits in terms of students' dispositions for critical thinking from these reflective practices, do they last after the course is over?
- Transferability to other courses: are these reflective practices transferable to other courses across disciplines? The researcher has introduced the reflective practices to students in other courses as a guest lecturer, including an MBA program and library science. The response from students was positive along the same lines as the

substantive theory described in this thesis. Similar experience with professional development programs beyond the undergraduate level lead the researcher to believe that these reflective practices would have similar benefits in any course where interpretative skills and critical thinking are important.

- Transferability to other instructors: what are the challenges faced by other instructors who would facilitate learning through reflective practices, and how may they be addressed? When the reflective practices have been offered in faculty workshops, many faculty members see their relevance and power not only to critical thinking but to creative problem-solving as well. Even using some of the techniques rather than the whole set of practices is noted as potentially valuable and several faculty members have adapted them for their own purposes. But the challenge to develop reflexive awareness requires some personal discipline. Transferability to other instructors will depend considerably on the organizational culture they are in.
- Transferability to online modes: With the increasing use of electronic media it remains important for future research designs to include online learning in comparison to classroom mode.

With further refinement of indicators and continuous scale measurement it could be appropriate to design randomized control studies in order to make the tentative conclusions here more reliable. These questions point to further interdisciplinary research that may contribute to improving the engagement and retention of students, the quality of their university experience, and their abilities to address the complex problems facing our world.

References

Abrami, P. (2008). Instructional interventions affecting critical thinking skills and dispositions: A stage 1 meta-analysis. *Review of Educational Research, 78*(4), 1102-1134.

Adorno, T. W., & Horkheimer, M. (1979). *Dialectic of enlightenment.* London, UK: Verso.

Allen, E., & Seaman, J. (2011). *Going the distance: Online education in the United States, 2011.* Babson Park, MA: Babson Survey Research Group.

Allen, I., & Seaman, J. (2010). *Class differences: Online education in the United States, 2010.* Wellesley, MA: Sloan Consortium and Babson Survey Research Group.

Alvesson, M., & Skoldberg, K. (2000). *Reflexive methodology: New vistas for qualitative research.* Thousand Oaks, CA: Sage Publications.

American Council on Education, Business-Higher Education Forum. (2004). *Public accountability for student learning in higher education.* Washington, DC: American Council on Education.

Angelo, T. A. (1995). Classroom assessment for critical thinking. *Teaching of Psychology, 22*(1), 6-7.

Argyris, C. (1982). *Reasoning, learning, and action: Individual and organizational.* San Francisco, CA: Jossey-Bass.

Argyris, C. (1990). *Overcoming organizational defenses.* Needham, MA: Allyn and Bacom.

Argyris, C., & Schön, D. (1978). *Organizational learning: A theory of action perspective.* Reading, MA: Addison-Wesley.

Arum, R., & Roska, J. (2011). *Academically adrift: Limited learning on college campuses*. Chicago, IL: University of Chicago Press.

Baron, J. B., & Sternberg, R. J. (Eds.). (1987). *Teaching thinking skills: Theory and practice*. New York, NY: Freeman.

Baxter Magolda, M. B. (1992). *Knowing and reasoning in college: Gender-related patterns in students' intellectual development*. San Francisco, CA: Jossey-Bass Publishers.

Baxter Magolda, M. B. (2004). *Making their own way: Narratives for transforming higher education to promote self-development.* Sterling, VA: Stylus.

Beauchamp, C. (2006). *Understanding reflection in teaching: A framework for analyzing the literature.* (Unpublished doctoral dissertation). Department of Integrated Studies in Education, McGill University, Montreal

Becher, T. (1989). *Academic tribes and territories: Intellectual enquiry and the cultures of disciplines.* Bristol, PA: Milton Keynes: Society for Research into Higher Education.

Beddoe, A. E., & Murphy, S. O. (2004). Does mindfulness decrease stress and foster empathy among nursing students? *Journal of Nursing Education. 43*(7), 305-312.

Belenky, M. F., Clinchy, B. M., Goldberger, N. R., & Tarule, J. M. (1986). *Women's ways of knowing: The development of self, voice, and mind.* New York, NY: Basic Books.

Benson, H. (1976). *The relaxation response*. Boston, MA: G. K. Hall.

Benson, H. (1980). *The mind/body effect: How behavioral medicine can show you the way to better health*. New York, NY: Berkley Books.

Bloom, A. D. (1987). *The closing of the American mind: How higher education has failed democracy and impoverished the souls of today's students.* New York, NY: Simon and Schuster.

Bohm, D. (1996). *On dialogue.* London, UK: Routledge.

Boix Mansilla, V., & Duraising, E. D. (2007). Targeted assessment of students' interdisciplinary work: An empirically grounded framework proposed. *The Journal of Higher Education, 78*(2), 215-237.

Boris, G., & Hall, T. E. (2005). Critical thinking and online learning: A practical inquiry perspective in higher education. Paper presented at the *20th Annual Conference on Distance Teaching and Learning.* Madison, WI. Retrieved from http://www.uwex.edu/disted/conference/Resource_library/proceedings/04_1288.pdf

Bowers, J. (1988). Review essay on discourse and social psychology: Beyond attitudes and behavior. *British Journal of Social Psychology, 27*, 185-192.

Boyd, E. (1983). Reflective learning: Key to learning from experience. *The Journal of Humanistic Psychology, 23*(2), 99-117.

Boyer, E. L. (1987). *College: The undergraduate experience in America*. New York, NY: Harper & Row.

Brookfield, S. (1995). *Becoming a critically reflective teacher.* San Francisco, CA: Jossey-Bass Publishers.

Brookfield, S. (2005). *The power of critical theory: Liberating adult learning and teaching*. San Francisco, CA: Jossey-Bass Publishers.

Brooks, D. (January 16, 2009). An economy of trust. *New York Times,* p. A29.

Brown, A. L. (1987). Metacognition, executive control, self-regulation, and other more mysterious mechanisms. In F. Weinert, & R. Kluwe (Eds.), *Metacognition, motivation, and understanding* (pp. 65-116*)*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Brown, A. L., & Palincsar, A. S. (1985). *Reciprocal teaching of comprehension strategies: A natural history of one program for enhancing learning.* (Technical Report No. 334). Cambridge, MA: Bolt, Beranek, and Newman, Inc.

Browne, M. N., Freeman, K. E., & Williamson, C. L. (2000). The importance of critical thinking for student use of the internet. *College Student Journal, 34*(3), 478-481.

Bruffee, K. A. (1999). *Collaborative learning: Higher education, interdependence, and the authority of knowledge.* (2nd ed.) Baltimore, MD: John Hopkins University Press.

Bruner, J. (1990). *Acts of meaning*. Cambridge, MA: Harvard University Press.

Brunt, B. (2005). Models, measurement, and strategies in developing critical-thinking skills. *The Journal of Continuing Education in Nursing; Thorofare, 36*(6), 255-262.

Bryman, A. (2007). Barriers to integrating quantitative and qualitative research. *Journal of Mixed Methods Research, 1*(1), 8-22.

Buchmann, M. (1988). Argument and contemplation in teaching. *Oxford Review of Education, 14*(2), 201-214.

Canadian Council on Learning. (2007). *Post-secondary education in Canada: Strategies for success 2007.* Ottawa, ON: Canadian Council on Learning.

Carlile, P. (2004). Transferring, translating, and transforming: An integrative framework for managing knowledge across boundaries. *Organization Science, 15*(5), 555-568.

Casner-Lotto, J., & Rosenblum, E. (2009). *The ill-prepared U.S. workforce.* New York: The Conference Board. Retrieved from www.conference-board.org

Castillo, J. (2002). A note on the concept of tacit knowledge. *Journal of Management Inquiry*, *11*(1), 46-57.

Castoriadas, C. (1992). Power, politics, autonomy. In A. Honneth (Ed.), *Cultural-political interventions in the unfinished project of enlightenment.* (pp. 269-298). Cambridge, MA: MIT Press.

Chapnick, A. (September 27, 2010). Tyranny of content. *University Affairs.* Online edition. Retrieved from http://www.universityaffairs.ca/tyranny-of-content.aspx.

Charmaz, K. (2002). The self as habit: The reconstruction of self in chronic illness. *The Occupational Therapy Journal of Research, 22 (Supplement 1)*, 31s-42s.

Charmaz, K. (2006). *Constructing grounded theory.* London, UK: Sage Publications.

Chickering, A. W., Dalton, J. C., & Stamm, L. (2006). *Encouraging authenticity and spirituality in higher education.* San Francisco, CA: Jossey-Bass.

Chickering, A., & Gamson, Z. (1999). Development and adaptations of the seven principles for good practice in undergraduate education. *New Directions for Teaching & Learning,* (80), 75-81.

Clarke, A. (2005). *Situational analysis: Grounded theory after the postmodern turn.* Thousand Oaks, CA: Sage Publications.

Clinchy, B. (1989). On critical thinking and connected knowing. *Liberal Education, 75*(5), 14-19.

Collison, G., Elbaum, B., Haavind, S., & Tinker, R. (2000). *Facilitating online learning*. Madison, WI: Atwood Publishing.

Conrad, R., & Donaldson, J. A. (2004). *Engaging the online learner*. San Francisco, CA: Jossey-Bass.

Cote, J., & Allahar, A. (2007). *Ivory tower blues: A university system in crisis*. Toronto: University of Toronto Press.

Cox, R. (2009). *The college fear factor.* Cambridge, MA: Harvard University Press.

Cranton, P. (1994). *Understanding and promoting transforming learning: A guide for educators of adults*. San Francisco, CA: Jossey-Bass.

Crooks, S. (2005). Strong credulity and Pro/Con analysis. *Teaching Philosophy, 28*(1), 45.

Crooks, S. (2009). *Critical thinking and critical writing.* [Powerpoint slides]. Presentation to Saint Mary's University faculty on February 7, 2009.

Daly, W. (2001). The development of an alternative method in the assessment of critical thinking as an outcome of nursing education. *Journal of Advanced Nursing, 36*(1), 120-130.

Damasio, A. (1994a). *Descartes' error: Emotions, reason, and the brain.* New York, NY: G. P. Putnam's Sons.

Damasio, A. (1994b, October). Descartes' error and the future of human life. *Scientific American,* 144.

Davidson, R. J. (2010). Empirical explorations of mindfulness: Conceptual and methodological conundrums. *Emotion, 10*(1), 8-11.

Davidson, R. J.; Begley, S. (2012). *The emotional life of your brain: how its unique patterns affect the way you think, feel and love – and how you can change them.* New York, NY: Penguin Group.

Day, C., Pope, M., & Denicolo, P. (Eds.). (1990). *Insight into teachers' thinking and practice.* Bristol, PA: The Falmer Press, Taylor and Francis Inc.

De Bono, E. (1970). *Lateral thinking: A textbook of creativity*. London, UK: Ward Lock Educational.

De Bono, E. (1976). *Teaching thinking*. London, UK: Temple Smith.

Dewey, J. (1938). *Experience and education*. New York, NY: Collier Macmillan.

Donald, J. G. (2002). *Learning to think: Disciplinary perspectives*. San Francisco, CA: Jossey-Bass.

Dressel, P., & Marcus, D. (1982). *On teaching and learning in college.* San Francisco, CA: Jossey-Bass Publishers.

Driscoll, C., Sable, D., & van Esch, L. (2005). Applying transformative learning to ethics education. *Atlantic Universities' Teaching Showcase. IX,* 69-87. Halifax, NS: Dalhousie University.

Elbow, P. (1986). *Embracing contraries.* New York, NY: Oxford University Press.

Elder, L. (2008). Critical thinking: Strategies for improving student learning. *Journal of Developmental Education, 32*(1), 32.

Endres, B. (1997). Habermas and critical thinking. *Philosophy of Education: Proceedings of the Annual Meeting of the Philosophy of Education Society*, 168-177.

Ennis, R. H. (1962). A concept of critical thinking. *Harvard Educational Review, 32*(1), 81-111.

Ennis, R. H. (1987). A taxonomy of critical thinking dispositions and abilities. In J. Baron, & R. Sternberg (Eds.), *Teaching thinking skills: Theory and practice.* (pp. 9-26). New York, NY: Freeman.

Ennis, R. H. (1996). *Critical thinking.* Upper Saddle River, NJ: Prentice Hall.

Fabro, K. R., & Garrison, D. R. (1998). Computer conferencing and higher-order learning. *Indian Journal of Open Learning, 7*(1), 41.

Facione, P. A. (1990). *Critical thinking: A statement of expert consensus for purposes of educational assessment and instruction. Research findings and recommendations.* Executive Summary. Millbrae, CA: The California Academic Press.

Facione, P. A. (2007). *Critical thinking: What it is and why it counts. 2007 update.* Millbrae, CA: California Academic Press.

Facione, P. A., & Facione, N. C. (1994). Critical thinking disposition as a measure of competent clinical judgment: The development of the California critical thinking disposition inventory. *Journal of Nursing Education, 33*(8), 345-350.

Facione, P. A., & Facione, N. C. (2007). Talking critical thinking. *Change, 39*(2), 38-45.

Facione, P. A., Facione, N. C., & Giancarlo, C. (2001). *California Critical Thinking Disposition Inventory: CCTDI inventory manual*. Millbrae, CA: California Academic Press.

Fasseart, T., van Dulmen, S., Schellevis, F., & Bensing, J. (2007). Active listening in medical consultations: Development of the active listening observation scale (ALOS-global). *Patient Education and Counseling*, *68*(3), 258-264.

Fischer, C. S. (1996). *Inequality by design: Cracking the bell curve myth*. Princeton, NJ: Princeton University Press.

Fisher, A. (2001). *Critical thinking: An introduction*. Cambridge, UK: Cambridge University Press.

Fisher, A., & Scriven, M. (1997). *Critical thinking: Its definition and assessment*. Norwich, UK: Edgepress.

Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitive-developmental inquiry. *American Psychologist, 34*(10), 906-911.

Flavell, J. (1976). Metacognitive aspects of problem solving. In L. Resnick (Ed.), *The nature of intelligence*, pp. 231-236. Hillsdale, NJ: Lawrence Erlbaum Associates.

Forgas, J. (2008). Affect and cognition. *Perspectives on Psychological Science, 3*(2), 94-101.

Fosnot, C. T. (Ed.) (1996) Constructivism: Theory, perspectives and practice. New York, NY: Teachers College Press

Fox, S., & MacKeogh, K. (2003). Can eLearning promote higher order learning without tutor overload? *Open Learning: The Journal of Open and Distance Learning, 18*(2), 121-135.

Freire, P. (1993). *Pedagogy of the oppressed.* (M. B. Ramos Trans.). 2nd ed. London, UK: Penguin Books.

Frisson, S. (2009). Semantic underspecification in language processing. *Language and Linguistics Compass, 3*(1), 111-127. doi:10.1111/j.1749-818X.2008.00104.x

Gadamer, H. (1989). *Truth and method.* 2nd ed. London, UK: Sheed & Ward.

