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Reason in the Service of the Heart: The Impacts of Contemplative Practices on Critical Thinking

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The primary objective of this research was to determine if a specific set of contemplative practices enhance the underlying dispositions for critical thinking. The set of contemplative practices included mindfulness practice extended into journal writing, listening, inquiry, and dialogue. Taken together, this set of practices became contemplative interaction. 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 for critical thinking dispositions appearing in student journals. Students' sense of connectedness was based on taking an uncertain journey together and risking the suspension of beliefs long enough to be challenged. Connectedness supports critical thinking that is more focused on deeper and broader understanding than winning an argument. It opens the door to respect, empathy, and compassion: reason in service of the heart.

Keywords: mindfulness, contemplation, contemplative interaction, reflective awareness, affective dispositions, critical thinking, connectedness, empathy, felt sense, dialogue

Introduction

I began to notice the impacts that certain contemplative practices had on student engagement and learning in general when 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 contemplative practices on student learning and perhaps contribute something of value to the scholarship of teaching and learning. The practices were all based on simple principles of mindfulness and awareness meditation applied to thinking, writing, listening, inquiry, and dialogue.

There is a significant challenge in teaching students to become independent, critical thinkers (Arum & Roska, 2011). There is an even greater challenge enabling students to use critical thinking to discover their connectedness to each other and the world, empathy, and compassion (Zajonc, 2008). For many students entering university today, these challenges are out of reach. The first shock is discovering that learning is more than collecting information and reiterating it (Cote & Allahaar, 2007). These students often know what they know on the basis of accepting authority without considering the source or validity of the authority (Baxter Magolda, 2004).

However, the potential of mindfulness-based contemplative practices to encourage independent thinking, introduce new ways of knowing, and engage students with each other and course content has been noted by teachers and scholars from diverse disciplines (Beauchamp, C., 2006; Shapiro, S. L., Brown, K. W., & Astin, J.A., 2008; Senge, Smith, Kruschwitz, Laur & Schely, 2008; Zajonc, 2003, 2008). The research described below provides evidence that a particular set of contemplative practices enabled undergraduates to reflect on their thinking processes to become more aware of their own mental habits and how they form; inquire with open-minded curiosity, including suspension of assumptions long enough for them to be challenged; and generate justifiable, contextual understandings and judgments, individually and in collaboration. Moreover, it enabled many students to feel more connected and empathetic with people they disagreed with than people they easily agreed with at a superficial level. The contemplative practices include mindfulness meditation practice extended into journal writing, listening, inquiry, and dialogue.

Critical Thinking

The critical thinking movement of the 1980's began in response to widespread criticism of the American educational system. It 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 widely accepted than individual judgments. They achieved significant progress in creating a consensus definition of critical thinking (Facione, 1990, 2007). The consensus conceptualization of critical thinking comprised two dimensions: cognitive skills and underlying affective dispositions. The general working definition of the cognitive skills required for critical thinking included: "...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).

At the same time, the majority of experts in the Delphi process also identified underlying affective dispositions for critical thinking as part of their conceptualization of critical thinking. These dispositions were considered primarily *affective* as opposed to primarily *cognitive* in that they are the essential motivation for students to apply their cognitive skills. The dispositions, listed in Table I, become essential to understanding how critical thinking can be cultivated:

Table I.
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
-

All these dispositions for critical thinking are considered "reflective," in the sense that Schön described reflective thinking (1987). As Schön described, they encourage looking back and reconsidering what has occurred (*reflection-on-action*) and they encourage mindfulness: being aware of the present, suspending intellectual habits (temporarily), and looking freshly at the present (*reflection-in-action*). This later quality of mindfulness, including the willingness to suspend judgment at least temporarily, further defines a particular kind of affective disposition: a *reflexive disposition*. Here the word "reflexive" is used in the sense of awareness "bending back" on oneself (Steier, 1991). A reflexive disposition opens awareness and permits attention to present experience both outwardly and inwardly. A reflexive disposition therefore includes awareness of feeling, one's own feeling and others' feelings. In short, most of the experts came to recognize there needed to be an integral relationship between reasoning and feeling in order for learners to be motivated.

