

2017-12-07

An Integral View of Mindfulness Practices and the Perception of Challenge Within a School Based Setting

Daniel, Anne

Daniel, A. (2017). An Integral View of Mindfulness Practices and the Perception of Challenge Within a School Based Setting (Doctoral thesis, University of Calgary, Calgary, Canada).

Retrieved from <https://prism.ucalgary.ca>.

<http://hdl.handle.net/1880/106317>

Downloaded from PRISM Repository, University of Calgary

UNIVERSITY OF CALGARY

An Integral View of Mindfulness Practices and the Perception of Challenge Within a
School Based Setting

by

Anne Daniel

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES
IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE
DEGREE OF DOCTOR OF EDUCATION

GRADUATE PROGRAM IN EDUCATIONAL RESEARCH

CALGARY, ALBERTA

DECEMBER, 2017

© Anne Daniel 2017

Abstract

The purpose of this study was to examine how mindfulness-based strategies are taught within school-based settings and how they impact students' perceptions of challenge. In the course of this research, I also found myself exploring the effects of two different attitudes toward mindfulness training: the first derives from Eastern sensibilities and traditions, while the other is more strongly rooted in Western ways of thinking. The former focuses on awareness of personal experience and function, the latter much more on situated being. Integral Methodological Pluralism (IMP) was used to achieve an informed perspective from multiple viewpoints. This IMP study investigated how mindfulness practices were taught within four different classroom settings in a high school located within the a large school district in Western Canada.

Informed by phenomenological methodology, interviews were conducted with both teachers and student participants to investigate their perception of challenge. Findings revealed three overarching themes connected to challenge: time, necessity and anxiety. Structural analysis of language frequency and comparisons revealed many similarities and differences within the language of teacher and student participants. Ethnographic observations were used to interpret the functions and meanings of different daily routines within both Eastern-influenced and Western-style mindfully-based classrooms. Hermeneutic interviews conducted with teacher and student participants further disclosed some similarities, such as a culture of attention, slower pace and challenge, differences in student retention, and application of mindfulness strategies. Systemic influences are discussed in connection to individual and cultural themes. Lastly, implications for implementation of mindfulness and the connection to student perception of challenge are explored.

Acknowledgements

I would like to thank my husband and three children for supporting me throughout the entirety of this process. You have continued to ask questions about my findings and conclusions and cheered me on, which inspired me to see this project through to its completion.

My former students were the reason why I started on my doctoral journey—they are the inspiration for my research. The students I have taught for the past twenty years have been courageous, humorous, engaged and kind. Their successes and trials gave me the desire to seek a better understanding of resiliency, perception of challenge, and mindfulness.

I would also like to thank my friends who would send me articles, video links and Twitter feeds when they thought it would help support my research. They humoured me while I discussed my findings at dinner parties and around the campfire. My captive audience helped me build a clear understanding of what I was investigating, and for this reason I am truly grateful.

I am sincerely appreciative for my integral peeps that were my community for the past 46 months; I would never have made it without you. Finally, I want to thank both Veronika Bohac-Clarke and Brent Davis for all of the knowledge sharing, support and feedback throughout the entire process: it is because of you I now see my world through integral glasses.

Dedication

I dedicate this doctoral dissertation to my family, Scott, Jonas, Hannah and Alex. You are my world.

Table of Contents

Abstract	ii
Acknowledgements	iii
Dedication	iv
List of Figures	xi
Chapter 1: Introduction of the Topic, Questions, and Methodology	1
Introduction	1
Statement of Problem	2
Purpose of Study	3
Research Questions	4
Rationale for the Study	5
Definitions	5
Personal qualities associated with mindset	6
Varieties of student engagement	6
Types of lesson designs	7
Significance of Research	7
Researcher Assumptions	8
Methodology	9
Conclusion	9
Chapter 2: Applying the Literature	10
Introduction	10
The Integral Model	10

Mindfulness and Challenge in the AQAL Model	16
Mindfulness and Challenge in the Lower Right (“Systems”) Quadrant	17
Mindfulness in Western Culture.	17
Provincial Focus on Student Engagement.	18
Mindfulness and Challenge in the Upper Right (“Behavioural”) Quadrant	21
Measurement of Mindfulness.	21
Standardized Academic Achievement and Mindset.	22
Mindfulness and Challenge in the Upper Left (“Consciousness”) Quadrant.....	25
Mindfulness Practices.	25
Challenge in Developing Mindset.	28
Development of Resilience.	29
Mindfulness and Challenge in the Lower Left (“Cultural”) Quadrant.....	31
Direct teaching of mindset.	31
Role of Feedback and Praise.	32
Problem-based Learning.	35
Scaffolding within IL and PBL.	35
Zone of Proximal Development.	37
Conclusion	38
Chapter 3: Methodology	39
Introduction	39
Methodological Attitude: Integral Methodological and Ontological Pluralism.....	41
Integral Methodological Research	44
Left Quadrant Methodologies and Methods.....	46

Lower Left (“Cultural”) Quadrant.....	53
Contextual Considerations	60
Research Setting	63
Ethical Considerations.....	64
Trustworthiness	65
Limitations	66
Delimitations	67
Summary	68
Chapter 4: Findings and Discussion Part 1	71
LL (“Cultural”) Zone 4: Ethnographic Observations.....	71
Ethnographic Observations: Yoga 15 & 25/35	73
Ethnographic Observations - Natural Science 10/20/30	84
Discussion of LL Zone 4 Similarities	91
Discussion of LL Zone 4 Similarities	95
LL (“Cultural”) Zone 3: Hermeneutic Interview Findings	99
LL – Zone Three Theme 1: Culture of Attention.....	100
Discussion of Culture of Attention.....	105
LL – Zone Three Theme 2: Culture of Slow	106
LL – Zone 3 - Discussion of Culture of Slow	109
LL – Zone 3 Theme 3: Culture of Challenge	110
Discussion of Culture of Challenge	112
Summary	114

Chapter 5: Findings and Discussion Part 2	116
UL (“Consciousness”) Zone 1 - Phenomenological Interview Findings	116
UL Zone 1, Theme 1: Time	118
Discussion of UL Theme 1: Challenge and Time	122
Zone 1: Phenomenological – UL Theme 2: Necessity of Challenge	125
Discussion of UL Theme 2: Necessity of Challenge	128
UL Zone 1, Theme 3: Stress, Anxiety and Challenge	130
Discussion of Challenge and Anxiety	136
UL Exterior Zone 2: Structuralist Findings and Analysis	139
Comparisons between Natural Science and Yoga Student Participant Responses	140
Shared terminology between Natural Science and Yoga Student Participants	141
Stress	141
Anxiety	142
Ambiguity	143
Calm	143
Gratitude	144
Compassion	145
Focus	146
Breath	146
Shared terminology between Natural Science and Yoga Teacher Participants	147
Stress	148
Being present	150
Building Consciousness	151