Garner, R., & Alexander, P. (1989). Metacognition: Answered and unanswered questions. *Educational Psychologist, 24*(2), 143-158.

Garrison, D. R., Anderson, T., & Archer, W. (2000). Critical inquiry in a text-based environment: computer conferencing in higher education. *The Internet and Higher Education, 2*(2-3), 87-105.

Garrison, D. R., & Anderson, T. (2003). *E-learning in the 21st century: A framework for research and practice*. New York, NY: RoutledgeFalmer.

Garrison, D. R., Anderson, T., & Archer, W. (2001). Critical thinking, cognitive presence, and computer conferencing in distance education. *American Journal of Distance Education, 15*(1), 7-23.

Geertz, C. (1983). *Local knowledge: Further essays in interpretive anthropology*. New York, NY: Basic Books.

Gendlin, E. T. (1962). *Experiencing and the creation of meaning: a philosophical and psychological approach to the subjective*. New York, NY: Free Press of Glencoe.

Gendlin, E. T. (1978). *Focusing.* New York, NY: Everest House.

Gendlin, E. T. (2000). When you feel the body from the inside, there is a door. *Presentation at the Evolution of Psychotherapy Conference, May 25-29, 2000.* Anaheim, CA.

Gendlin, E., & Levin, D. M. (1997). *Language beyond postmodernism: Saying and thinking in Gendlin's philosophy*. Evanston, IL: Northwestern University Press.

Gergen, K. J. (1999). *An invitation to social construction.* London, UK: Sage.

Gergen, K. J. (2001). *Social construction in context*. Thousand Oaks, CA: Sage.

Gergen, K., & Gergen, M. (1991). Towards reflexive methodologies. In Steier (Ed.), *Research and reflexivity.* (pp. 76-95). London, UK: Sage Publications.

Germer, C. K., Siegel, R. D., & Fulton, P. R. (2005). *Mindfulness and psychotherapy.* New York: Guilford Press.

Giannakou, M. (2006). *Higher education: Quality, equity, and efficiency.* Chair's Summary, Meeting Of OECD Education Ministers, June 26-27, 2008. Athens: OECD Education. Retrieved from www.oecd.org/dataoecd/62/21/37032873.pdf

Giddings, L. (2006). Mixed-methods research: Positivism dressed in drag? *Journal of Research in Nursing, 11*(3), 195-203.

Glaser, B. G. (1978). *Theoretical sensitivity: Advances in the methodology of grounded theory.* Mill Valley, CA: The Sociology Press.

Glaser, B. G., & Strauss, A. L. (1967). *The discovery of grounded theory: Strategies for qualitative research*. Chicago, IL: Aldine Publishing Company.

Goldberg, N. (1986). *Writing down the bones.* Boston, MA: Shambhala Publications.

Goleman, D. (1997). *Emotional intelligence.* New York, NY: Bantam Books.

Goleman, D. (2003). *Destructive emotions: How can we overcome them?: A scientific dialogue with the Dalai Lama.* New York, NY: Bantam Books.

Greenwood, J. (2000). Critical thinking and nursing scripts: The case for the development of both. *Journal of Advanced Nursing, 31*(2), 428-436.

Gunawardena, C. N. (March, 1995). Social presence theory and implications for interaction and collaborative learning in computer conferencing. *Paper Presented at the Fourth International Conference on Computer Assisted Instruction,* Hsinchu, Taiwan.

Habermas, J. (1990). *Moral consciousness and communicative action.* Cambridge, MA: MIT Press.

Hall, T. E. (2005). *Critical thinking, self-direction and online learning: A practical inquiry perspective in higher education.* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses, 0516 (0203).

Hay, E. (1987). *The critical thinking movement and its implication for the teaching of speech communication.* Paper presented at the 73rdAnnual Meeting of the Speech Communication Association (Boston, MA, November 5-8, 1987). Retrieved from ERIC database. (ED290196)

Haynes, C. (2002). Introduction: Laying a foundation for interdisciplinary teaching. In C. Haynes (Ed.), *Innovations in interdisciplinary teaching* (pp. xi--xxii). Westport, CT: Oryx Press.

Hedburg, P. R. (2006) Learning through reflective classroom practice. *Journal of Management Education*. *33*(1) 10-36.

Heidegger, M. (1959). *An introduction to metaphysics.* New Haven, CT: Yale University Press.

Heidegger, M. (1962). *Being and time*. Oxford, UK: Blackwell.

Ingram, D., & Simon-Ingram, J. (1992). *Critical theory: The essential readings*. New York, NY: Paragon House.

Isaacs, W. (1999). *Dialogue: The art of thinking together.* New York, NY: Doubleday.

Isaacs, W. (1992). *The ladder of inference.* Cambridge, MA: MIT Centre for Organizational Learning.

Jaison, B. (2007). *Integrating experiential and brief therapy.* (2nd ed.). Toronto, ON: Focusing for Creative Living.

James, W. (2007). *The principles of psychology.* New York, NY: Cosimo Inc.

Jennings, P. (March 5, 2012). Building an evidence base for mindfulness in educational settings. Retrieved from www.mindful.org/mindful-voices/on-education/building-an-evidence-base-for-mindfulness-in-educational-settings

Jeong, A. C. (2003). The sequential analysis of group interaction and critical thinking in online threaded discussions. *The American Journal of Distance Education, 17*(1), 25-44.

Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. *Educational Researcher, 33*(7), 14-26.

Kabat-Zinn, J. (2005). *Coming to our senses.* New York, NY: Hyperion.

Kabat-Zinn, J., & University of Massachusetts Medical Center/Worcester Stress Reduction Clinic. (1990). *Full catastrophe living: Using the wisdom of your body and mind to face stress, pain, and illness*. New York, NY: Delta.

Kennison, M., & Misselwitz, S. (2002). Evaluating reflective writing for appropriateness, fairness, and consistency. *Nursing Education Perspectives, 23*, 238-242.

King, P. M., & Kitchner, K. S. (1994). *Developing reflective judgment: Understanding and promoting intellectual growth and critical thinking in adolescents and adults.* San Francisco, CA: Jossey-Bass Publishers.

Kitchenbaum, A. (2008). The evolution of John Mezirow's transformative learning theory. *Journal of Transformative Education, 6*(2), 104-123.

Klein, J. T. (1996). *Crossing boundaries: Knowledge, disciplinarities and interdisciplinarities.* Charlotttesville, NC: University of Virginia Press.

Koch, G. (1982). Intraclass correlation coefficient. In S. Kotz, & N. Johnson (Eds.), *Encyclopedia of statistical sciences, vol. 4* (p. 213). New York, NY: John Wiley & Sons.

Kockelmans, J. J. (1979). Why interdisciplinarity. In J. J. Kockelmans (Ed.), *Interdisciplinarity and higher education* (pp. 123-160). University Park, PA: The Pennsylvania State University Press.

Kolb, D. (1984). *Experiential learning: Experience as a source of learning.* Englewood Cliffs, NJ: Prentice-Hall.

Komiyama, H. (2006). *The challenge of the explosion of knowledge for twenty-first century higher education.* Athens, Greece: OECD.

Kuh, G. (2009). The national survey of student engagement: Conceptual and empirical foundations. *New Directions for Institutional Research, 141*, 5-20.

Kuhn, D. (2000). Metacognitive development. *Current Directions in Psychological Science, 9*(5), 178-181.

Kurfiss, J. G. (1988). *Critical thinking: Theory, research, practice and possibilities.* (ASHE-ERIC Higher Education Report No. 2). Washington, D.C.: Association for the Study of Higher Education.

Langer, E. J. (1989). *Mindfulness*. Reading, MA: Addison-Wesley Publishing Company.

Langer, E. J. (2000). Mindful learning. *Current Directions in Psychological Science, 9*(6), 220-223.

Langer, E. J. (2005). *On becoming an artist: Reinventing yourself through mindful creativity*. New York, NY: Ballantine Books.

Lattuca, L. (2001). *Creating interdisciplinarity: Interdisciplinary research and teaching among college and university faculty. Vanderbilt issues in higher education.* Nashville, TN: Vanderbilt University Press.

Lattuca, L. (2002). Learning interdisciplinarity: Sociocultural perspectives on academic work. *The Journal of Higher Education, 73*(6), 711-739.

Lee, V. S. (2004). *Teaching and learning through inquiry: A guidebook for institutions and instructors.* Sterling, VA: Stylus.

Leppa, C. J. (1997). Standardized measures of critical thinking: Experience with the California critical thinking tests. *Nurse Educator, 22*(5), 29-33.

Lipman, M. (1991). *Thinking in education*. Cambridge, UK: Cambridge University Press.

Mackey, J. L. (2002). Rules are not the way to do interdisciplinarity: A response to Szostak. *Issues in Integrative Studies, 20*, 123-129.

MacKnight, C. B. (2000). Teaching critical thinking through online discussions. *Educause*, *23*(4), 38-41

Mandernach, B. J. (2006). Thinking critically about critical thinking: Integrating online tools to promote critical thinking. In *Insight: A collection of faculty scholarship.* (Vol. 1). Retrieved from www.insightjournal.net/Volume1/

Marche, S. (2005). Triangulation in a new light -- connecting epistemology to qualitative/quantitative research to relevance/rigor: explaining it all to Erny Schuman. Conference Keynote Address. *Information Systems Research Methodologies, ISONEWORLD 2005, April 1.*

Marcuse, H. (1964). *One-dimensional man.* Boston: Beacon Press.

Marton, F. (1986). A research approach investigating different understandings of reality. *Journal of Thought, 21*(2), 28-39.

Marton, F., & Booth, S. (1997). In Sternberg R. (Ed.), *Learning and awareness*. Mahwah, NJ: Lawrence Erlbaum Associates, Publishers.

Maurino, P. S. M. (2007). Looking for critical thinking in online threaded discussions. *Journal of Educational Technology Systems*, *35*(3), 241-260.

McBurney, D., & White, T. (2007). *Research methods* (7th ed.). Belmont, CA: Thompson Wadsworth.

McKenzie, H. (1994). *Education in Canada: Current issues.* (No. BP-368E). Ottawa: Political and Social Affairs Division, Government of Canada.

McMillan, J. (1987). Enhancing college students' critical thinking: A review of studies. *Research in Higher Education, 26*(1), 3-29.

McPeck, J. E. (1990). *Teaching critical thinking: Dialogue and dialectic*. New York: Routledge.

Mertens, D. M. (2005). *Research methods in education and psychology: Integrating diversity with quantitative and qualitative approaches.* (2nd ed.). Thousand Oaks, CA: Sage Publications.

Meyer, K. A. (2003). Face-to-face versus threaded discussions: The role of time and higher-order thinking. *Journal of Asynchronous Learning Networks, 7*(3), 55-65.

Mezirow, J. (1991). *Transformative dimensions of adult learning.* Toronto: John Wiley & Sons.

Mintzberg, H. (2004). *Managers not MBAs: A hard look at the soft practice of managing and management development*. San Francisco, CA: Berrett-Koehler Publishers.

Mipham, S. (1994, March 26-27). Meditation instruction. Transcript retrieved from http://www.shambhala.org/meditationinstruction.html

Mipham, S. (2003). *Turning the mind into an ally.* New York: Riverhead Books.

Mipham, S. (2010, December, 30). A short introduction to peaceful abiding. Video clip retrieved from http://shambhala.org/meditation/

Mitchell, G. J., & Pilkington, F. B. (1999). A dialogue on the comparability of research paradigms -- and other theoretical things. *Nursing Science Quarterly,* (12), 283-290.

Myers, M. D.; Avison, D. (2002). *Qualitative research in information systems.* Thousand Oaks, CA: Sage Publications Inc.

National Governors Association Center for Best Practices, Education Policy Division. (2007). *Higher education accountability for student learning.* Washington, DC: NGA Center for Best Practices.

National Research Council (U.S.). (2002). *Preparing for the revolution: Information technology and the future of the research university.* Washington, D.C.: The National Academies Press.

Nelson, T. (1996). Consciousness and metacognition. *American Psychologist, 51*(2), 102-116.

Nelson, T. O., & Rey, G. (2000). Metacognition and consciousness: A convergence of psychology and philosophy. *Consciousness and Cognition, 9*(2), 147-148.

Nickerson, R. S. (1988). Confirmation bias: A ubiquitous phenomenon in many guides. *Review of General Psychology, 2*(2), 175-220.

Nickerson, R. S., Perkins, D. N., & Smith, E. (1985). *The teaching of thinking.* Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Niedringhaus, L. (2001). Using student writing assignments to assess critical thinking skills: A holistic approach. *Holistic Nursing Practice, 15*(3), 9-17.

Nikitina, S. (2005). Pathways of interdisciplinary cognition. *Cognition & Instruction, 23*(3), 389-425.

Nosich, G. (1990). Educational virtue: Becoming a critical thinker. Preface. In R. Paul, *Critical thinking: What every person needs to survive in a rapidly changing world* (pp. ii-vii). Santa Rosa, CA: The Foundation for Critical Thinking.

Onwuegbuzie, A., & Leech, N. L. (2005). On becoming a pragmatic researcher: The importance of combining quantitative and qualitative research methodologies. *International Journal of Social Research Methodology, 8*(5), 375-387.

Onwuegbuzie, A. (2006). Linking research questions to mixed methods data analysis procedures. *The Qualitative Report, 11*(3), 474-498.

Palinscar, A. S. (1998). Social constructivist perspectives on learning. *Annual Review of Psychology, 49*, 345-375.

Palmer, P., & Zajonc, A. (2010). *The heart of higher education: A call to renewal.* San Francisco: Jossey-Bass.

Parker, I. (1994). Reflexive research and the grounding of analysis: Social psychology and the 'psy-complex'. *Journal of Community and Applied Social Psychology, 4*, 239-252.

Paul, R. W. (1990). *Critical thinking: What every person needs to survive in a rapidly changing world.* Santa Rosa, CA: The Foundation for Critical Thinking.

Paul, R. W. (1995). *Critical thinking: How to prepare students for a rapidly changing world.* Santa Rosa, CA: The Foundation for Critical Thinking.

Paul, R. W., Elder, L., & Bartlett, T. (1997). *California teacher preparation for instruction in critical thinking*. Santa Rosa, CA: Foundation for Critical Thinking.

Perkins, D. N., Jay, E., & Tishman, S. (1993). Beyond abilities: A dispositional theory of thinking. *Merrill-Palmer Quarterly, 39*(1), 1-21.

Perry, W. G. (1970). *Forms of intellectual and ethical development in the college years: A scheme.* New York, NY: Holt, Rinehart.

Piaget, J. (2005). *The psychology of intelligence.* (2nd edition ed.). London, UK: Taylor & Francis.

Piper, T. R., Gentile, M. C., & Daloz Parks, S. (1993). *Can ethics be taught? perspectives, challenges, and approaches at Harvard Business School.* Boston: Harvard Business School Press.

Polanyi, M. (1967). *The tacit dimension*. London, UK: Routledge & K. Paul.

Popper, K. R. (1959). *The logic of scientific discovery.* New York, NY: Routledge.