Contemplative Practices

The term “contemplative practices” is used in this study as an umbrella term to designate a particular set of learning activities: mindfulness meditation, structured contemplation, journal writing, mindful listening, reflective inquiry, and dialogue (Sable, 2012). Taken together, contemplative practices encourage individual and interactive examination of assumptions and the metacognitive abilities (thinking about one’s thinking) that are regarded by critical thinking experts essential to critical thinking (Kuhn, 2000; Nelson & Rey, 2000; Paul, 1990).

Mindfulness Meditation

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. Mindfulness meditation practice is training the mind by noticing whatever arises in consciousness and gently returning attention to the breath without judgment. The intention is to 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 out of which all 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. Insights may come as the mind settles and notices what is not usually noticed. These insights that seem to arise incidentally provide perspectives that may remain after the meditation session. 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.” Self-knowledge corresponds to the dispositions of facing one’s own biases, habitual patterns of thinking, egocentric or socio-centric tendencies, 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 contemplative practices that follow. It supports the basic “stepping back or ‘decentering’ 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.

Not all students gain the advantages of mindfulness, perhaps 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.

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 and open awareness. 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 contemplation practice: 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 practices described by Seamon and Zajonc (1998) and Zajonc (2008). The contemplation can be in virtually any dimension of thought: social, ethical, scientific, political, or spiritual. In the second step of contemplation one begins to *open the attention beyond the words of the question itself and allow deeper awareness to emerge*. Students open to new meaning that may emerge. 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).

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 from the perceived or something new may emerge in the perceiver, or both. This "monitoring of one's thinking" is extended to the affective domain and the subtle or as yet unarticulated meanings associated with the original contemplation question, image, or statement can be brought to conscious attention.

What students may gain from the two steps of structured contemplation is encouragement and familiarity with the affective dispositions of 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 (Endres, 1997).

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 fresh words that best convey what they themselves think and feel. 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, 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).

Journal Reading in Pairs: Contemplative Interaction

The next stages of the reflective learning process move students from introspection to *contemplative interaction*. Ordinarily, contemplative practices are regarded as individual and introspective. From this point forward students interact and construct what they know as a collaborative process in pairs and in later steps with the whole class led by the instructor. Ultimately, contemplative 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.

Reading, Listening and Reflecting Back (Paraphrasing)

First, the listener is instructed to listen, absorb what is said, 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 to some degree suspend judgments for the moment, just listening openly. Listening in pairs allows students who are reading to each other to feel less rushed and less pressured than speaking in the larger classroom format.

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, in the similar process called *focusing* Gendlin (1978) 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.

While there is a tendency for some students to return to a more typical unstructured conversation during contemplative 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. 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, and fair-mindedness in appraising reasoning.

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. This means asking “innocent” rather than leading questions (Isaacs, 1999; Rosenberg, 2005). For example, “What did you mean when you said _____?” By contrast, leading questions of the form “Did you mean to say _____,” or “Would _____ be a better word?” are discouraged by the instructor. Reflective inquiry is intended to correct mistaken assumptions of the inquirer and increase depth of understanding (Isaacs, 1992, 1999). When the pair are comfortable with the process, reflective inquiry also encourages the writer to look again at what they have written, clarify it, and perhaps go further (Driscoll, Sable, & Van Esch, 2005; Lee, 2004). However, to do reflective inquiry without the inquirer projecting assumptions and preferences is generally challenging for students in the early weeks of practice.

From inquiry, students may begin to generate new meaning derived from their interaction.

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 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. 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 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. At this point, all the dispositions for critical thinking should be primed.

Facilitated Class Discussions and Critical Thinking

When paired interactions are finished (generally 15-20 minutes for both students to read, reflect, and inquire) 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 point is not necessarily to arrive at preconceived conclusions. Rather, the facilitated discussion is an extension of dialogue to the whole group. The “received wisdom” presented in lectures and texts 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 critical thinking and kindness. It is here that students are most likely to recognize that they are participating in the construction of meaning not as a competition or argument but as collaboration.

Students are more prone at this point to respond to each other rather than direct all their attention to 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 of critical thinking may now appear aimed at enriching meaning and defining truth *within contexts*, rather competing to win a point or demonstrating skepticism.