Calm.....	152
Compassion and Gratitude.....	153
Differences in Terminology between Participants	154
Restorative, Vinyasa and Yin Yoga.....	155
Non-judgmental awareness.....	156
Self-actualization.....	156
UL Zone 2: Structuralism Conclusions	157
Summary	159
Chapter 6: Conclusions	161
Connecting Left Interior Quadrants to Right Exterior Quadrants	161
UR Quadrant Discussion	162
LR Quadrant Discussion	164
LR Impact on LL and UL Quadrants	165
Secular Education.....	165
Provincial Reporting.....	169
Outcomes-based assessment.....	171
Conclusion.....	173
Implications for Further Research.....	175
Implication from the UL: Play-Based Challenge and Assessment	176
Implication from the LL: Curriculum Re-Design and Curricular Delivery Models	178
Conclusion.....	180
References	183

Appendix A: Frayer Model	203
Appendix B: TCPS 2: Core Certificate of Completion.....	204
Appendix C: Request for Informed Consent.....	205
Appendix D: Letter to Research Ethics Board.....	209
Appendix E: Letter of Recruitment.....	210
Appendix F: U of C Assent Letter	211

List of Figures

<i>Figure 1.</i> Wilber’s AQAL model	11
<i>Figure 2.</i> Wilber’s AQAL model, used to relate different methodologies	12
<i>Figure 3.</i> An initial attempt to locate and elaborate my research interests	15
<i>Figure 4.</i> An elaboration of my research interests within the AQAL model	16
<i>Figure 5.</i> Wilber’s quadratic grid	42
<i>Figure 6.</i> Specifying, locating, and situating my research interests	43
<i>Figure 7.</i> The Frayer Model	49
<i>Figure 8.</i> Aligning research methods to research questions	60
<i>Figure 9.</i> An outline of the research cycle	62
<i>Figure 10.</i> Timeline for gathering and interpreting data	63
<i>Figure 11.</i> Similarities and differences between classrooms	91
<i>Figure 12.</i> Research question and Zone 3 themes within LL quadrant	98
<i>Figure 13.</i> Research question and Zone 1 themes within LL quadrant	116
<i>Figure 14.</i> Research question and Zone 2 themes within LL quadrant	138
<i>Figure 15.</i> Frequency and comparison of terminology among students	140
<i>Figure 16.</i> Frequency and comparison of terminology between teachers	147
<i>Figure 17.</i> Comparison of left and right quadrant themes and questions	160
<i>Figure 18.</i> Impact of LR systemic quadrant in LL cultural quadrant	164
<i>Figure 19.</i> The Noble Eightfold Path	165
<i>Figure 20.</i> Comparisons of Eastern and Western application of mindfulness	167
<i>Figure 21.</i> Situating research answers within Integral quadrants	176

Chapter 1: Introduction of the Topic, Questions, and Methodology

Introduction

Educational stakeholders are charged with the exciting yet daunting task of preparing learners to become competent and contributing future members of a complex and ever-changing society (Robinson, 2009). The pace of transformation has accelerated to the point that attempts to isolate and teach skills and aptitudes best fit for prospective working environments have become futile. Educators are encouraged to reach beyond and focus on building more generalized capabilities that span across different fields of study and experiences (Dweck, 2010). Developing broad-based competencies pushes the educator to prepare classroom environments that ensure students will be both authentically challenged and well supported as they engage in situations designed to provoke higher-order thinking.

To do this effectively the educator must first foster internal structures that enable students to have the academic and emotional stamina to work through each challenging learning task. Dweck (2009) has identified, defined, and illustrated two contrasting types of personal mindsets that support or inhibit students in their engagements with challenging problem-based academic work. The first of these is the *growth mindset*: the attitude that intelligence can be developed and that challenges and setbacks are essential to the process of learning. The second, the *fixed mindset*, is the belief that intelligence or talent is a pre-set or fixed trait. This mindset prompts individuals to work to protect their personal ideas of their intelligence or talents, and, as a result, students tend to avoid situations that require facing challenges or setbacks.

The goal of this study to examine how challenge is experienced by the learner and how mindfulness practices might affect perceptions of challenge. Mindfulness is a state of mental awareness of the present moment, which involves the ability to acknowledge thoughts and

feelings without judgment (Kabat-Zinn, 2009). Meditative practices have started to gain acceptance within Western society and are now starting to be employed within the classroom. And since mindfulness practices have been used to increase insight, self-actualization and compassion, this study aims to evaluate the effects of mindfulness practices on teachers' and students' perceptions of challenge.

Statement of Problem

Student engagement is connected to exposure to relevant challenging work for which the students are academically prepared. Within a classroom setting, different types of mindsets contribute to students' varying perceptions of their own abilities, their performance in diverse engagements within peer groups, and their varied levels of tenacity while participating in effortful work (Dweck, 1986, 2006 & 2010). Personal mindsets are fundamental assumptions about one's capacity to grow her talents and abilities (Blackwell, Trzesniewski & Dweck, 2007). A fixed mindset is a more solidified or static view of one's own abilities and talents. This type of mindset can result in a tendency to become protective of one's talent, causing one to spend more time and energy on proving existing talent rather than growing it. The growth mindset enables the learner to change and grow their abilities and talents (Dweck, 2006).

One of the key components to shaping learners' mindsets is their perception of the role of challenge (Yeager & Dweck, 2012). According to Mueller and Dweck (1998), if challenges are perceived to threaten ability, the student will have a fixed or entity mindset. If, however, challenge is embraced and regarded as necessary to foster new learning, the student will develop a growth or incremental mindset (Dweck, 2006). Yeager and Walton (2011) argue that the development of a growth mindset depends on challenges that positively influence student academic and social behaviours. Challenge is thus deemed to be necessary for high levels of

student achievement within both the affective and cognitive domains (Blackwell et al., 2007; Dweck, 2010; Mueller & Dweck 1998). The benefits of a growth mindset are widely acknowledged; hence, the implications of encouraging learners to embrace challenge and reform their view of challenging work through mindfulness practices is a fertile area for research.

Indeed, compelling research has already been conducted on the matter, and has shown that mindfulness practices can be used to help learners develop a level of comfort with challenge. Mindfulness has been positively linked to the enhancement of mental flexibility and emotional self-regulation (Meiklejohn et al., 2012). Kabat-Zinn (2009) demonstrates that mindfulness practices can improve both mental and physical health and aid in the reduction of stress and anxiety.