Potter, J., & Wetherell, M. (1987). *Discourse and social psychology. beyond attitudes and behavior.* London, UK: Sage.

Rabinow, P., & Rose, N. (Eds.). (2003). *The essential Foucault*. New York, NY: The New Press.

Repko, A. F. (2008). *Interdisciplinary research: Process and theory*. Los Angeles, CA: Sage.

Ricoeur, P. (1978). *The rule of metaphor: Multidisciplinary studies of the creation of meaning in language.* London, UK: Routledge & Kegan Paul.

Rogers, C. (1969). *Freedom to learn: A view of what education might become.* Columbus, OH: Charles Merrill.

Rogers, C. R. (1951). *Client-centered therapy: Its current practice, implications, and theory*. Boston, MA: Houghton Mifflin.

Rorty, R. (1991). Inquiry as recontextualization: An anti-dualist account of interpretation. In D. R. Hiley, J. F. Bohman & R. Shusterman (Eds.), *The interpretative turn. Philosophy, science and culture.* Conference publication. New York: Cornell University Press.

Rosenberg, M. B. (2005). *Nonviolent communication: A way of life.* Encinitas, CA: Puddle Dancer Press.

Rourke, L., Anderson, T., Archer, W., & Garrison, D. R. (1999). Assessing social presence in asynchronous, text-based computer conferences. *Journal of Distance Education, 14*(2), 50-71.

Ruth-Sahd, L. (2003). Intuition: A critical way of knowing in a multicultural nursing curriculum. *Nursing Education Perspectives, 24*(3), 129-34.

Sable, D. (2010). Contemplative interaction: A key to transformative learning online. In T. Yuzer, & G. Kurubacak (Eds.), *Transformative learning and online education* (pp. 260-280). Hershey, PA: Information Sciences Publishing.

Sable, T. (2005). *Emerging identities: A proposed model for an interactive science curriculum for First Nations students.* (Doctoral dissertation). Retrieved from Library and Archives Canada. ISBN: 978-0-494-35748-4

Sacks, P. (1999). *Standardized minds: The high price of America's testing culture and what we can do to change it*. Cambridge, MA: Perseus Books, Harper Collins Publishers.

Santorelli, S. F. (1999). *Heal thy self: Lessons on mindfulness in medicine*. New York, NY: Random House.

Scharmer, C. O. (2009). *Theory U*. San Francisco: Berrett-Koehler Publishers.

Schön, D. (1987). *Educating the reflective practitioner: Toward a new design for teaching and learning in the professions.* San Francisco: Jossey-Bass.

Schön, D. (1983). *The reflective practitioner.* New York: Basic Books.

Shapiro, S. L., Brown, K. W., & Astin, J. A. (2008). T*oward the integration of meditation into higher education: A review of research.* Amherst: Contemplative Mind in Society.

Schutz, A. (1962). *Collected papers*. M. Natanson (Ed.), The Hague, The Netherlands: Martinus Nijhoff.

Schuyler, K. G. (2010). Increasing leadership integrity through mind training and embodied learning. *Consulting Psychology Journal: Practice and Research, 62*(1), 21-38. doi:10.1037/a0018081

Scriven, M. (1976). *Reasoning.* New York, NY: McGraw-Hill.

Seamon, D., & Zajonc, A. (Eds.) (1998). *Goethe's way of science: A phenomenology of science.* Albany, NY: State University of New York Press.

Seibert, K. W., & Daudelin, M. W. (1999). *The role of reflection in managerial learning.* Westport, CT: Quorom Books.

Senge, P. (1990). *The fifth discipline: The art and practice of the learning organization.* New York, NY: Doubleday/Currency.

Senge, P. (2004). *Presence: Human purpose and the field of the future*. Cambridge, MA: The Society for Organizational Learning.

Senge, P., Smith, B., Kruschwitz, N., Laur, J., & Schely, S. (2008). *The necessary revolution.* New York: Doubleday.

Shapiro, S. L., Brown, K. W., & Astin, J. A. (2008). *Toward the integration of meditation into higher education: A review of research.* Amherst, MA: Contemplative Mind in Society.

Shrout, P. E., & Fleiss, J. L. (1979). Intraclass correlations: Uses in assessing rater reliability. *Psychological Bulletin, 86*(2), 420-428. doi:10.1037/0033-2909.86.2.420

Siegel, H. (1990). McPeck, informal logic, and the nature of critical thinking. In J. McPeck (Ed.), *Teaching critical thinking: Dialogue and dialectic* (pp. 75-85). New York: Routledge.

Slavin, A. (September 10, 2007). Has Ontario taught its high school students not to think? *University Affairs.* Online edition. Retrieved from http://www.universityaffairs.ca/has-ontario-taught-its-high-school-students-not-to-think.aspx

Smith, C., & Short, P. M. (2001). Integrating technology to improve the efficiency of qualitative data analysis -- A note on methods. *Qualitative Sociology, 24*(3), 401-407.

Smythe, E. (2005). The thinking of research. In Ironside, P. (ed.) *Beyond Method: Philosophical Conversations in Healthcare Research and Scholarship. Interpretive studies in health care and the human sciences*, Vol (4). (pp. 223–258). Madison, WI: The University of Wisconsin Press.

Stanovich, K., & West, R. (1997). Reasoning independently of prior belief and individual differences in actively open-minded thinking. *Journal of Educational Psychology, 89*(2), 342-357.

Statistics Canada. (2008). *Educational portrait of Canada.* Retrieved February 22, 2012 from http://www42.statcan.ca/smr08/pdf/smr08_107-eng.pdf

Steier, F. (Ed.). (1991). *Research and reflexivity.* London, UK: Sage Publications Ltd.

Strauss, A. L., & Corbin, J. M. (1990). *Basics of qualitative research: Grounded theory procedures and techniques*. Newbury Park, CA: Sage Publications.

Svinicki, M. (2004). *Learning and motivation in the postsecondary classroom*. Bolton, MA: Anker.

Szostak, R. (2002). How to do interdisciplinarity: Integrating the debate. *Issues in Integrative Studies,* (20), 103-122.

Tamburri, R. (December, 6, 2004). Graduate students get that long-distance feeling. *University Affairs.* Online edition. Retrieved from http://www.universityaffairs.ca/graduate-students-get-that-long-distance-feeling.aspx

Tashakkori, A., & Teddie, C. B. (1998). *Mixed methodology: Combining quantitative and qualitative approaches.* Thousand Oaks, CA: Sage.

Taylor, P. J. (2005). *We know more than we are, at first, prepared to acknowledge: Journeying to develop critical thinking.* Retrieved April 20, 2008 from http://www.faculty.umb.edu/pjt/cv.html#pubs

Trungpa, C. (1971). *Meditation in action*. Boston, MA: Shambhala Publications

Trungpa, C. (1984). *Shambhala: The sacred path of the warrior.* Boston, MA: Shambhala Publications.

U.S. Department of Education. (2006). *A test of leadership: Charting the future of higher education.* Washington, DC: U.S. Dept of Education.

van Gelder, T. (2005). Teaching critical thinking. *College Teaching, 53*(1), 41-46.

Van Gyn, G., & Ford, C. (2006). *Teaching for critical thinking. Green guide no. 6*. London, ON Canada: Society for Teaching and Learning in Higher Education.

Van Gyn, G. (May 1, 2007). *Teaching for critical thinking* [unpublished Powerpoint document]. A workshop for faculty at Dalhousie University, Halifax, NS.

Van Manen, M. (1990). *Researching lived experience: Human science for an action sensitive pedagogy*. Albany, N.Y.: State University of New York Press.

Varela, F., & Shear, J. (1999). *The view from within: First-person approaches to the study of consciousness*. Bowling Green, OH: Imprint Academic.

Wason, P. C. (1960). On the failure to eliminate hypotheses in a conceptual task. *Quarterly Journal of Experimental Psychology, 12*(3), 129-140.

Watson, G., & Glaser, E. M. (1980). *Watson-Glaser critical thinking appraisal manual.* Cleveland, OH: Psychological Corp.

Wheatley, M. (2006) *Leadership and the new science: Discovering order in a chaotic world.* San Francisco: Berrett-Koehler.

Wigner, E. P. (1960). The unreasonable effectiveness of mathematics in the natural sciences. *Communications on Pure and Applied Mathematics,* (13), 1-14.

Williams, R. (1983). *Keywords: A vocabulary of culture and society.* New York: Oxford University Press.

Yang, Y. C. (2008). A catalyst for teaching critical thinking in a large university class in Taiwan: Asynchronous online discussions with the facilitation of teaching assistants. *Educational Technology Research and Development*, 56(3), 241-264.

Zajonc, A. (2003). *Survey of transformative and spiritual dimensions of higher education.* Amherst, MA: The Center for Contemplative Mind in Society.

Zajonc, A. (2008). *Meditation as contemplative inquiry: When knowing becomes love.* Herndon, VA: Lindisfarne Books.

Appendices

Appendix A: Individual and Interactive Contemplation Practice

Purpose

The purpose of this exercise is to enable you to engage a question or statement and respond to it with insight beyond your initial assumptions and habitual thinking. This, in turn, enables you to communicate what you know and what you are learning with fresh language and to engage others in a mindful, genuine, creative dialogue.

The Subject of Contemplation

The subject of contemplation can be a question, a dilemma, an image, or some kind of assertion that people wish to explore together. The contemplation can be in virtually any dimension of thought: social, ethical, scientific, political, spiritual, etc. The practice can be applied to diverse situations, including developing insight, brainstorming new approaches to complex issues, exploring blockages to communication, or renewing a vision of collective purpose.

<u>Individual Contemplation</u>

1. Find the present moment.[5]

   Calm the mind by resting attention on your breathing for several minutes. If distracting thoughts arise, notice that you are thinking and simply come to the present moment by returning attention to the breath. The point is to bring your awareness to the present and to let your awareness open.

[5] This assumes the audience has had basic meditation instruction before and merely needs a reminder here. For more complete meditation instruction see Appendix C.

2. Hold the contemplation.
   When you feel ready, bring up the specific contemplation for this session and use that as the focal point of your attention. At this point just stay with the question or statement; you can repeat the question to yourself or just let it remain in your mind's eye. There is no need in this step for analysis or storylines you may tell yourself. This part of the process trains your ability to remain focused on a particular contemplation.

3. Open to the meaning of the contemplation.
   Next, open your awareness and pay attention to what is happening in your whole experience of the contemplation. Notice especially any felt sense in the present moment rather than a storyline with words. The felt sense is something you don't yet have words for but it is a felt experience in your body. Some people understand this as "knowing from the heart," and others consider the felt sense as related to intuition. In this step, stay with that felt sense just as you would otherwise stay with the breath in meditation. Look directly at this felt sense without judgment. Let your attention be open but focus on present experience.

4. Find fresh language that fits the moment.
   See if there is some new meaning to the contemplation when you have included awareness of any underlying felt sense. Let your response come in fresh words that reflect your full, present experience of the contemplation. Don't rush to write; be patient and wait for words that fit best with your present experience.

5. Finally, write down what comes to you from your contemplative experience. First, write down your responses to your contemplation without a lot of editing. Once you start writing, let it be "first thought, best thought." Then ask yourself, "Is that all?" Explore the edges of what you are aware of in response to the contemplation. Then blend in critical thinking if that's appropriate, but write no more than a page, less is better. There will be time to edit it later if you wish.

Interactive Contemplation

1. Reading and Listening

   Break into pairs. One person volunteers to read out loud his or her response to the contemplation. The other person listens. Listen with self-awareness. This awareness has two aspects: 1) Notice the tendency to make judgments, to agree or disagree. The point is not to reject your own judgments, but to recognize your habitual pattern without feeling committed to it. 2) Try to listen openly, beyond your judgments and assumptions. (Do not take notes while the first person is reading; focus your attention fully on the person speaking.)

2. Reflecting (Paraphrasing Back).

   The listener then offers his or her understanding by paraphrasing or reflecting back what has been said, trying to communicate just what the first person said *without adding to or interpreting their meaning*. The first person confirms, corrects, or fills in if something important to them is missing.

3. Reflective Inquiry.

   The listener then asks questions to clarify what the first person meant. You may start with something that interested you in what was read – "What did you mean by _____?" "Can you say more about _____?" Avoid leading questions such as "When you said 'x' did you mean 'y?'", "I thought the contemplation meant _____, didn't it?" The purpose here is get at what the reader meant, not to lead or persuade the person to a different point of view or add to it yet.

4. Alternating.

   The interactive process (steps 1-3) is then repeated so that first person listens and the second person reads.

5. Dialogue. (Optional – especially with people doing it for the first time.)

Pairs then explore the contemplation not from their personal points of view, but by creating a new meaning between them – this is a "flow of meaning between people" or a true dialogue. A dialogue in this sense is a mutual search for new meaning created in the present, not an attempt to win an argument.

6. Group Reflection.

   When the pairs are finished, the larger group reassembles and the instructor/facilitator asks for a few minutes of silence. The guided instruction at this point is, "find your breath and settle into the present moment…Now sense the space in the room and the connection you have with others, based on the interaction you just went through." *(With more advanced practitioners you can ask them to return to the meaning of their responses and gradually expand their awareness to sense the presence and connection to others in the room)*

6. Reading to the Group.

   The facilitator then asks for volunteers to read out their contemplations to the whole group. If the group is small enough, each pair can read their contemplations and describe how they worked with it. In this way people get a sense of how the group responded as a whole.

7. Group Inquiry and Dialogue.

   As people read out their contemplations it may be fruitful to allow more inquiry, if time allows. The situation is now ripe to "*sense from the whole*" rather than the ego's point of view; to find new meaning that comes from the present interaction in the group. With the trust and respect that was created in pairs, the group can engage in genuine dialogue -- a flow of meaning between people who are letting go of ego-centered perspectives and finding new ways to approach the contemplation.[6]

[6] What is implied here by "letting go of ego-centered perspectives" is merely that one's personal perspective is more apparent as only one possible view and consequently seen in a context relative to the whole group.

Where there is divergence, the point is not to arrive at agreement or consensus. The point is to encourage people to hold what appear to be divergent views as if they could exchange places with others. It is then possible that something new may emerge, something generated from the present experience of the participants.

Appendix B: Meditation Instruction

Meditation Instruction by Sakyong Mipham Rinpoche (Mipham, 1994).

Also see video clip (Mipham, 2010) http://shambhala.org/meditation/

The following transcript is a condensed compilation of talks given on the first day of a two-day seminar entitled Fearless in Meditation, which took place at the Shambhala Centre in Halifax, Nova Scotia on March 26 and 27, 1994.

The practice of mindfulness/awareness meditation is common to all Buddhist traditions. Beyond that, it is common to, inherent in, all human beings.

In meditation we are continuously discovering who and what we are. That could be quite frightening or quite boring, but after a while, all that slips away. We get into some kind of natural rhythm and begin to discover our basic mind and heart.

Often we think about meditation as some kind of unusual, holy spiritual activity. As we practice, that is one of the basic beliefs we try to overcome. The point is that meditation is completely normal; it is the mindful quality present in everything we do.