Methodology

The primary research question of this multi-year study was: What are the impacts of contemplative practices on the dispositions for critical thinking in undergraduate

courses? Previous research relied on scholars' models of critical thinking and the reflective dispositions that produce it (Facione, Facione, & Giancarlo, 2001). 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), and Ruth-Sahd (2003) called for a more phenomenological account of critical thinking. How do students describe and explain their experience? How can their experience inform standardized measures of the dispositions for critical thinking? Is there any change in students' dispositions over an eleven-week course?

A mixed methods approach of qualitative and quantitative research was chosen in order to develop a comprehensive response to these research questions. From qualitative research (Phase I), theory describing students' experience and possible indicators were derived to serve as the dependent variables in the quantitative phase of the research (Phase II).

Qualitative Methods

Grounded theory methods (Charmaz, 2006) were chosen for Phase I because the approach is empirical, data-oriented, and systematic. Grounded theory methods enable the researcher to work from a phenomenological point of view, *building theory from participants' experience rather than preconceiving theory to confirm or disprove*. The data were the transcripts of one-to-one interviews and audio recordings of the one-to-one sessions that yielded the transcripts. Eight former students who informally expressed interest in learning more about contemplative 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 development of ego, the ontology of being, 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 from students who were familiar with the contemplative practices. This kind of selection process was appropriate because the qualitative research was focused on the meaning of the "lived experience" of the students (Van Manen, 1990) rather than statistical validity (Charmaz, 2006; Glaser, 1978).

Quantitative Methods

Phase II of the research was designed to test the hypothesis that the application of a particular set of contemplative practices in the classroom will produce significant increases in indicators for reflective dispositions (Table 2) over the duration of an eleven-week undergraduate course. The indicators were developed from previous students' experience as well as the expert consensus established by Facione (1990).

All the contemplative practices were introduced in the first class and used each week in class. The primary quantitative research methods used were content analysis of students' written work, data reduction, data analysis through descriptive statistics, and interpretation of results. The desired number of participants for statistical analysis was at least 40. The total number of participants in the quantitative research was 43.

Table 2
Measurable Indicators

Does the contemplation response demonstrate that the student is:

1. slowing down; giving more time to understand one's own thoughts and the underlying felt sense?
 2. allowing openness: letting something come without searching or trying to make it happen?
 3. exploring what he or she really thinks?
 4. finding personal meaning in course content?
 5. identifying one's own assumptions, tendencies, habits of thought and feelings?
 6. understanding others' perspectives (intellectual)?
 7. feeling connected with others (affective, knowing others better)?
 8. feeling challenged but willing to work with obstacles?
 9. applying the techniques from the contemplative 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)?
-

Data Sources and Data Preparation

There were four data sources collected from the participants for quantitative analysis:

- 1) 410 written journal entries (allowing for 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 done outside the context of the classroom)
- 3) 56 end-of-term anonymous questionnaires designed to assess the value of reflective practices and other pedagogical features from students' perspectives; and
- 4) Five twenty-minute interviews with six students done after the term was over. (One interview was with two students who asked to be interviewed together.)

The instructor's memos and notes written throughout the course served as a fifth data source.

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

Results

Qualitative

When sunlight passes through a diamond different facets appear to have different colors. In the same way, students' experiences of contemplative 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 contemplative practices. Figure 1 maps the major themes that emerge.

Three more themes emerged from the foundation as the effects of being present: Engagement with Others, Engagement with Learning, and Self-Confidence.