Closely related research has been conducted in the field of education, with much of it exploring how the development of a growth mindset relates to how challenge is viewed. As discussed in Chapter 2, a key finding of this research is that becoming comfortable with challenge enables students to become more capable and confident while engaging in challenging work. Student engagement requires students to be exposed to and take up meaningful and challenging work. Therefore, it is beneficial to explore challenge and how students can develop the ability to embrace challenge as a fundamental component to the learning process.

Purpose of Study

The original purpose of this study was to explore how students perceive challenge and to examine the effects that mindfulness practices might have on developing comfort with challenge. In this research, I viewed mindfulness and challenge systemically, empirically, phenomenologically and ethnographically by employing the Integral theory model (Wilber, 2007). Integral theory attempts to consolidate diverse philosophies and theorists into one single

framework. It endeavours to pull together a number of separate paradigms into an interconnected network of approaches.

While exploring mindfulness practices I also discovered I had the serendipitous opportunity to also investigate the contrast between two very different approaches to developing mindfulness. The yoga classes were based on Eastern practices, which stemmed mainly from Theravada traditions. This eastern form was taught using a clear scope and sequence outlined within the course syllabus. Yoga practices, meditation, and mindfulness were assessed using formative outcomes-based assessment practices. In contrast, the Natural Science classes used mindfulness approaches that focused more on biophilia, gratitude, circle protocols, and grounding rituals. Many of the mindfulness strategies were designed to enable students to connect more deeply and genuinely to the environment they were learning about and will eventually be caretakers of. Each mindfulness or meditative strategy was purposefully not assessed and was implicitly taught in tandem with the Natural Science program of study.

Research Questions

I examined students' perceptions of challenge and the effects of mindfulness practices within the classroom. The following questions were explored to develop a better understanding of mindfulness practices and the impact mindfulness has on the perception of challenge.

- a) What perceptions do students have about the role of challenge within their learning process?
- b) How do teachers teach and create a culture of mindfulness?
- c) How is student behaviour impacted by mindfulness?
- d) How does the system influence the development of mindfulness practices within the classroom setting?

Rationale for the Study

Inquiry relies on problem-based learning and dissonance—the space between the known and the learned—which allows for the student to generate their own questions and therefore personalize and deepen their understanding (Branch & Oberg, 2004). A major impetus for this study arose from the researcher’s experiences within an inquiry-based classroom in which many students quickly became frustrated and had difficulty engaging in critical thinking tasks. This experience confirmed for me that the learning gap between students who are successful and unsuccessful is usually not related to cognitive abilities. The learning gap often has more to do with students’ exposure to the material and their willingness to engage in rigorous work that connects smaller learning outcomes to larger problem-solving skills (Duckworth, 2009; Gafoor & Kottalil, 2011; Shechtman, DeBarger, Dornsife, Rosier & Yarnall, 2013).

To be successful, students need to be willing to reframe their understanding of the role of challenges and setbacks in their learning equation. Dweck (2010) observed that students with fixed mindsets will become defensive in the face of challenges, place the blame externally, act bored or act out, and give up quickly. Students with a growth mindset, on the other hand, often embrace learning and growth, understand the role of effort in creating intelligence, and are able to maintain a resilient attitude in the face of setbacks.

Definitions

Mindfulness. is a type of awareness that is created by paying attention in the present moment, nonjudgmentally to the experience that is occurring at that moment (Kabat-Zinn, 2003).

*Note – this definition is limited definition of mindfulness but was the definition that was used within the classrooms that the research was conducted in.

Mindset. Following Dweck (2011), *mindset* refers to how students see themselves as learners and how they see themselves connected to their learning environment. Mindset includes beliefs, attitudes, dispositions, values, and ways of perceiving oneself. According to Dweck, the two main subcategories of mindset are:

- *Fixed mindset:* the attitude that intelligence is a fixed trait you are born with and cannot change;
- *Growth mindset:* the attitude that intelligence is a malleable quality; it has potential that can be developed.

Personal qualities associated with mindset.

Agency refers to an individual's sense of efficacy: "By building agency, young people utilize effective learning strategies and demonstrate a positive mindset that not only helps them drive their own learning to do better in school, but also helps them to navigate the typical barriers to success, both inside and outside the classroom" (Shechtman, DeBarger, Dornsife, Rosier & Yarnall, 2013).

Academic perseverance refers to a student's tendency to complete school assignments in a timely and thorough manner to the best of her ability, despite distractions, obstacles, or level of challenge (Shechtman, DeBarger, Dornsife, Rosier & Yarnall, 2013).

Varieties of student engagement.

Behavioral engagement is connected to participation and being involved in social, academic and extracurricular activities.

Emotional engagement is connected to the positive and negative reactions to the people and physical structures that make up a school setting.

Cognitive engagement is connected to being mentally invested in the learning process,

and includes a student's willingness to put forth the effort needed to master complex and higher order skills (Shechtman, DeBarger, Dornsife, Rosier & Yarnall, 2013).

Effortful control concerns successful students' ability to harness their willpower and regulate their attention in the face of distractions (Shechtman, DeBarger, Dornsife, Rosier & Yarnall, 2013).

Types of lesson designs.

Inquiry-based learning. Inquiry-based learning is a process where students are involved in their learning and are encouraged to formulate questions, investigate the material widely, and build new understandings, meanings and knowledge. This new knowledge may be used to answer a question, to develop a solution, or to support a position or point of view. The knowledge is usually presented to others and may result in some sort of action (Branch & Oberg 2004),

Problem-based learning. Problem-based learning is a learning model in which students engage in theory construction about phenomena through research, testing and critical discussion (Schmidt, Rotgans & Yew, 2011).

Significance of Research

This study focuses primarily on mindfulness practice and its role in building a growth mindset in school learners. To date, studies that have been conducted on mindsets have primarily used summative forms of assessment to show the benefits of mindset and the role of praise and direct teaching to foster or impede growth mindset. To demonstrate this relationship, Duckworth, Grant, Loew, Oettingen & Gollwitzer (2011) and Dweck (2010) used test scores and single-word praise after task completion to measure and foster growth mindset. To date, there has not been a study examining the perception of challenge in relation to mindfulness strategies.

This study would help teachers understand which types of mindfulness strategies are best for developing and supporting a learner's response to challenge. As a result, teachers could become more discerning when implementing mindfulness strategies within their classrooms. School administrators would benefit from this research, given that it would help inform and guide the focus of school-wide professional development and decision-making initiatives related to securing appropriate and useful mindfulness resources and resident experts. At the system level, this study would benefit the different school boards, as the topic has an indirect connection to test scores and student retention rates. Gafoor and Kottalil (2011) have looked at the subsequent relationship of resiliency, mindfulness practices and student retention rates.