That is a straightforward principle but we are continuously distracted from coming to our natural state, our natural being. Throughout our day everything pulls us away from natural mindfulness, from being on the spot. Our natural tendency to rush means that we're rushing past opportunities. We're either too scared or too embarrassed or too proud or just too crazy, to be who we are.

That is what we call the journey or the path: continuously trying to recognize that we can actually relax and be who we are. So practicing meditation begins by simplifying everything. We sit on the cushion, follow our breath and watch our thoughts. We simplify our whole situation.

Mindfulness/awareness meditation, sitting meditation, is the foundation of this particular spiritual journey. Unless we are able to deal with our mind and body in a very simple

way, it is impossible to think about doing high-level practices. How the Buddha himself, having done all kinds of practices, became the Buddha was simply to sit. He sat under a tree and he did not move. He practiced exactly as we are practicing.

What we're doing is taming our mind. We're trying to overcome all sorts of anxieties and agitation, all sorts of habitual thought patterns, so we are able to sit with ourselves. Life is difficult, we may have tremendous responsibilities, but the odd thing, the twisted logic, is that the way we relate to the basic flow of our life is to sit com-pletely still. It might seem more logical to speed up but here we are reducing everything to a very basic level.

How we tame the mind is by using the technique of mindfulness. Quite simply, mindfulness is complete attention to detail. We are completely absorbed in the fabric of life, the fabric of the moment. We realize that our life is made of these moments and that we cannot deal with more than one moment at a time. Even though we have memories of the past and ideas about the future, it is the present situation that we are experiencing.

Thus we are able to experience our life fully. We might feel that thinking about the past or the future makes our life richer, but by not paying attention to the immediate situation, we are actually missing our life. There's nothing we can do about the past, we can only go over it again and again, and the future is completely unknown.

So the practice of mindfulness is the practice of being alive. When we talk about the techniques of meditation, we're talking about the techniques of life. We're not talking about something that is separate from us. When we're talking about being mindful and living in a mindful way, we're talking about the practice of spontaneity.

It's important to understand that we're not talking about trying to get into some kind of higher level or higher state of mind. We are not saying that our immediate situation is unworthy. What we're saying is that the present situation is completely available and unbiased, and that we can see it that way through the practice of mindfulness.

Sitting Meditation Practice

At this point we can go through the actual form of the practice. First, it is important how we relate with the room and the cushion where we will practice. One would relate with where one is sitting as the centre of the world, the centre of the universe. It is where we are proclaiming our sanity, and when we sit down the cushion should be like a throne.

When we sit, we sit with some kind of pride and dignity. Our legs are crossed, shoulders relaxed. We have a sense of what is above, a sense that something is pulling us up at the same time that we have a sense of the ground. The arms should rest comfortably on the thighs. Those who cannot sit down on a cushion can sit in a chair. The main point is to be somewhat comfortable.

The chin is tucked slightly in, the gaze is softly focusing downward about four to six feet in front, and the mouth should be open a little. The basic feeling is one of comfort, dignity and confidence. If you feel you need to move you should just move, just change your posture a little bit. So that is how we relate with the body.

And then the next part -- actually the simple part -- is relating with the mind. The basic technique is that we begin to notice our breath, that we could have a sense of our breath. The breath is what we're using as the basis of our mindfulness technique; it brings us back to the moment, back to the present situation. The breath is something that is constant-otherwise it's too late.

We put the emphasis on the out-breath. We don't accentuate or alter the breath at all, just notice it. So we notice our breath going out, and before we breathe in there is just a momentary gap, a space. There are all kinds of meditation techniques and this is actually a more advanced one. We're learning how to focus on our breath while at the same time giving some kind of space to the technique.

Then we realize that, even though what we're doing is quite simple, we have a tremendous number of ideas, thoughts and concepts-about life and about the practice itself. And the way we deal with all these thoughts is simply by labeling them. We just note to ourselves that we're thinking, and return to following the breath.

So if we wonder what we're going to do for the rest of our life, we simply label it thinking. If we wonder what we're going to have for lunch, simply label it thinking. Anything that comes up, we gently acknowledge it and let it go.

There are no exceptions to this technique: there are no good thoughts and no bad thoughts. If you're thinking how wonderful meditation is, then that is still thinking. How great the Buddha was, that's still thinking. If you feel like killing the person next to you, just label it thinking. No matter what extreme you go to, it's just thinking, and come back to the breath.

In the face of all these thoughts, it is difficult to be in the moment and not be swayed. Our life has created a barrage of different storms, elements and emotions that are trying to unseat us, trying to destabilize us. All sorts of things come up, but they are labeled thoughts and we are not drawn away. That is known as holding our seat, just dealing with ourselves.

Post-meditation Practice

The idea of holding our seat continues when we leave the meditation room and go about our lives. We maintain our dignity and humour and the same lightness of touch we use dealing with our thoughts. Holding our seat doesn't mean we are stiff and trying to become like rocks; the whole idea is learning how to be flexible. The way that we deal with ourselves and our thoughts is the same way that we deal with the world.

When we begin to meditate, the first thing we realize is how wild things are-how wild our mind is, how wild our life is. But once we begin to have the quality of being tamed, when

we can sit with ourselves, we realize there's a vast wealth of possibility that lies in front of us. Meditation is looking at our own backyard, you could say, looking at what we really have and discovering the richness that already exists. Discovering that richness is a moment-to-moment process, and as we continue to practice our awareness becomes sharper and sharper.

This mindfulness actually envelopes our whole life. It is the best way to appreciate our world, to appreciate the sacredness of everything. We add mindfulness and all of a sudden, the whole situation becomes alive. This practice soaks into everything that we do; there's nothing left out. Mindfulness pervades sound and space. It is a complete experience.

Appendix C: Interview Guide

Qualitative Research Questions:

1. How do the reflective practices, taken as a whole, enable you to reflect, in the sense of becoming more aware of your own intellectual habits and how they form?
2. How did the introspective practices (meditation, focusing, journal writing) affect you?
3. How did the interactive practices (listening, inquiry, dialogue) affect you?
4. Did the introspective practices affect the interactive practices for you?
5. More specifically, how does mindfulness meditation … guided contemplation…journal writing….active listening…authentic inquiry…dialogue enable you to reflect, in the sense of becoming more aware of your own intellectual habits and how they form?
    a. To what extent did the instructions for the individual part of the exercise shift your initial response to the contemplated question?
    b. To what extent did the interactive part of the exercise shift your thinking from what was expressed in your initial written reflection?
    c. To what extent was there a difference between ordinary class discussions and what happened after work in pairs?
    d. After the whole exercise, how did your thinking about the contemplated topic change? Can you recall any examples?
6. Did anything change for you over the twelve weeks of doing this exercise? If so, what?
    a. About when did you notice something different?
    b. Did it stay with you after the course?

Appendix D: Sample Coding Worksheet for Qualitative Research

B1 First Interview	Open Coding	Focused Coding	Theoretical Coding
DS: I will start at the most general level and you can respond to that however you wish. Then I will break it down more specifically to the practices themselves. So the most general level, if I say to you, "How do you think the reflective practices we did in class affected your learning and your thinking? What would you say to that? Taking the whole sum of them....let me summarize. The meditation practice, the contemplation -- we focus on the question and then go deeper; the journal writing, then the listening exercise followed by inquiry. Then the facilitated discussion, where I'm aiming at a dialogue to get people to really contribute to a kind of collective meeting. So, with all of that, how would you say that it affected your learning and thinking, in general?			
B1: I think that... I mean I may be making a generalization here, but I think that learning is usually equated with memorizing material. So if you show that you know the material, if you can repeat what you have read and what is being said to you in class or in work, I think that the meditation, contemplation and discussion model takes what you have learned and helps you internalize it.	Learning=memorizing Repeating what was said or read Internalizing what you've learned		
So I would say that for myself, it is interesting to think that there is a physical reaction to what we are learning. When you first used the term "felt sense" in the contemplation model, at first it is not something that anyone would really recognize is happening—that you are having a physical or even an emotional reaction to the material. But meditating and then finding that felt sense in the material helps to see that the learning process is more than just being able to repeat what you are being told. Also, it allowed me to see that there are layers to the material, and learning is taking place not just on an intellectual level, but also on a physical level.	Noticing physical reaction reacting to material finding FS; learning more than repeating, seeing layers to the material	"Felt sense" makes sense learning is taking place not just on an intellectual level	Embodied learning; recognizing that that the learning process is more than just being able to repeat what you are being told

Appendix E: Sample Coded Form for Quantitative Research

Indicators of reflective dispositions (numbered 1 to 9) identified by research assistants were entered for each student response.

Question	"Spirituality in the Workplace is about individuals and organizations seeing work as a spiritual path, as an opportunity to grow and to contribute to society in a meaningful way. It is about care, compassion and support of others; about integrity and people being true to themselves and others. It means individuals and organizations attempting to live their values more fully in the work they do." Is this consensus definition acceptable to you? What concerns do you have?
Student Response	It is a very acceptable definition for me. I always think spirituality is about self-training, not about supporting of others or organizations. But, spirituality in the work place is not only matter for workers or individuals but also organizations or companies. If organizations also participate with individuals to have meaningful way in the work place and self-training, and then individuals would access easier to spirituality in the workplace.
Codes	SuC, A
Indicators	5, 3
Question	Which of these four concerns about the dignity of work are most important to you? Why? Is there anything else you would include? Evangelism: bringing people to your faith Ethics: concern with fairness and social justice Engagement: finding personal meaning and purpose in your work, feeling you are doing what is natural for you Human Potential: practices in individual and social transformation not affiliated with specific religions; communication skills, health and well being (tai chi, yoga, meditation, etc. supported in the workplace).
Student Response	Engagement is the most important to me. I am always trying to find personal meaning and purpose before I get started doing something so than I can have the reason of doing that. This gives me power that it holds me to do that continually even if I want to quit. I have a motivation of doing that. If I don't have the meaning and purpose of doing something, I would quit easily whenever I face to trouble. Even I am not gong to try to solve the problem because I don't have any reason to keep that. That's why engagement is the most important to me.
Codes	SuC, B
Indicators	4, 5, 3
Question	What does spirituality mean to you?

Student Response	For me, spirituality is power that which makes nothing impossible. People always can do more or better than actaully they think. It is not depending on what situations they have but it is depending on how people use spirituality in their places (or situations). There is saying that every cause of problem comes from you and also you got the key to slove the problem. So, things going differently depending on how you think. Try to understand, think positive, and gratitude for every moment are the most important parts for spirituality.
Codes	SuC, R
Indicators	3
Question	Have you experienced a shift in how you think or feel about spirituality and work? If so, how would you describe it? If so, how will you manifest this shift in your life?
Student Response	Through the course, I was not only experienced a shift in how I feel or think about spirituality and work, but also I was experienced a shift in how I feel or think about spirituality and my life. I realized that all the matters are not about what situations I have, it is all about myself. All the problems are coming from myself and also I have the solution. I learned that is before blame others or situations what I have badly, look into myself first. I learned this from meditation practice and interaction with classmate during contemplation. I very enjoyed it and it gave me how to deal with my problems.
Codes	SuC, F
Indicators	4, 3, 5, 9, 7
Question	Imagine you are applying for work with a large company that has modern human resource development programs. What questions would you ask to determine their intention?
Student Response	I would ask "do you think your programs really help your employees to work with spirituality in the workplace?" I want to ask this question because sometimes they do have programs just to show how much they care about their workers. They make this good image so that more employees apply for their company and also making image of company where people want to work on. So, it is unnecessary how variety programs they have but how much their workers are satisfied with their programs. However, I wonder that can i ask this kind of question in real job interview. In fact, in the interview, they have more influence than mine because I will be there to be selected not select companies. If they think I am over ambitious or honest, they may not hire me. My partner said she would ask 'what's the purpose of the grogram and

	what's benefit from the grogram?'. I did not have question on her response because I understand her questions and I think our responses are interconnected somehow. My question " do you think your programs really help your employees to work with spirituality in the workplace?" implicate the purpose of the grogram and benefit of the grogram. Their purpose might be making a good image of the company and benefit might be good image of the company where people desire to work on. But, for sure, there are some where really care about their workers so they try to develop thier programs.
Codes	SuC,L
Indicators	3, 6
Question	Could greed, defined as the pursuit of profit as an end in itself, be good?
Student Response	I agree this definition of greed. Greed would harm others and also oneself. Greed is different from ambition, passion, or desire. So greed can not contain any positive side. Ambition and desire can contain a goal but greed can not because greed just want more and more without any reasons or goal. Greed just want more so people who are greed, they never can know the feeling of accomplishment.
Codes	SuC, J
Indicators	3
Question	Would a company that was demonstrating Corporate Social Responsibility with triple-bottom line reporting be a company that is acting in agreement with our definition of spirituality in the workplace? Why? If not, what else would be necessary?
Student Response	It would be perfect if the company take triple bottom line (people, profit, environment). However, I wonder if everyone will be happy with this. If the company care everything these three things in a same time, their products' unit price will increase and then some customers would not happy with it. Poor people would be poorer because every products are expensive. In addition, the company of course have to think about their maximum profits so the price will be expensive. Now, the customers who care about our planet and has money try to buy eco-friendly products even if it is expensive. So my point is that the customers also have to have the right to choose what they are going to buy. I think, it is very hard to have all these three including people, planet, and profit in a same time.
Codes	SuC, C
Indicators	3, 6

Question	What will you look for when you finish your studies: Jobs – work to get paid; Careers – life-long professions that we think contribute to society; work that has prestige; Your "Calling" – work that has personal meaning; work and feels naturally fulfilling. Can these come together for you? How will you know?
Student Response	for me, it does not come together because jobs and personal meaning does not be met together in my case. I want to work on about people's welfare after graduation. However, usually this kind of job does not make good money. I will be happy to help others but my family would not be happy because I make less money to feed them. My partner suggested me that find job where can have better paid, even if you do not like it, and save enough money and then find work what I like to do. It makes sense but I do not know what is enough money. If I work with well paid, I would not be quit because I might want more and more to save for the future. never be enough. I think jobs and careeres come together because usually people who has profession and prestige (careers) also make good money (jobs).
Codes	SuC, N
Indicators	3
Question	What lessons from the Antigonish Movement may be relevant today? Why? Reminder – the core message: It is impossible to introduce people to values and a vision of a greater society unless the values and vision grow out of their daily work. People's "consciousness" changes when they become collectively self-reliant and responsible for economic outcomes. By jointly solving their economic problems people would escape self-centeredness and psychic paralysis.
Student Response	[Missed]
Codes	SuC, Z
Indicators	NA
Question	Do you think you could help others to appreciate existential values in the workplace in addition to conventional values? What would be the challenges?
Student Response	[Missed]
Codes	SuC, T
Indicators	NA

Question	If you had a management position and you were invited by your organization leader to suggest a way to improve respect for spiritual diversity in a workplace with people from many backgrounds, how would you begin?
Student Response	I am going to provide many different culture events for employees so that both of us, manager and employees, can have chance to know each other more deeply and even personally. To understand each other we need to understand their culture and also if they have opportunity to meet each other often, not for the working, but for in personal, they may have chance to know each other deeply. I think the most important role for management is that facilitate interaction among workers. Of course manager have to know more about workers background in order to understand their values and beliefs, but it is also important to provide opportunity for workers to understand each other.
Codes	SuC, Q
Indicators	6, 4, 9

Appendix F: End of Term Questionnaire

Please answer the following questions. These questions are specific to this course and are not addressed on the university course evaluation forms. Consider your experience at the end of the whole course rather than what you may remember as your first reaction. Your answers will help plan the course for future students.