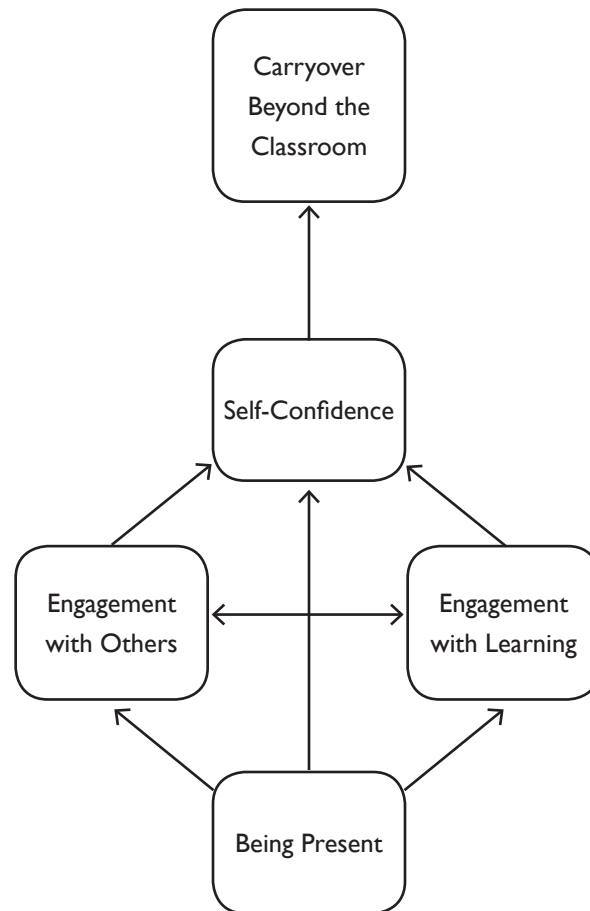


Figure 1. Major themes in students' experience of reflective practices

There was no evidence to suggest a developmental sequence for Engagement with Others and Engagement with Learning. Some students progressed from Being Present to engagement with course content and others became more engaged with the communication process first. Although these two themes are distinct, they are interrelated and create a “virtuous cycle” with Self-Confidence, supporting and increasing each other over time.

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

In general, the contemplative practices positively affected students' dispositions for critical thinking. As the excerpts from the data below show, the contemplative practices also deeply affect students' communication skills, understanding of themselves, and understanding others. *One unanticipated outcome was that some students felt more connected to people in the class that they disagreed with than to people they agreed with easily. The mutual exploration of different views, through listening, inquiry, and dialogue gave 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 was a more neutral experience or even a disappointment compared to feeling connected through contemplative interaction. Such outcomes do not develop instantly in the first session of the course. On the contrary, students felt challenged because most have not encountered this type of learning activity before.

On the personal level, the contemplation practices brought knowing with the mind and knowing with the body together. Structured contemplation revealed underlying responses that they may not at first have been aware of or able to articulate. Yet when their attention was open to the feelings and sensations in the body, it added a quality of authenticity and created a kind of confidence to articulate experience in fresh language.

...[W]hat 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

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

...[I]f 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?” ... [Y]ou 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

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. The quotes below illustrate how different views began to emerge as contextual and multi-layered, but not arbitrary or merely idiosyncratic.

... [T]hat'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

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

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

Feeling Connected with Others

Although the student participants were asked open-ended questions by the researcher in the qualitative research interviews, most of their responses confirmed what the researcher already suspected based on his observations over years of teaching with contemplative practices. The researcher was content to clarify and ground his assumptions in the words of the students. However, this theme—feeling connected with others—took a turn that the researcher did not anticipate. *Many of the students felt 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

[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

When pairs of 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

Quantitative Research: Analysis and Results

Phase II of the research was designed to test the hypothesis that the application of a particular set of contemplative classroom practices will produce significant increases in the indicators for reflective dispositions over the duration of an eleven-week undergraduate courses.

The quantitative approach undertaken in Phase II of this mixed methods study provided the added value of measuring validity of the hypothesis that contemplative practices have positive impact on the reflective dispositions for critical thinking.

On the first pass through the students' journals, independent inter-rater reliability of the two research assistant (RA) observers' scores was not strongly established. Having first scored participants journal entries independently, the RAs became more experienced at making judgments. By exploring each other's judgments and coming to agreement, the research assistants strengthened each other's understanding of the indicators. It was concluded later that the indicators are not yet discrete enough for two independent observers to strongly agree whether they are present in contemplation responses or not. However, the RAs came to consensus agreement on the presence of indicators found in student journals by working together. The data from their consensus scores was analyzed to test the hypothesis.

The consensus scores for week I and week II were used to see if there was a statistically 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 I and week II (a within-groups design). T-test results for weeks I and II (summarizing all participants who submitted journal entries in week I and week II) are shown in Table 3 (below).

Table 3
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)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				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. The range of weekly averages was approximately 1.5 to 4 indicators over 11 weeks. The full point gain over 11 weeks is statistically significant ($t = 3.8, df = 30, p < .01$). The t-test rejects the null hypothesis at the 99% confidence interval and provided plausible evidence that the contemplative practices increased occurrences of the dispositions for critical thinking in the participants.