Researcher Assumptions

I, of course, enter this research with some “natural”—that is, culturally-sanctioned and experience-conditioned—assumptions. My first assumption is that an inquiry-based setting is the most conducive environment for examining challenging work. I have worked within an inquiry-based setting for the past eleven years, and I feel it produces many challenging opportunities due to the focus on project-based work. Inquiry-based classrooms utilize overarching and essential questions formulated by the students, which helps to guide and connect learning to curricular outcomes. Project-based work requires flexibility to allow for generative learning to occur. Many of the projects students engage in are large and cross-curricular and require students to face social, academic and intellectual challenges.

My second assumption is that teachers who are involved in mindfulness practices outside of the classroom would be more inclined to implement these practices inside the classroom. I also assume that teachers who are versed in mindfulness strategies would naturally conduct their classrooms in a different manner.

Methodology

This study employed integral methodological pluralism (IMP) as a research framework. Wilber (2007) has discussed how integral methodological pluralism is created by looking at the eight fundamental perspectives and situating them within eight fundamental methodologies. As elaborated in chapters 2 and 3, in order to generate a multifaceted understanding of the role of mindfulness practices in developing growth mindset, IMP was used to honour and include all legitimate perspectives and realities in connection to the research question (Martin, 2008). IMP involves all major methodologies within contemporary research and coordinates different approaches in attempts to gain the clearest understanding. This type of multi-methodology emphasizes an assortment of fundamental perspectives, which align themselves with postmodernist epistemologies, and focuses on studying occurrences and knowledge created from the interplay of all four different quadrants (Martin, 2008).

Conclusion

Student engagement is an essential component to student success but, unfortunately, student engagement decreases throughout formal graded education (Willms, Friesen & Milton, 2009). This study was not looking directly at student engagement but rather at the smaller necessary ingredient ensuring that a student can be engaged in their learning: their perception of challenge. This study was designed to examine how students perceive challenge and develop more comfort with challenge through the use of mindfulness practices. I did not attempt to quantitatively measure the impact; I looked at possible influences that mindfulness practices have on learner perceptions. This study was rooted in the assumption that challenge is usually something that students perceive in a negative way, but is essential to their learning, and mindfulness practices can have a positive impact on students' perception of challenge.

Chapter 2: Using the Literature to Contextualize the Topic and the Questions of this Study

Introduction

This study was originally concerned with students' perceptions of challenge and the effects of mindfulness practices, along with the possible impact of these practices on the school learner. The study was elaborated to include an examination of the similarities and contrasts between mindfulness practices rooted in ancient Eastern and more recent Western sensibilities. Integral theory was employed to build a multi-perspective, multi-method view of how learners can use meditative mindfulness practices to change their view of challenge and create a growth mindset.

This chapter begins with an introduction to Integral theory. I then situate my research interests within that model by examining the cultural ethos surrounding mindfulness and mindset. Here I discuss the rise of mindfulness practices within Western society, student engagement, and standardized achievement. The focus of writing then shifts to the more empirical region of the model as I explore information about the physiological and psychological benefits of mindfulness and growth mindset. I then examine the region of the model concerned with personal perspectives, drawing on phenomenological accounts of the role of challenge and mindset. Finally, the chapter concludes with an examination of the classroom climate and the role of the educator in an inquiry-driven, problem-based setting, and how the educator and setting contributes to the development of growth mindset and mindfulness.

The Integral Model

Integral theory was developed by Ken Wilber (Esbjorn-Hargens, 2010; Wilber, 2007, 2012) in attempt to bring a wide range of theories and thinkers into productive conversation.

Wilber proposed to organize all human knowledge and experience in a four-quadrant grid, divided along the axes of *interior–exterior* and *individual–collective*. The resulting *All-Quadrants-All-Levels* (AQAL, pronounced “ah-qwul”) model is illustrated in Figure 1.

	Interior	Exterior
Individual	<p>Consciousness: “What I experience”</p> <p>“I”</p> <p>Subjective realities (e.g. self and consciousness, states of mind, psychological development, mental models, emotions, will.)</p>	<p>Behaviour: “What we do”</p> <p>“It”</p> <p>Objective realities (e.g., brain and organism, visible biology, degrees of activation within body systems.)</p>
Collective	<p>Culture: “What we experience”</p> <p>“We”</p> <p>Intersubjective realities (e.g. shared values, culture and worldview, webs of culture, communication, relationships, norms, boundaries, customs.)</p>	<p>Systems: “What we do”</p> <p>“Its”</p> <p>Intersubjective realities (e.g., social systems and environment, visible social structures, economic systems, educational systems, political order)</p>

Figure 1. Wilber’s AQAL model. Adapted from *Integral Spirituality* by K. Wilber (2006).

Each of the quadrants of the AQAL model is also associated with specific modes of inquiry and methodological traditions. Figure 2 illustrates some of the main categories, organized according to whether a phenomenon is examined from *inside* or from *outside*. For example, looking at the lower left quadrant, a hermeneutical study would entail examining one’s own cultural situation (i.e., from *inside*), whereas an ethnographic study is more commonly associated with inquiries into other cultures (i.e., from *outside*).

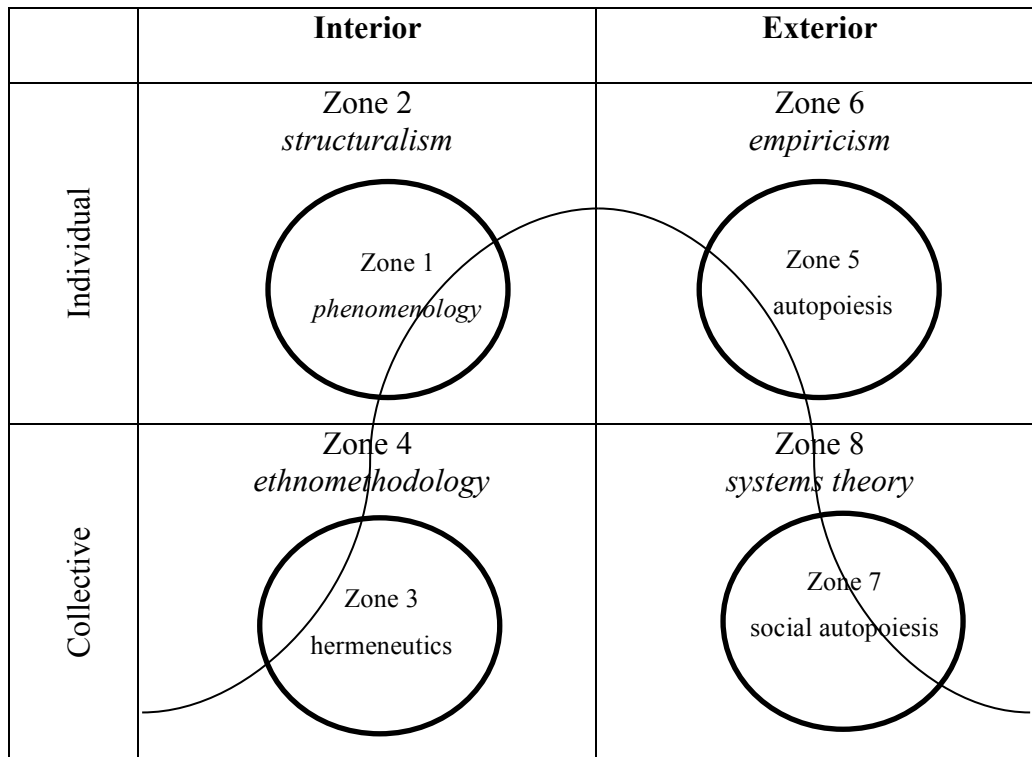


Figure 2. Wilber’s AQAL model, used to relate different research methodologies. Adapted from *Integral Spirituality* by K. Wilber (2006).