Please rate each of the class features as very helpful (1), somewhat helpful (2), or not helpful (3) to your learning in this course.	
a) Assigned readings	1 __ 2__ 3__
b) Mindfulness meditation practice	1 __ 2__ 3__
c) Individual reflection and journal writing	1 __ 2__ 3__
d) Contemplative interaction in pairs after reflection	1 __ 2__ 3__
e) Summaries and discussion of small group conversation in class	1 __ 2__ 3__
f) Lecture	1 __ 2__ 3__
g) Personal communication with the instructor	1 __ 2__ 3__
h) Studying for midterm exam	1 __ 2__ 3__
i) Discussion board online	1 __ 2__ 3__
j) Class notes online	1 __ 2__ 3__
k) Student reflection responses summarized at the beginning of class	1 __ 2__ 3__
Please rate each of the class features as most challenging (1), somewhat challenging (2), or not challenging (3).	
a) Assigned readings	1 __ 2__ 3__
b) Mindfulness meditation practice	1 __ 2__ 3__
c) Individual reflection and journal writing	1 __ 2__ 3__
d) Contemplative interaction in pairs after reflection	1 __ 2__ 3__
e) Summaries and discussion of small group conversation in class	1 __ 2__ 3__
f) Lecture	1 __ 2__ 3__
g) Personal communication with the instructor	1 __ 2__ 3__
h) Studying for midterm exam	1 __ 2__ 3__
i) Discussion board online	1 __ 2__ 3__
j) Class notes online	1 __ 2__ 3__
k) Student reflection responses summarized at the beginning of class	1 __ 2__ 3__
(continued on next page…)	

Please rate the class features as very enjoyable, (1) somewhat enjoyable (2), or not enjoyable (3).	
a) Assigned readings	1 __ 2__ 3__
b) Mindfulness meditation practice	1 __ 2__ 3__
c) Individual reflection and journal writing	1 __ 2__ 3__
d) Contemplative interaction in pairs after reflection	1 __ 2__ 3__
e) Summaries and discussion of small group conversation in class	1 __ 2__ 3__
f) Lecture	1 __ 2__ 3__
g) Personal communication with the instructor	1 __ 2__ 3__
h) Studying for midterm exam	1 __ 2__ 3__
i) Discussion board online	1 __ 2__ 3__
j) Class notes online	1 __ 2__ 3__
k) Student reflection responses summarized at the beginning of class	1 __ 2__ 3__

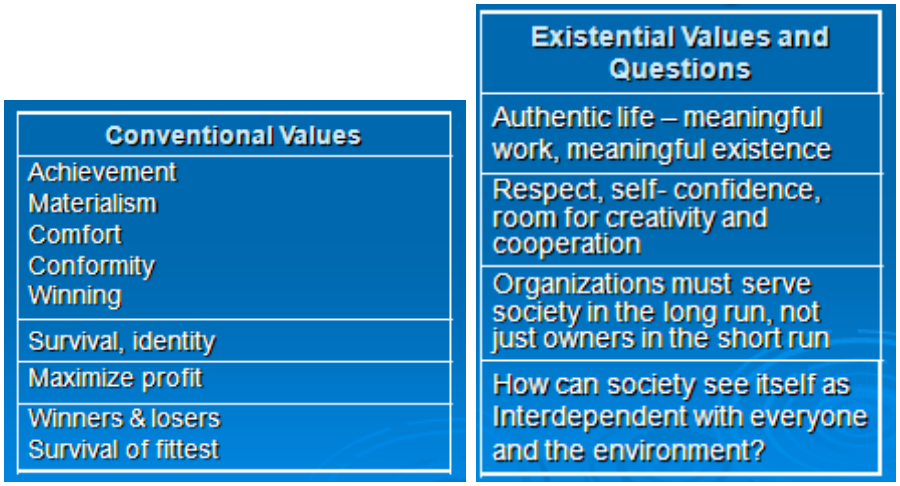
What would have helped you to learn more from this course?

Appendix G: Contemplation Questions from the Two Courses

Questions from Buddhism Course - Fall, 2011	
Question 1 Code R	Do you need to find the basic truths about life and reality for yourself, or can you rely on some authority outside yourself?
Question 2 Code A	What does your happiness depend on? Is it possible to achieve permanent happiness?
Question 3 Code B	Are you something more than your ego? If so, what?
Question 4 Code J	What does this cartoon mean? 
Question 5 Code Z	"The experience of our interdependence with each other and our environment is the basis for compassion." What does this mean to you?
Question 6 Code L	Consider a time when you were stuck in one of the six realms (as a state of mind). Think about your ego in that situation. What would compassion (toward yourself and others) mean in that situation? Six Realms 1. The God Realm (Absorption) 2. Jealous God Realm/Asuras (Paranoia) 3. Human Realm (Passion) 4. Animal Realm (Stupidity) 5. Hungry Ghost Realm (Poverty) 6. Hell Realm (Aggression/Hatred)
Question 7 Code N	Why would taking the Bodhisattva vow, the personal vow of compassion, be important if you already have the practice of meditation?
Question 8 Code T	[Tonglen meditation instruction (exchanging oneself for others) in class.] What did you learn from trying this practice?
Question 9 Code Q	Genuine compassion requires an unbiased view. How does the contemplating the Heart Sutra affect our experience of compassion?
Question 10 Code C	"When [in winter] still water by the wind is stirred, It takes [as ice] the shape and texture of a rock. When the deluded are disturbed by discursive thoughts, That which is as yet unpatterned turns very hard and solid."

	What do these lines from the Royal Song of Saraha mean?
Question 11 Code F	What does “transforming suffering and confusion into wisdom” mean? How can you do it?

Questions from Spiritually and Work Course, Fall, 2011		
Class/Date	Topics	Contemplation
Class 1 September 8	Course Overview; Why Study Spirituality and Work?	What does spirituality mean to you?
Class 2 September 15	Meanings of "Spirituality in the Workplace"	Spirituality in the Workplace is about individuals and organizations seeing work as a spiritual path, as an opportunity to grow and to contribute to society in a meaningful way. It is about care, compassion and support of others; about integrity and people being true to themselves and others. It means individuals and organizations attempting to live their values more fully in the work they do." Is this consensus definition acceptable to you? What concerns do you have?
Class 3 September 22	From Slave Labour to the Dignity of Work	Which of these four concerns about the dignity of work are most important to you? Why? Is there anything else you would include? Ethics: concern with fairness and social justice Evangelism: bringing people to your faith Finding your "calling," personal meaning and purpose in your work Human Potential: practices in communication skills, meditation, consciousness raising, individual and social transformation not affiliated with specific religions
Class 4 September 29	The Spirit of Capitalism	http://www.youtube.com/watch?v=7upG01-XWbY Could greed, defined as the pursuit of profit as an end in itself, be good? Why?
Class 5 October 6	The Antigonish Movement and Solidarity in N.S.	➢ What lessons from the Antigonish Movement may be relevant today? Why? Reminder – the core message: ➢ It is impossible to introduce people to values and a vision of a greater society unless the values and vision grow out of their daily work. ➢ People's "consciousness" changes when they become collectively self-reliant and responsible for economic outcomes. ➢ By jointly solving their economic problems people would escape self-centeredness and psychic paralysis.
Class 6 October 13	From Scientific Management to Human Resource Development	Imagine you are working for full-time for a large company with modern human resources development programs. What questions would you ask to determine their intention?
October 20	**Midterm Exam in Class**	

Class 7 October 27	The Quest for Authenticity in the Work Place	What will you look for when you finish your studies: Jobs – work to get paid; Careers – life-long professions that we think contribute to society; work that has prestige; Your "Calling" – work that has personal meaning; work and feels naturally fulfilling. Can these come together for you? How will you know?
Class 8 November 3	Promises, Dilemmas And Dangers of Spirituality in the Workplace	Do you think you could help others to appreciate existential values in the workplace in addition to conventional values? What would be the challenges? 
Class 9 November 10	Changing Attitudes: Respectful Pluralism	If you had a management position and you were invited by your organization leader to suggest a way to improve respect for spiritual diversity in a workplace with people from many backgrounds, how would you begin?
Class 10 November 17	Spirituality and Corporate Social Responsibility	Would a company that was demonstrating Corporate Social Responsibility with triple-bottom line reporting be a company that is acting in agreement with our definition of spirituality in the workplace? Why? If not, what else

		would be necessary? Consensus Definition: "Spirituality in the Workplace is about individuals and organizations seeing work as a spiritual path, as an opportunity to grow and to contribute to society in a meaningful way. It is about care, compassion and support of others; about integrity and people being true to themselves and others. It means individuals and organizations attempting to live their values more fully in the work they do."
Class 11 November 24	Trends In Corporate Social Responsibility	After 11 weeks in this course have you experienced a shift in how you think or feel about spirituality and work? If so, how would you describe it? If so, how will you manifest this shift in your life?

Appendix H: Independent Observations of Indicators for Reflective Dispositions

RA1		question 1 (week 1)										question 2 (week 2)										question 3 (week 3)										question 4(week 4)										question 5 (week 5)									
indicator/ student		Blank	1	2	3	4	5	6	7	8	9	T1	Blank	1	2	3	4	5	6	7	8	9	T2	Blank	1	2	3	4	5	6	7	8	9	T3	Blank	1	2	3	4	5	6	7	8	9	T4	Blank	1	2	3	4	5	6	7	8	9	T5
YaZ-M4	1				1			1				2		1		1		1					3	YES													1	1							2				1		1					2
ZiY-M3	2				1	1						2				1		1	1		1		4	YES													1	1		1			1			4			1			1	1				3
YiS	3				1							1				1		1					2				1		1				2			1			1	1				3				1	1			1			3
TrC-M6	4			1			1	1				3			1	1		1					3	YES													1							2			1	1	1	1				1	5
SiX-M3	5				1		1					2			1	1		1					3				1					1	3			1							1				1	1	1	1			5
KaS-M8	6			1	1		1	1				4			1	1		1				1	4				1	1	1					3	YES										YES										
YaL	7				1		1	1				3			1								1			1			1			1	3			1		1	1				3						1	1	1			3
DaW	8				1							1				1		1					2		1		1		1				3										1				1	1	1		1		4
KaM	9		1	1	1		1			1		5		1	1	1	1	1					5		1	1	1	1	1			1		6			1	1		1				3										0
JeC-M3	10		1	1	1		1	1	1	1		7		1	1	1		1			1		5		1	1	1		1			1		5				1	1	1				3		1	1	1			1			4
DaZ	11						1	1				2			1	1		1					3			1	1		1				3										0										0
RaX-M3	12						1			1		2			1								1			1	1		1				3			1	1						2										0
WeW	13				1							1				1		1					2				1		1		1		3			1			1	1	1			4					1					1
XiX	14			1	1	1	1			1		5				1	1	1					3			1	1		1				3						1				1					1		1		1			3
JiC	15				1		1					2						1					1						1	1	1		3						1	1				2					1	1				2
YiL	16			1			1					2			1	1		1					3		1	1	1	1	1			1	1	7				1						1					1		1			2
LeL	17				1	1	1					3	YES															1		1		2				1	1	1				3					1		1			2
XiL	18				1	1	1			1	1	5						1					1			1		1			1	3						1				1					1					1
YuN-M3	19			1								1		1		1	1						3										0			1							1					1					1
ChZ-M7	20						1					1			1	1	1	1		1			5			1			1		1		3	YES															1					1
QiC	21			1								1			1			1					2				1		1		1		3			1						1		2					1		1			2
totals			2	8	14	4	14	6	1	5	1	55		4	11	15	4	17	1	1	2	1	56		4	8	13	3	17	1	5	5	2	58		0	9	8	4	11	3	1	3	0	39		1	3	10	4	12	4	9	0	1	44
SW Course																																																								
RyB	22				1	1	1	1	1	1		6				1		1	1		1		4			1		1	1				3				1		1			1		3				1	1				1		3
PaO	23		1	1	1		1	1		1		6		1		1		1	1		1	1	6				1	1	1	1		1		5		1	1	1		1					4				1	1	1	1	1	1	7
AlV	24		1	1	1	1				1		5				1	1	1	1	1	1		6				1	1	1	1		1		5				1	1	1					4		1	1	1		1		1		5
NeH -M3	25			1						1		2			1	1		1			1		4				1		1	1				3	YES																					0
MeC	26											0											0				1			1				2			1							1										0
DiE	27		1	1	1	1	1		1			6				1		1	1				3				1	1	1	1	1			5				1		1	1				3				1		1	1		1		4
KaL	28				1		1					2				1		1					2				1		1					2				1		1					2				1		1				2
HaY	29		1	1			1					3			1	1					1		3			1	1		1					3						1					1				1		1				2
ChR	30				1			1				2			1	1		1	1				4			1	1		1	1				4											0										0
YuJ	31			1	1		1					3			1	1		1					3				1		1					2											0									1		1
JiW	32			1	1							2											0				1		1					2				1		1			1		3	YES										
YaW	33				1							1				1		1	1				3				1		1					1				1		1					2										0
SaP	34			1	1				1			3			1	1		1					3				1		1					2		1	1		1					3	YES										
SuC	35				1							1				1		1					2				1	1	1					3				1							1	YES										
BoY	36		1		1							2			1	1							2			1	1		1	1				5		1	1								2				1						1
WeC	37											0						1					1				1			1				2			1								1						1	1		1		3
FaY	38		1		1							2			1			1			1		3				1	1	1					3						1					1										0
ZhL-M3	39						1					1			1				1				2				1		1					2		1									1			1	1						2
YiX	40			1								1											0			1	1		1					3				1							1			1	1						2
WeL	41		1	1					1			3			1	1		1					3							1	1			2	YES																					0
BrW	42		1	1	1		1					4			1	1	1	1	1	1			6				1		1	1	1			4				1							1					1	1	1		1		4
YiY	43				1		1					2				1			1				3				1		1	1				3				1							3				1			1		1		3
totals			8	11	15	3	9	3	4	4	0	57		1	10	16	2	14	10	2	6	1	62	0	0	5	19	6	20	10	4	2	0	66	0	1	4	15	1	11	3	0	2	0	37	0	1	3	11	3	6	5	2	7	1	39
indicator/ student		Blank	1	2	3	4	5	6	7	8	9	T1	Blank	1	2	3	4	5	6	7	8	9	T2	Blank	1	2	3	4	5	6	7	8	9	T3	Blank	1	2	3	4	5	6	7	8	9	T4	Blank	1	2	3	4	5	6	7	8	9	T5