Limitations

However, the data required further analysis. Weeks 4 through 10 indicated there were confounding factors influencing the outcomes. The questions used in the contemplative practices varied week to week and it was initially assumed the impact of using different questions would be negligible. The particular questions may have had a larger impact than anticipated. All of the quantitative research participants interviewed after the course 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 that the contemplation questions seemed progressive and the earlier contemplations helped to inform their responses to later questions. However, when questions in weeks 4 through 10 included language or referred to experiences that were unfamiliar, the questions became too difficult for some students to respond to with any confidence. Only some of students were able to use difficult questions to develop their own new questions that would clarify the original question. Despite explicit classroom 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 students would say "we don't understand the question," but they would not write that or explore it in their submitted responses. Analysis of responses by students with higher than average total indicators per week revealed 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.

Summary

Overall, there is evidence that the contemplative practices had a positive influence on the reflective 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, demonstrated a significant relationship between the contemplative practices and the underlying affective dispositions for critical thinking.

Conclusion

This research addressed the gap in research on students' experience of the underlying dispositions related to independent, critical thinking. Specifically, this study explored the impact of using a specific set of classroom-based contemplative practices to increase students' dispositions for engaged, independent critical thinking. As one research advisor noted, the contemplative practices had a purpose and effect similar to laboratory sections in physical science courses (Duffy, 2012). 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.*

The research provided both qualitative and quantitative evidence that a particular set of contemplative 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, provided plausible evidence of a significant relationship between the contemplative practices and reflective dispositions for critical thinking.

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 contemplative 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 contemplative practices themselves could make valuable additions to instructors' pedagogical methods wherever critical thinking is required.

For these students, meaning began to emerge as contextual and multi-layered—it was not arbitrary or merely idiosyncratic opinion. Critical thinking for them included 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.

The deeper awareness encouraged by mindfulness applied to structured contemplation, journal writing, listening, inquiry, and dialogue relates to the primary cognitive skill of self-regulation, or metacognition (Flavell, 1976, 1979). This “monitoring of one's thinking” was extended to the affective domain by the contemplative practices. The subtle or unarticulated meanings of a contemplated question, image, or statement were brought to conscious attention individually and in interaction. It was here that “honesty in facing one's own biases, prejudices, stereotypes,

and egocentric or sociocentric tendencies” permitted 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 contemplative practices on students’ dispositions: being present, engagement with learning, engagement with others, self-confidence, and carry-over beyond the classroom. The theory was amply supported by well-articulated experiences reported by students. The qualitative research 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.*

Clear, directive guidelines from an instructor and modeling mindful listening and reflective inquiry in group dialogue were important. But the confidence to express reflective, independent, critical thinking publically came when students felt connected by a challenging journey they took both individually and together. To some extent feeling connected with others in this way was a process that developed unintentionally; it was not an explicit learning objective. It was a kind of natural respect and empathy, knowing that inner work must be behind everyone’s journey: reason in service of the heart.

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DAVID SABLE, PhD, began teaching at Saint Mary's University in Canada in 2000, bringing with him fifteen years of professional experience in the non-profit sector as a training and education consultant. In 2012, David held a sessional appointment as Assistant Professor in the Religious Studies Department with an equal focus on teaching and research. In the same year, David completed the Interdisciplinary PhD program at Dalhousie University in Halifax. His thesis, "The Impact of Reflective Practices on the Dispositions for Critical Thinking in Undergraduate Courses," was nominated for Best Thesis in the Social Sciences and his work noted in *The National Teaching and Learning Forum* 2012 21(4). He continues to teach part-time at Saint Mary's University and Mount Saint Vincent University and is working on a book for educators documenting the diverse impacts of reflective practices on learning.

David has been studying and practicing meditation and Buddhism in the Shambhala tradition since 1971 and continues to teach at meditation programs throughout North America. He was trained and authorized as a meditation teacher by the renowned Tibetan Buddhist teacher, Chögyam Trungpa, and continues to teach in Shambhala Centers throughout North America. David is a founding member of the Authentic Leadership in Action Institute ([ALIA](#)) and a faculty member of the [Atlantic Contemplative Centre](#).