Esbjorn-Hargens (2010) refers to the resulting eight regions as basic “methodological categories.” The upper left quadrant contains the individual interior and the methodologies of phenomenology and structuralism. The lower left quadrant, which is the quadrant that encapsulates the interior collective, will employ both hermeneutics and ethnomethodology. Autopoiesis and empiricism are used for the exterior of the individual in the upper right quadrant, and the lower right will use social autopoiesis and systems theory. As I develop in this chapter, the four quadrants and eight methodological categories of Integral theory are also useful for situating the research question and for expanding upon different aspects of the problem from different internal and external views (as illustrated in Figure 1).

The AQAL model is associated with “Integral methodological pluralism” (IMP), a framework for research in which an event or a phenomenon is understood as a *holon*—“a

whole/part or a whole that is part of another whole” (Wilber, 2007, p. 34). IMP might be described as a “holonomic approach” that invites researchers to view a phenomenon within and across eight fundamental perspectives that align with eight fundamental methodologies (Esbjorn-Hargens 2010; Wilber, 2007). Or, stated still differently, this conceptual framework emphasizes an assortment of fundamental perspectives that align themselves with postmodernist epistemologies and focuses on studying occurrences and knowledge created from the occurrence from all four quadrants (Martin, 2008).

Importantly, IMP involves most major methodologies within contemporary research. The model also aims to coordinate and triangulate different research approaches to support the most nuanced and robust understandings possible. To elaborate, Zone 1 and 2 in the upper left *individual–interior* (“Consciousness”) quadrant are associated with phenomenological and structuralist methodologies (Wilber, 2007). Phenomenology is a mode of inquiry used to examine the direct experience of the insides of individual interiors, while structuralism studies the reoccurring patterns of direct experience, or the outsides of individual interiors. Zone 5 and 6 in the upper right *individual–exterior* (“Behavioural”) quadrant are associated with phenomena that lend themselves to strategies associated with empiricism and autopoiesis. Autopoiesis is concerned with self-regulating behaviour (the insides of the individual exteriors), while empiricism is employed to investigate observable behaviours that occur on the outsides of individual exteriors (Wilber, 2007). As for Zones 7 and 8 in the lower right *collective–exterior* (“Systems”) quadrant, these zones are, according to Esbjorn-Hargens (2010), associated with social-autopoiesis and systems theories. Their associated methodologies are used to explore self-regulating dynamics in systems (the insides of collective exteriors), and the functional-fit of parts within the observational whole (the outsides of the collective exteriors). Finally, Zones 3 and 4 in

the lower left *collective–interior* (“Cultural”) quadrant are affiliated with hermeneutics and cultural anthropology. These methodologies explore intersubjective understanding, or the insides of collective interiors, and recurring patterns of mutual understanding, or the outsides of collective interiors (Wilber, 2007).

Notably, the model is not intended to be a simple “sum” of perspectives and methodologies. Considered holistically, Integral ways of knowing transcend and include ideas held within each quadrant. It is precisely this quality that draws me to the framework, as it allows me to locate and elaborate on my research interests. I illustrate this point briefly in Figure 3.

	Individuality		
Interior	Consciousness Quadrant	Behavioural Quadrant	Exterior
	<ol style="list-style-type: none"> 1) Phenomenological view of challenge 	<ol style="list-style-type: none"> 1) Empirical research about growth mindset 2) Empirical research on mindfulness practice 	
	Cultural Quadrant	(Systems) Quadrant	
	<ol style="list-style-type: none"> 1) Scaffolding used within mindful classroom 2) Implementation of mindfulness practices in classroom 	<ol style="list-style-type: none"> 1) Rise of Eastern Mindfulness practices within Western Society 2) Focus in Alberta on student engagement 3) Outcomes Based Assessment 	
	Community		

Figure 3. An initial attempt to use the AQAL model to locate and elaborate my research interests.

Adapted from *Integral Spirituality* by K. Wilber (2006).

The research interests identified in Figure 3 are translated into research questions and foci in Figure 4. These are discussed in greater detail in subsequent sections.



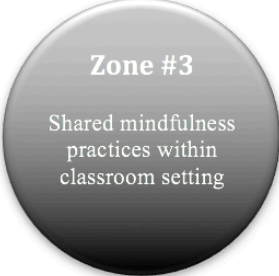
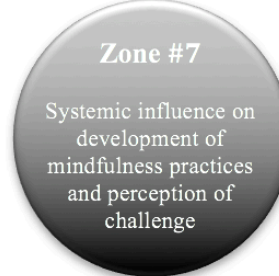
	Interior	Exterior
Individual	<p>“I” What perceptions do students have about the role of challenge?</p> <div style="text-align: center;">  <p>Zone #1 Student perception of challenge</p> </div> <div style="text-align: center; background-color: #cccccc; padding: 5px;"> <p>Zone #2 Contextualization of challenge</p> </div>	<p>“It” Does the use of mindfulness practices increase student growth mindset and positively impact student achievement?</p> <div style="text-align: center;">  <p>Zone #5 Increase of growth mindset</p> </div> <div style="text-align: center; background-color: #cccccc; padding: 5px;"> <p>Zone #6 Student behaviour within mindful classroom</p> </div>
Collective	<p>“We” How do teachers create a classroom ethos conducive to mindfulness? How can teachers embed mindfulness practices within scaffolding practices to foster student comfort with challenge?</p> <div style="text-align: center;">  <p>Zone #3 Shared mindfulness practices within classroom setting</p> </div> <div style="text-align: center; background-color: #cccccc; padding: 5px;"> <p>Zone #4 Observed mindfulness practices</p> </div>	<p>“Its” How do current system wide curriculum support the development of mindfulness practices?</p> <div style="text-align: center;">  <p>Zone #7 Systemic influence on development of mindfulness practices and perception of challenge</p> </div> <div style="text-align: center; background-color: #cccccc; padding: 5px;"> <p>Zone #8 Systemic embracement of mindfulness practices within secular culture</p> </div>

Figure 4. An elaboration of my research interests within the AQAL model. Adapted from *Integral Spirituality* by K. Wilber (2006).