RA1	question 6 (week 6)											question 7 (week 7)										
indicator/ student	Blank	1	2	3	4	5	6	7	8	9	T6	Blank	1	2	3	4	5	6	7	8	9	T7
YaZ-M4						1		1			2	YES										
ZiY-M3	YES												1	1	1		1	1				5
YiS				1							1				1		1			1	1	4
TrC-M6		1	1	1		1					4	YES										
SiX-M3	YES														1		1	1				3
KaS-M8	YES											YES										
YaL		1	1	1	1				1	1	6				1		1					2
DaW						1					1											0
KaM			1	1	1	1		1	1	1	7			1	1	1	1		1	1		6
JeC-M3		1	1		1	1					4		1	1	1							3
DaZ			1			1					2											0
RaX-M3				1	1	1					3											0
WeW											0											0
XiX				1		1	1	1			4								1			1
JiC											0											0
YiL			1			1					2				1							1
LeL				1	1	1	1				4											0
XiL				1		1					2											0
YuN-M3			1								1											0
ChZ-M7	YES										0	YES										
QiC						1	1		1		3			1			1					2
totals		3	7	8	5	12	3	3	3	2	46		2	4	7	1	6	2	2	2	1	27
SW Course																						
RyB				1		1			1		3			1		1	1					3
PaO			1	1		1	1	1		1	6			1	1	1					1	4
AlV				1		1	1				3				1		1					2
NeH -M3	YES														1		1					2
MeC				1		1					2					1	1	1				3
DiE		1		1			1				3				1		1	1	1	1	1	6
KaL									1		1			1	1		1					3
HaY											0				1		1					2
ChR				1		1			1		3				1		1		1			3
YuJ											0					1	1					2
JiW											0				1		1					2
YaW											0			1	1		1					3
SaP						1					1				1	1	1				1	4
SuC				1			1				2				1							1
BoY				1	1	1					3				1	1	1			1	1	5
WeC				1					1		2											0
FaY											0				1		1			1		3
ZhL-M3						1					1				1		1					2
YiX						1					1			1								1
WeL							1		1		2			1	1		1					3
BrW						1	1				2		1		1		1					3
YiY				1							1											0
totals	0	1	1	10	1	10	6	1	5	1	36	0	1	6	16	6	17	2	2	3	4	57
indicator/ student	Blank	1	2	3	4	5	6	7	8	9	T6	Blank	1	2	3	4	5	6	7	8	9	T7

RA1	question 8 (week 8)											question 9 (week 9)										
indicator/ student	Blank	1	2	3	4	5	6	7	8	9	T8	Blank	1	2	3	4	5	6	7	8	9	T9
YaZ-M4	YES													1			1					2
ZiY-M3							1	1		1	3			1	1		1					3
YiS											0										1	1
TrC-M6	YES											YES										
SiX-M3			1	1		1					3	YES										
KaS-M8	YES											YES										
YaL							1	1			2							1	1			2
DaW					1		1	1			3						1					1
KaM		1	1	1	1	1	1	1	1	1	9			1	1		1			1		4
JeC-M3	YES													1	1					1		3
DaZ											0											0
RaX-M3	YES																					0
WeW							1	1			2				1				1			2
XiX				1	1	1	1			1	5				1		1	1				3
JiC					1	1				1	3						1					1
YiL			1	1	1		1	1		1	6						1					1
LeL											0				1		1			1		3
XiL						1	1				2						1					1
YuN-M3	YES											YES										
ChZ-M7	YES											YES										
QiC							1	1	1		3											0
totals		1	3	4	5	5	9	7	2	5	41		0	4	6	0	9	2	2	3	1	27
SW Course																						
RyB				1	1		1		1		4			1	1		1			1		4
PaO				1	1	1					3				1	1	1	1				4
AlV				1		1	1		1		4			1	1		1	1		1		5
NeH -M3				1			1		1		3	YES										
MeC							1				1							1	1			2
DiE		1	1	1		1	1	1		1	7			1	1		1	1				4
KaL				1			1				2							1	1			2
HaY				1							1				1			1				2
ChR				1	1					1	3				1			1			1	3
YuJ				1							1						1					1
JiW				1		1					2				1							1
YaW	YES																					0
SaP						1	1		1		3							1				1
SuC				1			1	1	1		4				1	1		1	1	1		5
BoY				1		1			1		3				1		1					2
WeC				1							1							1			1	2
FaY				1		1	1		1		4						1					1
ZhL-M3	YES											YES										
YiX				1							1							1				1
WeL				1		1	1	1			4				1		1	1	1			4
BrW				1		1	1				3				1	1	1				1	4
YiY											0				1			1	1			3
totals	0	1	1	17	3	9	11	3	7	2	54	0	0	3	12	3	9	13	5	3	3	51
indicator/ student	Blank	1	2	3	4	5	6	7	8	9	T8	Blank	1	2	3	4	5	6	7	8	9	T9

RA1	question 10 (week 10)											question 11 (week 11)										
indicator/ student	Blank	1	2	3	4	5	6	7	8	9	T10	Blank	1	2	3	4	5	6	7	8	9	T11
YaZ-M4	YES																1					1
ZiY-M3	YES														1	1	1				1	4
YiS	YES													1	1		1					3
TrC-M6	YES											YES										
SiX-M3	YES												1	1		1	1			1		5
KaS-M8	YES											YES										
YaL						1					1			1								1
DaW				1		1					2			1	1	1						3
KaM		1	1	1		1			1		5			1	1	1	1				1	5
JeC-M3	YES											YES										
DaZ											0			1	1	1	1			1		5
RaX-M3	YES											YES										
WeW						1					1						1					1
XiX		1	1	1	1	1			1		6				1		1					2
JiC	YES																					0
YiL	YES														1							1
LeL	YES													1	1	1	1					4
XiL	YES													1							1	2
YuN-M3				1		1			1		3	YES										
ChZ-M7	YES										0	YES										
QiC			1								1						1		1	1		3
totals		2	3	4	1	6	0	0	3	0	19		1	8	8	6	10	0	1	3	3	40
SW Course																						
RyB		1	1	1		1	1	1	1		7				1	1	1	1		1	1	6
PaO				1		1	1	1	1		5		1	1	1	1	1	1	1	1	1	9
AlV				1		1					2		1		1	1	1	1	1		1	7
NeH -M3											0											0
MeC				1							1				1		1					2
DiE				1			1		1		3		1		1		1	1			1	5
KaL				1							1					1					1	2
HaY				1							1				1	1	1	1	1		1	6
ChR											0	YES										
YuJ	YES														1	1	1	1	1		1	6
JiW											0	YES										
YaW				1		1					2		1		1		1				1	4
SaP				1			1	1			3		1			1	1	1			1	5
SuC				1			1				2				1	1	1		1		1	5
BoY	YES														1	1	1	1	1		1	6
WeC											0	YES										
FaY											0				1	1	1			1	1	5
ZhL-M3	YES														1	1	1				1	4
YiX							1				1	YES										
WeL											0			1			1	1	1	1		5
BrW				1	1	1	1				4	YES										
YiY				1							1				1	1	1	1	1			5
totals	0	1	1	12	1	5	7	3	3	0	33	0	5	2	13	12	15	10	8	4	13	82
indicator/ student	Blank	1	2	3	4	5	6	7	8	9	T10	Blank	1	2	3	4	5	6	7	8	9	T11

RA2		question 1 (week 1)											question 2 (week 2)											question 3 (week 3)											question 4(week 4)											question 5 (week 5)										
indicator/ student		Blank	1	2	3	4	5	6	7	8	9	T1	Blank	1	2	3	4	5	6	7	8	9	T2	Blank	1	2	3	4	5	6	7	8	9	T3	Blank	1	2	3	4	5	6	7	8	9	T4	Blank	1	2	3	4	5	6	7	8	9	T5
B course																																																							
YaZ-M4	1							1				1			1			1	1					3	YES															1							1					1		1	1			3
ZiY-M3	2				1	1	1			1		4					1	1	1				3	YES															1			1				2								1			1
YiS	3					1						1					1						1					1						1					1		1	1			3					1			1			2
TrC-M6	4						1	1				2				1		1			1		3	YES															1								1		1		1		1					3
SiX-M3	5						1					1						1	1	1			3			1		1				1		3			1								1					1			1	1		3
KaS-M8	6						1	1				2			1		1	1					3					1			1			2	YES												YES											
YaL	7					1		1				2						1		1			2		1			1	1			1		4						1	1				2							1	1			2
DaW	8					1			1			2					1	1	1				3											0						1					1						1	1	1			3
KaM	9				1		1			1		3			1	1		1		1			4					1	1					2							1				1				1		1		1			3
JeC-M3	10				1		1	1		1		4		1	1	1		1		1	1		6			1	1		1		1			4					1	1	1				3			1			1		1			3
DaZ	11						1	1		1		3						1					1						1		1			2						1					1						1		1			2
RaX-M3	12						1					1						1					1					1	1		1			3						1	1				2								1			1
WeW	13					1						1						1					1						1		1			2						1	1	1			3							1	1			2
XiX	14					1	1		1	1		4					1	1					2					1	1			1		3						1	1		1		3							1	1			2
JiC	15					1	1					2						1					1						1		1			2						1	1				2							1	1			2
YiL	16			1			1		1			3					1	1	1				3		1	1	1				1	1		5											0								1			1
LeL	17			1	1				1			3	YES																			1			1					1	1					2				1				1			2
XiL	18					1	1	1	1	1		5					1	1					2			1	1	1	1					4							1				1							1	1			2
YuN-M3	19											0					1						1					1			1			2											0						1		1			2
ChZ-M7	20								1			1					1	1					2				1				1			2	YES																				1			1
QiC	21					1						1					1			1			2					1	1		1			3				1							1		1	1					1			3
totals																																																							
SW course																																																							
RyB	1				1			1				2				1			1				2				1	1			1			3			1	1	1						3				1	1			1			3
PaO	2			1	1		1	1		1		5		1		1	1	1	1				5		1			1	1	1	1	1	1	7			1	1		1	1	1			5				1	1	1	1		1		5
AlV	3			1		1	1			1		4		1	1				1		1		4		1	1				1	1			4	YES				1						1		1	1	1		1	1		1		6
NeH -M3	4											0						1	1				2					1		1	1			3											0											0
MeC	5			1					1			2						1			1		2					1	1					2		1		1			1				3							1		1		2
DiE	6		1	1	1							3						1	1	1			3							1	1	1		3							1				1				1	1						2
KaL	7					1			1			2			1								1					1		1				2							1				1				1			1	1			3
HaY	8					1	1					2				1				1			2					1	1		1			3						1					1											0
ChR	9			1		1						2				1			1				2					1		1	1			3								1			1							1	1			2
YuJ	10			1			1					2								1			1								1			1						1	1				2			1								1
JiW	11			1								1							1	1			2					1		1				2			1					1			2	YES											
YaW	12			1								1							1	1			2					1	1		1			3											0											0
SaP	13								1			1					1			1	1		3					1			1			2			1	1							2	YES											
SuC	14					1						1					1						1					1	1					2				1	1	1	1				4	YES											
BoY	15				1							1				1							1			1	1	1	1					4				1					1		2				1							1
WeC	16			1								1			1					1			2								1			1							1				1			1				1		1		3
FaY	17			1	1							2			1	1							2				1	1			1	1		4				1			1		1		3				1							1
ZhL-M3	18											0											0											0											0											0
YiX	19					1						1					1						1				1				1			2				1							1				1		1					2
WeL	20											0		1	1	1							3				1	1			1			3	YES																					0
BrW	21									1		1							1				1						1	1	1			3											0							1	1			2
YiY	22						1	1				2								1			1				1							1				1			1				2				1			1				2

RA2	question 6 (week 6)										
indicator/ student	Blank	1	2	3	4	5	6	7	8	9	T6
B course											
YaZ-M4								1			1
ZiY-M3	YES										
YiS								1			1
TrC-M6				1	1	1			1		4
SiX-M3	YES										
KaS-M8	YES										
YaL			1	1					1		3
DaW							1		1		2
KaM			1	1	1	1			1		5
JeC-M3					1	1	1	1			4
DaZ					1	1					2
RaX-M3					1	1			1		3
WeW											0
XiX				1		1		1			3
JiC											0
YiL					1		1		1		3
LeL			1		1	1			1		4
XiL					1	1					2
YuN-M3					1						1
ChZ-M7	YES										
QiC				1	1	1					3
totals											
SW course											
RyB					1				1		2
PaO		1		1	1	1	1	1		1	7
AlV						1	1				2
NeH -M3	YES										
MeC					1	1			1		3
DiE				1			1	1			3
KaL					1						1
HaY					1						1
ChR				1	1		1		1		4
YuJ					1						1
JiW											0
YaW								1			1
SaP		1					1				2
SuC					1	1			1		3
BoY				1	1						2
WeC					1						1
FaY					1						1
ZhL-M3											0
YiX					1						1
WeL											0
BrW					1		1				2
YiY					1		1				2

RA2	question 7 (week 7)										
indicator/ student	Blank	1	2	3	4	5	6	7	8	9	T7
B course											
YaZ-M4	YES										
ZiY-M3											0
YiS					1			1	1		3
TrC-M6	YES										
SiX-M3					1		1	1			3
KaS-M8	YES										
YaL						1		1			2
DaW						1		1			2
KaM				1		1		1	1		4
JeC-M3		1	1	1				1			4
DaZ									1		1
RaX-M3							1	1			2
WeW											0
XiX								1			1
JiC						1					1
YiL											0
LeL											0
XiL											0
YuN-M3											0
ChZ-M7	YES										
QiC			1					1	1		3
totals											
SW course											
RyB					1	1					2
PaO					1		1	1			3
AlV				1	1						2
NeH -M3					1	1					2
MeC					1	1			1		3
DiE					1	1	1				3
KaL				1	1	1					3
HaY					1						1
ChR					1			1			2
YuJ				1	1						2
JiW					1			1			2
YaW						1					1
SaP				1	1	1				1	4
SuC											0
BoY				1	1	1		1			4
WeC					1			1			2
FaY				1	1						2
ZhL-M3											0
YiX					1						1
WeL				1	1						2
BrW			1		1						2
YiY					1		1				2

RA2	question 8 (week 8)										
indicator/ student	Blank	1	2	3	4	5	6	7	8	9	T8
B course											
YaZ-M4	YES										
ZiY-M3					1		1	1			3
YiS											0
TrC-M6	YES										
SiX-M3						1					
KaS-M8	YES										
YaL							1	1			2
DaW							1	1	1		3
KaM			1		1	1		1	1		5
JeC-M3	YES										
DaZ							1	1	1		3
RaX-M3	YES										
WeW											0
XiX							1	1			2
JiC						1	1	1			3
YiL					1		1	1	1		4
LeL											0
XiL							1	1			2
YuN-M3	YES										
ChZ-M7	YES										
QiC					1		1	1			3
totals											
SW course											
RyB						1	1	1		1	4
PaO							1	1			2
AlV				1			1		1		3
NeH -M3							1		1		2
MeC											0
DiE		1					1	1	1	1	5
KaL							1				1
HaY								1			1
ChR				1				1	1		3
YuJ							1		1		2
JiW							1	1			2
YaW	YES										
SaP							1	1	1		3
SuC				1				1	1		3
BoY				1		1			1		3
WeC							1	1	1		3
FaY				1					1		2
ZhL-M3	YES										
YiX							1	1			2
WeL											0
BrW				1		1	1				3
YiY							1	1			2