Mindfulness and Challenge in the AQAL Model

Extending some of the issues that rose to the fore as I assembled Figure 4, in this section I move through the quadrants to examine how their associated sensibilities might frame the concepts of “mindfulness” and “challenge.” My intention is to arrive at a more comprehensive understanding of these two constructs, as such an understanding would pertain to formal education.

Mindfulness and Challenge in the Lower Right (“Systems”) Quadrant

The lower right quadrant is the systems quadrant in which societal norms, expectations, and embedded practices are examined. The view from this quadrant enables the researcher to understand the inside (autopoietic systems) and outside (systems theory) of the exterior collective (Wilber, 2007). Recent events that might be located within this quadrant include the rise of the mindfulness movement, provincially mandated movement towards competencies-based understanding, and the crisis in student engagement throughout the province of Alberta.

Mindfulness in Western Culture. Maturana and Varela (1987) characterized autopoietic systems as organizations that define, maintain and reproduce themselves. Communication is the main element within a social system, which is self-replicating and cannot exist outside of the network. Humans are another component of the social system and, since they are the source of the communication, they are then considered an essential internal component of the system (Fuchs & Hofkirchner, 2009). Mindfulness has now entered into Western social communication and has become a strong part of the vernacular in many areas of the larger community (Brown & Gerbarg, 2009).

The topic of mindfulness practices is centuries old and has a solid place in many different cultural, spiritual and religious practices. It is starting to gain traction within the secular world through its connection to social and societal well-being. The popularization of mindfulness has

been associated with shifts in meaning, as understandings of mindful practices have morphed and shifted from a deep spiritual connection to a more secular life-based practice. People are using mindfulness practices to enhance relationships, inform career decisions, and strengthen personal bonds with the social community around them. Secular benefits of mindfulness practices greatly benefit the organizations that embrace the practice (Weick & Putnam, 2006).

Connections between neuroscience and the benefits of meditation have boosted the popularity of mindfulness within western society. In particular, greater attention has been given to this type of practice since the Dalai Lama was invited to the scientific conversation and allowed studies to be coordinated with the Buddhist masters who had had more than ten thousand hours of mindful meditative practice (Ricard, Lutz & Davidson, 2014). Just as any practice that continually stimulates areas of the brain, mindfulness uses and therefore cultivates areas within the brain that control self-perception and self-regulation. Evidence that meditation changes the structure of the brain is now supported through the field of neuroplasticity (Brown & Gerbarg, 2009). Mindfulness practices have been connected to salutary effects on the mind and the body (Bodhi, 2000). As a result of all this empirical research, mindfulness strategies have begun to garner support within educational, medical, sociological and scientific communities. Brown and Ryan (2003) state that mindfulness practices have spread beyond, but not away from, primarily spiritual and religious communities.

Provincial Focus on Student Engagement. Willms, Friesen and Milton (2009) determined that schools differ greatly in their levels of student engagement, and this variation is attributed less to demographic or socio-economic background than to classroom practices and climate. There is a marked decrease in student intellectual engagement between Grades 6 and 12. As discussed in this study, one explanation for the drop in student engagement is that students

who are not sufficiently challenged become academically and intellectually disengaged. In response to the decline in engagement, at the local systemic level, the Alberta government has made it a primary goal to shift the focus away from covering content and towards developing learner competencies. To do this successfully, Alberta Learning has identified competencies that will yield greater learner success. Engagement, ethicality, entrepreneurial spirit, inquisitive questioning, creativity, and critical and generative thinking have been outlined and are clearly stated within the new Alberta ministerial order published in May 2013 (Alberta Learning, 2013).

Rotgans and Schmidt (2011) define cognitive engagement as the ability and willingness to take on presented learning tasks. In their definition of cognitive engagement, Walker, Greene, & Mansell (2006) also include the level of effort students are willing to put forth, and the amount of resiliency they have while engaged within the task itself. Conventionally, cognitive engagement has been measured through a collection of stable traits; however, Rotgans and Schmidt (2011) propose that cognitive engagement is affected by context and learner autonomy and empowerment.

Developing broad-based competencies pushes educators to prepare their classroom environments with the goal to ensure students are well supported as they engage in situations that provoke higher order thinking. To do this effectively, the educator must first attend to fostering internal character traits that enable students to have the academic and emotional stamina to work through each challenging learning task. Attempting to develop the outlined competencies without attending to and nurturing qualities such as tenacity and resilience could be self-defeating. Educators must first build the scaffolding within the student to equip them for the paradigm shift in systemic educational goals.

Considerable research has been conducted on these topics. Notably, Duckworth et al.

(2011) defined resilience as the ability to embrace challenges, stay the course, and not get discouraged. Shechtman, DeBarger Dornsife, Rosier and Yarnall (2013) indicate that resilience is one of the most important qualities for a student to acquire. Deconstructing resilience quickly leads one to understand a student's personal mindset, which is one of the central components of this attribute. Dweck (2009) has identified, defined and illustrated two different types of personal mindsets. Growth mindset is the belief that intelligence can be developed, and that challenges and setbacks are essential to the process of learning. As Mercer and Ryan (2009) state, mindset is not a simple dichotomy and can be very domain specific. Therefore, mindfulness practices could be very helpful in regulating the mindset and creating consistency across all different domains.

Educators are moving to more progressive spaces in our understanding of how to prepare students to navigate their future experiences. Building competencies rather than skills through the creation of learners with growth mindsets pushes researchers to seek strategies to help prepare competent students. The strategy proposed by this research proposal is to use mindfulness practices, which are embedded into the scaffolding of a problem-based, inquiry-driven classroom.

Within the educational system in Alberta there is a push towards more competency-based curriculum. This movement is in response to the understanding that the globalized world is too complex to try and navigate with a skills-based curriculum. There has also been a noted decline in student engagement, which starts to appear with middle school students and continues to decline throughout high school. It has been concluded that, for student engagement to increase, students need to be engaged in new ways. Problem-based, generative-academic, child-centered experiences have been proposed to re-engage the student and make the student the central agent of their learning (Willms, Friesen & Milton 2009). Such experiences would require the student to

become more comfortable with dissonance within learning environments. Finally, mindfulness is becoming more understood and embraced within many different communities within the western world. These systemic occurrences of western culture embracing mindfulness and the call for deeper engagement within the student learner are situated in the lower right quadrant and provide a solid place to view the need for mindfulness practices to foster growth mindset.

Mindfulness and Challenge in the Upper Right (“Behavioural”) Quadrant

Having outlined the systemic supports and barriers to mindfulness and growth mindset, it is important to now compare and connect the behavioural upper right quadrant. This quadrant has historically been the heart of most educational research. Human responses to interventions and stimuli are measured, analysed, and reported within the upper right. It is beneficial for my study to examine the information within this quadrant because it provides the scientific evidence from which the phenomena of mindset, challenge, and mindfulness extend. Within this quadrant, research about how to measure growth mindset is discussed. Three different mindfulness scales indicating the level a person has reached are explained. Finally, a mindset scale is discussed in relationship to student achievement.

Measurement of Mindfulness. Mindfulness is considered to be a flexible state of being aware of the present moment while also being able to understand new content and contexts. It refers to a level of consciousness that moves the individual away from autopilot and enables her to have clarity and perspective (Langer, 1989). Insights can be directed inward and outward and can influence the focus of the meditation. Whether the insight comes from an inward or outward source of stimuli, it has an influence on the brain and how it understands different events (Brown & Ryan, 2003). The Mindfulness and Attention Awareness Scale (MAAS) has been used to measure focus and awareness. This scale is considered to be limited in that it does not allow for

the measurement of other aspects of mindfulness, such as non-judgemental attitude, acceptance, insight, or dis-identification (Brown & Ryan, 2003). The Toronto Mindfulness Scale (TMS) is another scale that has been developed to measure one's level of mindfulness after being engaged in meditation. The scale is made up of ten different items to help differentiate between individuals who have meditated and individuals who did not engage in meditative practices (Shapiro, Astin, Bishop & Cordova 2005). Finally, another measure of mindfulness currently in use is the Kentucky Inventory of Mindfulness Scale (KIMS), which relies on a conceptualization of mindfulness as applied in Dialectical Behavioral Therapy (DBT). KIMS is made up of thirty-nine separate items that are organized into four different scales.

These are only a few of the different mindfulness scales that are currently being used; however, these scales are the most predominately mentioned when looking at the subject of overcoming challenge and becoming tenacious or resilient through the use of mindfulness practices. Since this study is concerned with the phenomenon of challenge, these three particular scales are the most conducive to measuring and analyzing this particular area of inquiry.

Standardized Academic Achievement and Mindset. Looking beyond the measurement of mindfulness, it is important to look at the standardized level of student achievement and its connection to mindset. Blackwell et al. (2007) examined students transitioning into Grade 7 who were given a baseline assessment measuring their level of fixed or growth mindset. The 373 students were then monitored using summative math tests throughout the next two years. The students with growth mindset on average started to outperform the students who had a fixed mindset on average by 8% each year (Dweck, 2010). Grant and Dweck (2003) studied college student achievement within a pre-med organic chemistry class. The researchers used math SAT scores for an assessment baseline to enable an examination of the influence that fixed or growth

mindset had on the students' success in organic chemistry throughout the year and on the final exam. Students who had a fixed mindset struggled more to recover from a poor grade than students with a growth mindset. These results were tracked by questionnaires and by analysis of proceeding assignments and quizzes. This research creates a clear connection between growth mindset and student achievement.

Blackwell et al. (2007) also found that mindset theory interventions need to be customized to be successful. The messages are to be precise and pinpoint how a certain mindset affects students in certain specific contexts. Dweck (2006) cautions against large group interventions, suggesting that messaging cannot come in the form of a blanket approach. Although providing lectures about neuroscience and the brain's potential to change is valuable information, these presentations are not to be confused for actual intervention. The intervention occurs when people's characteristics, which are based in the brain, have the potential to be developed (Yeager & Walton, 2011). It would be highly ineffective to scale up and create a generic system-wide program consisting only of information packages or workshops regarding neurology of the brain and growth mindset (Yeager & Walton, 2011).

Yeager and Dweck (2012) suggest that mindset interventions need to focus the message on how mindset is directly affecting the student within their specific context. The student must also be able to use personalized strategies to assist in internalizing the message quickly. However, Yeager and Dweck (2012) have also discussed how implicit theory interventions could be delivered on a larger scale if they are customized for different student populations. Gathering specific data about the specific goals and challenges within a specific learning community would be necessary before planning and implementing any larger scale intervention. The people facilitating the mindset intervention also need to have a solid understanding of the underlying

psychology that the interventions are trying to instil and, therefore, partnerships would need to be established in order for interventions to truly work (Yeager & Walton, 2011).

As Yeager and Dweck (2012) argue, to be truly supportive of this movement that values effort over ability, it might be imperative to systematically ease off standardized product-centered assessment practices. Such weaning would encourage an environment of process-driven assessments, which would be much more conducive to growth than a fixed framework of intelligence. However, in a time of greater demand for accountability this is not always possible. Dweck (2010) has therefore stated that the system can deliver a common message that high-stakes testing only assesses students' current skills and not their long-term potential to learn.

Viewing mindfulness and mindset from the upper right confirms that there are tools for measuring both of these phenomena. However, there are no measures that directly connect the two. The tools previously discussed measure the four different mindfulness skills of observation, description, attention, and non-judgmental awareness, and these tools connect mindfulness to stress-reduction, and stress-reduction to student achievement. Measurements and studies that connect mindset to student achievement have also been discussed. These established measurements for mindset and mindfulness have been helpful in enabling researchers to use quantitative empirical data to validate their results. This study, which examines students' perceptions of challenge and how different attitudes toward mindfulness training impact their personal perceptions, was primarily situated within the two left quadrants. However, there was merit to also view the study's findings through the upper right to investigate the limits or possibilities of these quantitative tools to assist in the creation of sustainable mindfulness practice, which may have long-term benefits for the student.

Mindfulness and Challenge in the Upper Left (“Consciousness”) Quadrant

Moving into the upper left, mindfulness practices and growth mindset were viewed through a phenomenological lens. This is where personal thoughts, perceptions, judgments, and emotions are most naturally situated. This quadrant highlights how students perceive challenge and the role it plays within their learning. Personal narratives were investigated after engaging in mindfulness practices. The research within this quadrant was essential because it sits at the center of mindset and is the historic location of mindfulness.

Mindfulness Practices. Mindful practice has not been extensively explored and supported inside the curriculum of Western schooling. Albrecht, Albrecht and Cohen (2012) argue that one reason for this lack of support is that vague definitions of mindfulness are often left to personal interpretation, which in turn contributes to discomfort concerning the implementation of mindfulness within school-based settings. There are many definitions of mindfulness; however, some of the following are conducive when bridging mindfulness to growth mindset. Brown and Gerbarg (2009) propose that mindfulness is a way to assist in perceiving reality more lucidly in order to build an enhanced understanding of oneself and the surrounding environment, which will help one reach fulfillment. Mindfulness is a deliberate practice to move beyond embedded habits of the mind and become free of false perception; as a result, one can construct past and future experience in the present moment (Holland, 2004). Kabat-Zinn (2003) described mindfulness as paying attention in a particular way, in the present moment, non-judgmentally. Mindfulness can be operationally defined as the self-regulation of attention towards present-moment experience, complemented by an enquiring, open, and accepting stance. A definition more related to education describes mindful practice as *building habits of the mind* (Roeser, Skinner, Beers & Jennings, 2012). These habits enable one to gather

data through the use of all senses, to be aware of and reflect on one's experience in an unprejudiced manner, to be adaptable when problem solving, and to control one's emotion.