RA2	question 9 (week 9)										
indicator/ student	Blank	1	2	3	4	5	6	7	8	9	T9
B course											
YaZ-M4				1				1			2
ZiY-M3						1	1				2
YiS					1						1
TrC-M6	YES										0
SiX-M3	YES										0
KaS-M8	YES										0
YaL							1	1			2
DaW				1		1	1				3
KaM		1		1				1	1		4
JeC-M3				1				1	1		3
DaZ								1			1
RaX-M3											0
WeW							1	1			2
XiX				1		1	1				3
JiC						1					1
YiL											0
LeL				1	1				1		3
XiL							1	1	1		3
YuN-M3	YES										
ChZ-M7	YES										
QiC							1	1			2
totals											
SW course											
RyB									1	1	2
PaO				1		1	1	1	1	1	6
AlV					1	1	1		1		4
NeH -M3	YES										
MeC											0
DiE			1	1			1				3
KaL							1	1		1	3
HaY					1			1			2
ChR							1	1	1	1	4
YuJ							1	1		1	3
JiW			1				1		1	1	4
YaW							1				1
SaP			1				1			1	3
SuC				1				1	1		3
BoY				1							1
WeC								1		1	2
FaY									1		1
ZhL-M3	YES										
YiX											0
WeL			1	1					1		3
BrW						1	1				2
YiY							1				1

RA2	question 10 (week 10)										
indicator/ student	Blank	1	2	3	4	5	6	7	8	9	T10
B course											
YaZ-M4	YES										
ZiY-M3	YES										
YiS	YES										
TrC-M6	YES										
SiX-M3	YES										
KaS-M8	YES										
YaL						1			1		2
DaW						1	1				2
KaM						1			1		2
JeC-M3	YES										
DaZ						1	1				2
RaX-M3	YES										
WeW					1			1			2
XiX			1			1			1		3
JiC	YES										0
YiL	YES										0
LeL	YES										0
XiL	YES										0
YuN-M3				1		1					
ChZ-M7	YES										
QiC											0
totals											
SW course											
RyB			1						1		2
PaO				1			1	1			3
AlV							1				1
NeH -M3							1				1
MeC							1	1	1		3
DiE							1	1	1		3
KaL			1	1				1			3
HaY					1			1			2
ChR				1				1			2
YuJ	YES										
JiW								1			1
YaW											0
SaP				1							1
SuC							1		1		2
BoY	YES										
WeC				1				1			2
FaY											0
ZhL-M3	YES										
YiX				1		1			1		3
WeL							1				1
BrW				1			1				2
YiY											0

RA2	question 11 (week 11)										
indicator/ student	Blank	1	2	3	4	5	6	7	8	9	T11
B course											
YaZ-M4											0
ZiY-M3					1	1					2
YiS				1	1	1					3
TrC-M6	YES										
SiX-M3		1			1	1			1		4
KaS-M8	YES										
YaL									1		1
DaW					1		1	1	1		4
KaM		1		1		1			1		4
JeC-M3	YES										
DaZ		1	1	1		1					4
RaX-M3	YES										
WeW									1		1
XiX							1		1		2
JiC									1		1
YiL							1	1			2
LeL				1		1					2
XiL						1					1
YuN-M3	YES										
ChZ-M7	YES										
QiC					1		1		1		3
totals											
SW course											
RyB		1			1	1	1				4
PaO				1	1	1	1	1	1	1	7
AlV		1		1	1	1		1	1		6
NeH -M3						1	1				2
MeC					1			1			2
DiE					1	1	1		1		4
KaL					1		1	1			3
HaY					1			1			2
ChR	YES										
YuJ				1	1			1			3
JiW	YES										
YaW							1				1
SaP		1		1	1		1			1	5
SuC				1	1	1					3
BoY				1	1	1				1	4
WeC	YES										
FaY				1	1				1		3
ZhL-M3											0
YiX	YES										0
WeL			1	1	1	1					4
BrW	YES										
YiY					1		1				2

Appendix I: Consensus Observations of Indicators for Reflective Dispositions

CONSENSUS SCORES	question 1 (week 1)										question 2 (week 2)										question 3 (week 3)										question 4(week 4)										question 5 (week 5)									
indicator/ student	Blank	1	2	3	4	5	6	7	8	9	T1	Blank	1	2	3	4	5	6	7	8	9	T2	Blank	1	2	3	4	5	6	7	8	9	T3	Blank	1	2	3	4	5	6	7	8	9	T4	Blank	1	2	3	4	5	6	7	8	9	T5
YaZ-M4				1			1				2		1		1	1	1					4	YES										0				1	1						2				1	1	1		1			4
ZiY-M3				1	1				1		3				1	1	1	1		1		5	YES										0				1			1		1		3					1		1			2
YiS (1)				**1**	**1**						**2**				**1**	**1**	**1**					**3**				**1**	**1**	**1**					**3**						**1**					**1**				**1**	**1**			**1**			**3**
TrC-M6						1	1				2				1		1					2	YES										0			1	1						2		1	1	1	1	1				5
SiX-M3				1		1					2				1		1	1				3				1	1				1		3			1							1				1	1			1	1		4
KaS-M8				1		1	1				3			1	1	1	1					4				1		1			1		3	YES										0	YES										0
YaL (2)				**1**	**1**		**1**				**3**			**1**			**1**		**1**			**3**					**1**	**1**			**1**		**3**						**1**	**1**	**1**				**3**						**1**	**1**			**2**
DaW (3)				**1**				**1**			**2**					**1**	**1**					**2**		**1**		**1**							**2**						**1**					**1**				**1**	**1**	**1**			**4**
KaM				1		1			1		3			1	1		1	1		1		5				1	1	1			1		4				1			1				2				1		1		1			3
JeC-M3 (4)		**1**	**1**	**1**		**1**	**1**	**1**	**1**		**7**		**1**	**1**	**1**		**1**		**1**	**1**		**6**		**1**	**1**	**1**		**1**		**1**	**1**		**6**				**1**	**1**	**1**	**1**				**4**		**1**	**1**			**1**		**1**			**4**
DaZ						1	1				2				1		1					2				1		1			1		3					1						1				1		1		1			3
RaX-M3					1						1			1			1					2				1		1			1		3											0								1			1
WeW				1	1						2						1					1						1			1		2											3					1		1			2
XiX					1	1			1		3					1	1					2				1	1	1					3											2				1			1	1			3
JiC						1					1						1					1						1			1		2											2					1	1	1			3
YiL			1			1					2				1	1	1					3		1	1	1		1			1	1	6				1							1					1			1			2
LeL (5)				**1**	**1**						**2**						**1**		**1**			**2**											**0**				**1**	**1**	**1**					**3**				**1**				**1**			**2**
XiL				1	1	1		1	1		5					1	1					2				1		1					2							1	1				2				1				1			2
YuN-M3			1								1				1		1					2								1		1			1										1				1		1		1			3
ChZ-M7						1		1			2				1	1	1		1			4				1		1		1			3	YES										0				1				1			2
QiC			1		1						2					1	1		1			3				1		1		1			3				1				1			2			1			1		1			3
RyB				1	1	1	1				4				1		1	1				3				1	1	1		1			4			1	1	1	1					5				1	1			1	1		4
PaO			1	1		1	1		1		5		1		1	1	1	1		1		6				1	1	1	1	1	1		6			1	1		1	1					4				1	1	1	1		1		5
AlV			1	1	1	1			1		5				1		1	1		1		4				1			1	1	1		4			1	1							2		1	1	1			1		1		5
NeH -M3 (10)								**1**			**1**				**1**		**1**			**1**		**3**					**1**	**1**	**1**	**1**			**4**											**0**											**0**
MeC (6)			**1**					**1**			**2**											**0**				**1**	**1**	**1**					**3**				**1**			**1**				**2**							**1**		**1**		**2**
DiE		1	1	1		1					4				1		1	1	1			4				1		1	1	1			4				1		1	1				3					1	1			1		3
KaL			1	1					1		3			1	1							2				1	1	1					3				1			1				2				1		1		1			3
HaY (9)		**1**	**1**		**1**	**1**					**4**			**1**	**1**				**1**	**1**		**4**				**1**	**1**	**1**			**1**		**4**					**1**						**1**				**1**		**1**	**1**			**3**
ChR				1	1						2				1		1	1				3				1		1	1	1			4							1				1								1	1			2
YuJ (7)			**1**	**1**		**1**					**3**			**1**					**1**			**2**						**1**	**1**				**2**						**1**	**1**				**2**				**1**				**1**			**2**
JiW			1	1							2								1			1				1	1	1					3			1	1				1			3	YES										0
YaW			1	1							2				1			1	1			3					1	1					2				1							1											0
SaP				1				1			2				1	1	1					3					1			1			2			1	1		1					3	YES										0
SuC (8)				**1**	**1**						**2**				**1**	**1**	**1**					**3**					**1**	**1**					**2**					**1**						**1**											**0**
BoY		1		1							2			1	1							2			1	1	1		1	1			5				1				1			2				1							1
WeC			1								1							1	1			2				1				1			2				1			1				2						1	1		1		3
FaY											0			1		1				1		3				1	1	1		1			4				1		1					2				1							1
ZhL-M3					1						1						1					1				1		1					2											0			1	1							2
YiX			1		1						2					1						1				1		1					3				1							1			1	1		1				3
WeL			1					1			2			1	1		1					3				1			1	1			3	YES										0											0
BrW											0				1		1	1	1			4				1	1	1	1				4				1							1				1		1	1	1			4
YiY				1		1	1				3				1			1	1			3				1		1					2				1			1				2				1			1				2

CONSENSUS SCORES — question 6 (week 6) and question 7 (week 7)

indicator/ student	Q6 Blank	1	2	3	4	5	6	7	8	9	T6	Q7 Blank	1	2	3	4	5	6	7	8	9	T7
YaZ-M4						1		1			2	YES										0
ZiY-M3	YES										0				1		1					2
YiS (1)				**1**			**1**				**2**				**1**	**1**	**1**		**1**	**1**		**5**
TrC-M6			1	1	1	1					4	YES										0
SiX-M3	YES										0					1	1	1	1			4
KaS-M8	YES										0	YES										0
YaL (2)			1	1	1				1		4				1		1					2
DaW (3)						1			1		2											0
KaM			1	1	1	1			1		5				1		1		1	1		4
JeC-M3 (4)		1	1		1	1		1			5		1	1	1				1			4
DaZ						1					1			1						1		2
RaX-M3					1	1					2								1			1
WeW											0											0
XiX				1		1		1			3								1			1
JiC											0						1					1
YiL						1	1		1		3				1							1
LeL (5)				1	1	1	1		1		5											0
XiL				1	1	1					3											0
YuN-M3			1		1						2											0
ChZ-M7	YES										0	YES										0
QiC				1		1	1				3			1			1		1			3
RyB				1	1	1			1	1	5			1		1	1					3
PaO			1	1	1	1	1	1		1	7				1	1		1	1			4
AlV				1		1	1				3				1	1	1					3
NeH -M3 (10)											0				1	1	1					3
MeC (6)				1	1	1			1		4					1	1			1		3
DiE				1			1	1			3				1	1	1	1	1			5
KaL					1				1		2				1	1	1					3
HaY (9)					1						1				1	1	1					3
ChR				1					1		2				1	1			1			3
YuJ (7)					1						1				1	1	1					3
JiW											0				1	1			1			3
YaW								1			1				1		1					2
SaP						1	1				2				1	1	1				1	4
SuC (8)				1	1		1		1		4				1	1	1					3
BoY				1	1	1					3				1	1	1		1	1		5
WeC				1	1				1		3								1			1
FaY					1						1				1	1	1					3
ZhL-M3						1					1				1		1					2
YiX					1	1					2			1		1						2
WeL							1				1				1	1	1					3
BrW					1	1	1				3			1	1	1	1					4
YiY				1	1						2					1						1

question 8 (week 8) and question 9 (week 9)

indicator/ student	Q8 Blank	1	2	3	4	5	6	7	8	9	T8	Q9 Blank	1	2	3	4	5	6	7	8	9	T9
YaZ-M4	YES										0			1	1		1		1			4
ZiY-M3							1	1			2				1		1	1				3
YiS (1)											**0**					**1**						**1**
TrC-M6	YES										0	YES										0
SiX-M3			1			1					2	YES										0
KaS-M8	YES										0	YES										0
YaL (2)							1	1			2							1	1			2
DaW (3)					1		1	1	1		4				1		1					2
KaM			1	1	1	1		1	1		6				1		1		1	1		4
JeC-M3 (4)	YES										0			1	1				1	1		4
DaZ								1	1		2								1			1
RaX-M3	YES										0											0
WeW							1	1			2				1	1			1			3
XiX				1		1	1	1			4				1		1	1				3
JiC					1	1		1			3						1					1
YiL					1	1		1			3					1						1
LeL (5)											0				1	1	1			1		4
XiL						1	1	1			3						1		1			2
YuN-M3	YES										0	YES										0
ChZ-M7	YES										0	YES										0
QiC					1		1	1	1		4								1			1
RyB				1	1		1	1			4				1		1			1	1	4
PaO				1	1		1	1			4				1	1	1	1	1	1		6
AlV				1		1	1		1		4				1	1	1	1		1		5
NeH -M3 (10)				1			1		1		3											0
MeC (6)							1	1			2							1	1			2
DiE		1		1	1		1	1		1	6			1	1		1	1				4
KaL							1				1							1	1		1	3
HaY (9)				1				1			2				1	1		1	1			4
ChR				1	1			1			3				1			1	1		1	4
YuJ (7)				1			1		1		3						1	1	1			3
JiW				1		1	1	1			4			1	1			1		1		4
YaW	YES										0							1				1
SaP						1	1	1	1		4			1			1			1		3
SuC (8)				1				1	1		3					1		1			1	3
BoY				1		1			1		3				1		1					2
WeC				1				1			2							1			1	2
FaY				1		1	1		1		4						1			1		2
ZhL-M3	YES										0	YES										0
YiX				1				1	1		3							1				1
WeL				1				1			2				1		1		1	1		4
BrW				1		1	1				3				1	1	1				1	4
YiY								1			1				1			1	1			3

question 10 (week 10) and question 11 (week 11)

indicator/ student	Q10 Blank	1	2	3	4	5	6	7	8	9	T10	Q11 Blank	1	2	3	4	5	6	7	8	9	T11	totals
YaZ-M4	YES										0						1					1	19
ZiY-M3	YES										0				1	1	1					3	23
YiS (1)	**YES**										**0**			**1**	**1**	**1**	**1**					**4**	24
TrC-M6	YES										0	YES										0	15
SiX-M3	YES										0		1			1	1			1		4	23
KaS-M8	YES										0	YES										0	10
YaL (2)						1			1		2			1						1		2	28
DaW (3)				1		1					2			1	1	1				1		4	25
KaM				1		1			1		3		1		1	1	1					4	43
JeC-M3 (4)	YES										0	YES										0	40
DaZ						1	1				2			1	1	1	1					4	23
RaX-M3	YES										0	YES										0	10
WeW						1					1						1			1		2	18
XiX			1	1		1			1		4				1					1		2	30
JiC	YES										0									1		1	15
YiL	YES										0					1		1				2	24
LeL (5)											0			1	1	1	1				1	5	23
XiL	YES										0			1			1					2	23
YuN-M3				1		1			1		3	YES										0	13
ChZ-M7	YES										0	YES										0	11
QiC			1								1					1	1		1	1		4	29
RyB			1	1				1	1		4				1	1	1	1				4	44
PaO				1		1	1	1	1		5		1		1	1	1	1	1	1	1	8	60
AlV				1		1	1				3		1		1	1	1		1	1		6	44
NeH -M3 (10)								1			1						1	1		1		3	18
MeC (6)				1							1				1	1	1		1			4	25
DiE				1			1	1	1		4				1	1	1	1		1		5	45
KaL				1				1			2					1			1			2	26
HaY (9)								1			1				1	1	1		1			4	31
ChR								1			1	YES										0	25
YuJ (7)											0				1	1			1			3	24
JiW								1			1											0	21
YaW				1							1				1		1	1			1	4	17
SaP				1				1			2				1	1	1	1			1	5	30
SuC (8)				1			1		1		3				1	1	1		1		1	5	29
BoY	YES										0				1	1	1		1		1	5	30
WeC				1				1			2	YES										0	20
FaY											0				1	1	1			1		4	24
ZhL-M3	YES										0			1	1	1					1	4	13
YiX				1		1	1				3	YES										0	21
WeL							1				1			1	1		1	1	1			5	24
BrW				1		1	1				3	YES										0	30
YiY				1							1				1	1		1	1			4	24

Appendix J: Summary Totals and Participants' Final Essay Exam Scores

RA1 - B course

indicator/ student	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	Total
YaZ-M4	2	3	0	2	2	2	0	0	2	0	1	14
ZiY-M3	2	4	0	4	3	0	5	3	3	0	4	28
YiS	1	2	2	3	3	1	4	0	1	0	3	20
TrC-M6	3	3	0	2	5	4	0	0	0	0	0	17
SiX-M3	2	3	3	1	5	0	3	3	0	0	5	25
KaS-M8	4	4	3	0	0	0	0	0	0	0	0	11
YaL	3	1	3	3	3	6	2	2	2	1	1	27
DaW	1	2	3	1	4	1	0	3	1	2	3	21
KaM	5	5	6	3	0	7	6	9	4	5	5	55
JeC-M3	7	5	5	3	4	4	3	0	3	0	0	34
DaZ	2	3	3	0	0	2	0	0	0	0	5	15
RaX-M3	2	1	3	2	0	3	0	0	0	0	0	11
WeW	1	2	3	4	1	0	0	2	2	1	1	17
XiX	5	3	3	1	3	4	1	5	3	6	2	36
JiC	2	1	3	2	2	0	0	3	1	0	0	14
YiL	2	3	7	1	2	2	1	6	1	0	1	26
LeL	3	0	2	3	2	4	0	0	3	0	4	21
XiL	5	1	3	1	1	2	0	2	1	0	2	18
YuN-M3	1	3	0	1	1	1	0	0	0	3	0	10
ChZ-M7	1	5	3	0	1	0	0	0	0	0	0	10
QiC	1	2	3	2	2	3	2	3	0	1	3	22
totals	**55**	**56**	**58**	**39**	**44**	**46**	**27**	**41**	**27**	**19**	**40**	**452**

RA2 - B course

indicator/ student	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	Total
YaZ-M4	1	3	0	1	3	1	0	0	2	0	0	11
ZiY-M3	4	3	0	2	1	0	0	3	2	0	2	17
YiS	1	1	1	3	2	1	3	0	1	0	3	16
TrC-M6	2	3	0	1	3	4	0	0	0	0	0	13
SiX-M3	1	3	3	1	3	0	3	0	0	0	4	18
KaS-M8	2	3	2	0	0	0	0	0	0	0	0	7
YaL	2	2	4	2	2	3	2	2	2	2	1	24
DaW	2	3	0	1	3	2	2	3	3	2	4	25
KaM	3	4	2	1	3	5	4	5	4	2	4	37
JeC-M3	4	6	4	3	3	4	4	0	3	0	0	31
DaZ	3	1	2	1	2	2	1	3	1	2	4	22
RaX-M3	1	1	3	2	1	3	2	0	0	0	0	13
WeW	1	1	2	3	2	0	0	0	2	2	1	14
XiX	4	2	3	3	2	3	1	2	3	3	2	28
JiC	2	1	2	2	2	0	1	3	1	0	1	15
YiL	3	3	5	0	1	3	0	4	0	0	2	21
LeL	3	0	1	2	2	4	0	0	3	0	2	17
XiL	5	2	4	1	2	2	0	2	3	0	1	22
YuN-M3	0	1	2	0	2	1	0	0	0	0	0	6
ChZ-M7	1	2	2	0	1	0	0	0	0	0	0	6
QiC	1	2	3	1	3	3	3	3	2	0	3	24
totals	**46**	**47**	**45**	**30**	**43**	**41**	**26**	**30**	**32**	**13**	**34**	**387**

Consensus B course

indicator / student	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	Total		Final Exam
YaZ-M4	2	4	0	2	4	2	0	0	4	0	1	19	YaZ-M4	88
ZiY-M3	3	5	0	3	2	0	2	2	3	0	3	23	ZiY-M3	82
YiS	2	3	3	1	3	2	5	0	1	0	4	24	YiS	75
TrC-M6	2	2	0	2	5	4	0	0	0	0	0	15	TrC-M6	90
SiX-M3	2	3	3	1	4	0	4	2	0	0	4	23	SiX-M3	75
KaS-M8	3	4	3	0	0	0	0	0	0	0	0	10	KaS-M8	80
YaL	3	3	3	3	2	4	2	2	2	2	2	28	YaL	90
DaW	2	2	2	1	4	2	0	4	2	2	4	25	DaW	90
KaM	3	5	4	2	3	5	4	6	4	3	4	43	KaM	95
JeC-M3	7	6	6	4	4	5	4	0	4	0	0	40	JeC-M3	100
DaZ	2	2	3	1	3	1	2	2	1	2	4	23	DaZ	92
RaX-M3	1	2	3	0	1	2	1	0	0	0	0	10	RaX-M3	80
WeW	2	1	2	3	2	0	0	2	3	1	2	18	WeW	82
XiX	3	2	3	2	3	3	1	4	3	4	2	30	XiX	82
JiC	1	1	2	2	3	0	1	3	1	0	1	15	JiC	80
YiL	2	3	6	1	2	3	1	3	1	0	2	24	YiL	90
LeL	2	2	0	3	2	5	0	0	4	0	5	23	LeL	80
XiL	5	2	2	2	2	3	0	3	2	0	2	23	XiL	80
YuN-M3	1	2	1	1	3	2	0	0	0	3	0	13	YuN-M3	95
ChZ-M7	2	4	3	0	2	0	0	0	0	0	0	11	ChZ-M7	90
QiC	2	3	3	2	3	3	3	4	1	1	4	29	QiC	75
totals	**52**	**61**	**52**	**36**	**57**	**46**	**30**	**37**	**36**	**18**	**44**	**469**		

RA1 - SW course

indicator/ student	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	Total
RyB	6	4	3	3	3	3	3	4	4	7	6	46
PaO	6	6	5	4	7	6	4	3	4	5	9	59
AlV	5	6	5	4	5	3	2	4	5	2	7	48
NeH -M3	2	4	3	0	0	0	2	3	0	0	0	14
MeC	0	0	2	1	0	2	3	1	2	1	2	14
DiE	6	3	5	3	4	3	6	7	4	3	5	49
KaL	2	2	2	2	2	1	3	2	2	1	2	21
HaY	3	3	3	1	2	0	2	1	2	1	6	24
ChR	2	4	4	0	0	3	3	3	3	0	0	22
YuJ	3	3	2	0	1	0	2	1	1	0	6	19
JiW	2	0	2	3	0	0	2	2	1	0	0	12
YaW	1	3	1	2	0	0	3	0	0	2	4	16
SaP	3	3	2	3	0	1	4	3	1	3	5	28
SuC	1	2	3	1	0	2	1	4	5	2	5	26
BoY	2	2	5	2	1	3	5	3	2	0	6	31
WeC	0	1	2	1	3	2	0	1	2	0	0	12
FaY	2	3	3	1	0	0	3	4	1	0	5	22
ZhL-M3	1	2	2	1	2	1	2	0	0	0	4	15
YiX	1	0	3	1	2	1	1	1	1	1	0	12
WeL	3	3	2	0	0	2	3	4	4	0	5	26
BrW	4	6	4	1	4	2	3	3	4	4	0	35
YiY	2	2	3	3	3	1	0	0	3	1	5	23
totals	57	62	66	37	39	36	57	54	51	33	82	574

RA2 - SW course

indicator/ student	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	Total
RyB	2	2	3	3	3	2	2	4	2	2	4	29
PaO	5	5	7	5	5	7	3	2	6	3	7	55
AlV	4	4	4	1	6	2	2	3	4	1	6	37
NeH -M3	0	2	3	0	0	0	2	2	0	1	2	12
MeC	2	2	2	3	2	3	3	0	0	3	2	22
DiE	3	3	3	1	2	3	3	5	3	3	4	33
KaL	2	1	2	1	3	1	3	1	3	3	3	23
HaY	2	2	3	1	0	1	1	1	2	2	2	17
ChR	2	2	3	1	2	4	2	3	4	2	0	25
YuJ	2	1	1	2	1	1	2	2	3	0	3	18
JiW	1	2	2	2	0	0	2	2	4	1	0	16
YaW	1	2	3	0	0	1	1	0	1	0	1	10
SaP	1	3	2	2	0	2	4	3	3	1	5	26
SuC	1	1	2	4	0	3	0	3	3	2	3	22
BoY	1	1	4	2	1	2	4	3	1	0	4	23
WeC	1	2	1	1	3	1	2	3	2	2	0	18
FaY	2	2	4	3	1	1	2	2	1	0	3	21
ZhL-M3	0	0	0	0	0	0	0	0	0	0	0	0
YiX	1	1	2	1	2	1	1	2	0	3	0	14
WeL	0	3	3	0	0	0	2	0	3	1	4	16
BrW	1	1	3	0	2	2	3	2	2	0	18	
YiY	2	1	1	2	2	2	2	2	1	0	2	17
totals	36	43	58	35	35	39	45	46	48	32	55	472

Consensus SW Course

indicator / student	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	Total		Final Exam
RyB	4	3	4	5	4	5	3	4	4	4	4	44	RyB	100
PaO	5	6	6	4	5	7	4	4	6	5	8	60	PaO	95
AlV	5	4	4	2	5	3	3	4	5	3	6	44	AlV	95
NeH -M3	1	3	4	0	0	0	3	3	0	1	3	18	NeH -M3	85
MeC	2	0	3	2	2	4	3	2	2	1	4	25	MeC	85
DiE	4	4	4	3	3	5	6	4	4	5	45	DiE	90	
KaL	3	2	3	2	3	2	3	1	3	2	2	26	KaL	85
HaY	4	4	4	1	3	1	3	2	4	1	4	31	HaY	90
ChR	2	3	4	1	2	2	3	3	4	1	0	25	ChR	80
YuJ	3	2	2	2	2	1	3	3	3	0	3	24	YuJ	85
JiW	2	1	3	3	0	0	3	4	4	1	0	21	JiW	85
YaW	2	3	2	1	0	1	2	0	1	1	4	17	YaW	95
SaP	2	3	2	3	0	2	4	4	3	2	5	30	SaP	95
SuC	2	3	2	1	0	4	3	3	3	3	5	29	SuC	90
BoY	2	2	5	2	1	3	5	3	2	0	5	30	BoY	75
WeC	1	2	2	2	3	3	1	2	2	2	0	20	WeC	90
FaY	0	3	4	2	1	1	3	4	2	0	4	24	FaY	75
ZhL-M3	1	1	2	0	2	1	2	0	0	0	4	15	ZhL-M3	80
YiX	2	1	3	1	3	2	2	3	1	3	0	21	YiX	80
WeL	2	3	3	0	0	1	3	2	4	1	5	24	WeL	85
BrW	0	4	4	1	4	3	4	3	4	3	0	30	BrW	80
YiY	3	3	2	2	2	2	1	1	3	1	4	24	YiY	85
totals	52	60	72	40	45	51	66	61	64	39	75	627		

Appendix K: Draft Questions for Phase II Participants

1. What impact did the reflective practices in class have on you? (opened-ended)

2. Did the reflective practices help you to:
   a. slow down your thinking, giving you more time to explore what you really think;
   b. understand the underlying felt sense
   c. allow openness: letting something come without searching or trying to make it happen
   d. identify your own assumptions, tendencies, habits of thought and feelings
   e. find personal meaning in course content
   f. understand others' perspectives (intellectual)
   g. feel connected with others (knowing others better)
   h. feel challenged but willing to work with obstacles and complexity
   i. apply the techniques from the reflective practices (e.g., listening, inquiry, dialogue) beyond the classroom exercise (e.g., in listening to students and the instructor, in reading texts critically and writing)

3. Were some contemplation questions more difficult to understand than others?

4. Was there a cumulative effect of doing the reflective practices over 11 weeks?

Appendix L: Total Number of Indicators over 11 Weeks and Final Exam Scores

Student	Total Indicators over 11 wks.	Final Essay Exam Scores
PaO	**60**	**95**
DiE	**45**	**90**
RyB	**44**	**100**
AlV	**44**	**95**
KaM	**43**	**95**
JeC-M3	**40**	**100**
HaY	**31**	**90**
XiX	**30**	82
SaP	**30**	**95**
BoY	**30**	75
BrW	**30**	80
QiC	**29**	75
SuC	**29**	**90**
YaL	**28**	**90**
KaL	**26**	85
DaW	25	90
MeC	25	85
ChR	25	80
YiS	24	75
YiL	24	90
YuJ	24	85
FaY	24	75
WeL	24	85
YiY	24	85
ZiY-M3	23	82
SiX-M3	23	75
DaZ	23	92
LeL	23	80
XiL	23	80
JiW	21	85
YiX	21	80
WeC	20	90
YaZ-M4	19	88
WeW	18	82
NeH -M3	18	85
YaW	17	95

TrC-M6	15	90
JiC	15	80
ZhL-M3	15	80
YuN-M3	13	95
ChZ-M7	11	90
KaS-M8	10	80
RaX-M3	10	80
Avg.	25.49	85.95