Looking at themes and patterns invoked within these different definitions, one could settle on the understanding that mindfulness is purposeful, present-mindedness supported by past and future to help build deeper understanding of oneself and the surrounding environment. Mindfulness practice therefore is a perfect fit for developing student growth mindset, as it enables the student to embrace challenge and discredit false perceptions of their personal abilities. However, selecting operational methods for using mindfulness in the classroom is a daunting task for someone new to this process.

Rybak (2013) investigated how to acquire a sense of wellbeing through mental practices within a counseling situation. When participants used visualization and focus techniques, they experienced an evolutionary shift in perspective, transitioning from a mode of self-preservation to a broader and more compassion-based perspective. Mindfulness-based training and mental skill development enabled subjects to become more emotionally resilient (Rybak, 2013). Participants were able to form and strengthen new neural connections, which served to recalibrate responses to stimuli, thus creating new and more appropriate responses to uncertainty. Replacing anger with inquisitiveness and willingness enabled participants to see the uncertain situation as a chance to discover and learn something new. Participants flourished by moving towards accomplishing goals and weathering negative events (Rybak, 2013). Becoming coherent with their environment allowed the participant to work in a holistic manner to unite physical, emotional, intellectual and spiritual systems to appropriately address different life circumstances.

The use of modified Mindfulness-Based Stress Reduction (mMBSR) (Flook, Goldberg, Pringer, Bonus & Davidson, 2013) was helpful in building an awareness of the surrounding

environment. Teachers benefited both personally and professionally from the reflective discipline that mindfulness practice promotes. Although mindfulness practice is grounded primarily in attention and awareness, Flook et al. (2013) found that it involves many measurable physiological and psychological benefits related to the reduction of physiological stress and increased differentiated activity within the brain. Implementation of the Cultivating Awareness and Resilience in Education (CARE) assisted teachers in dealing with the public pressure to broaden the educational agenda (Jennings, Snowberg, Coccia & Greenberg, 2011). The CARE professional development program used mindfulness practices to positively impact teacher wellbeing, motivational orientation, and feeling of self-efficacy.

Meditation is a specific mindfulness practice associated with decreased stress levels and has been used both inside and outside of the classroom environment. Holland (2004) suggests that a combination of two different forms of meditation (*Samatha* and *Vipassana*) and somatic education involving yoga is a powerful way to connect students to their own minds and bodies. The goal of this process is to embolden students to foster insight and overcome personal challenges. *Samatha* is a way of “settling the mind in a state of equipoise before applying it to the inquiry into the nature of reality” (Wallace, 2011, p. 89). It emphasizes sustained and controlled concentration as a means of attaining peacefulness and calm. A singular focus on a symbol, chant, or focal point enables a person to quiet the distractions of wandering thoughts and keep a centered focus and sense of momentary calm. *Vipassana* is similar to *Samatha* but emphasizes insight through the practice of deep concentration on a present moment (Holland, 2004). As one observes oneself, non-judgmental awareness and acceptance is created. *Vipassana* also involves the use of a focal point but, unlike *Samatha*, the focal point serves as a gentle anchor in which other phenomena can be observed and allowed to disperse.

Yoga breathing is another known strategy used to cultivate a point of focus, and can create a bi-directional relationship between the body and the mind. Yoga breathing, referred to as *pranayama*, is considered one of the Eight Limbs of Yoga that was systematized (Brown & Gerbarg, 2009). The life-force, life-air, vital breath—or strong-lung, as translated from Tibetan—creates control over, or expansion of, energy (Sovik, 1999). The manipulation of breath can affect an individual’s level of consciousness and create a realization of enlightenment by eliminating karmic airs and creating pathways within the body (Brown & Gerbarg, 2009). The use of purposeful in and out breathing leads to culmination of four frames of reference—the focus on the body, feelings, mind, and mental qualities—and the ability to have clear-knowing and release (Holland, 2004).

The use of mindfulness and yoga breathing could be very helpful in assisting students to build the proper perspective about their ability to change their mind and grow their brain. Calling forth challenges and awakening insight into their true perspectives about themselves within their own learning environment would enable the student to create a peaceful understanding of their own habits (Napoli, Krech & Holley, 2005). A student would become more comfortable with challenging work due to their ability to shed their protective and unproductive insecurities. Visualization and the settling of one’s mind through the use of Samatha or Vispassana could actually enable the student to “see” their brains creating new neuro-pathways while engaged in effortful practice.

Challenge in Developing Mindset. Students with a fixed mindset regard challenge, setbacks, and mistakes as indicators of a lack of cognitive ability (Dweck, 2007). Aronson, Fried and Good (2002) established that students with fixed mindsets respond negatively to under-par summative assessment and performance, and often never recover. Fixed mindsets associate hard

work with low intelligence, believing that smart students shouldn't have to work hard to obtain information reference. Gifted learners reduce their effort and interest in learning tasks when they become challenging, and appear disinterested rather than cognitively incapable (Dweck, 2010). In a study by Good, Aronson and Inzlicht (2003), first-year college math students showed that brain activity was only heightened upon discovering whether an answer was correct or incorrect. If the answer was incorrect, students with a fixed mindset demonstrated little brain activity when correctional work was presented, which impeded their ability to learn from their mistakes.

In contrast, students with growth mindsets confront their deficiencies and correct them, as they understand that challenge is a necessary component of learning (Dweck 2007). Good, Aronson and Inzlicht (2003) discovered that brain activity increased significantly during work revisions in learners with growth mindsets, thus affording the learner extended opportunities to understand curricular concepts.

Development of Resilience. Development of a growth mindset influences students' levels of resilience (Dweck, 2006). Blackwell et al. (2007) found that highlighting students' potential to change is essential to developing resiliency. Adolescents internalize the social labels they have acquired and have great anxiety over issues of social status and peer exclusion (Birnbaum, Deeb, Segall, Ben-Eligyah & Diesendruck, 2010). However, Yeager and Walton (2011) indicate that adolescents are not trapped in a fixed mindset; they can be led to accept more of an incremental or growth mindset framework. Tangney, Stuewig and Mashek (2007) found that self-blaming attributions could be replaced with feelings of self-acceptance within a social context by interrupting the student's potentially negative interpretations of the situation.

The theory of "flow" is connected to growth mindset in its relationship to challenge. *Flow* is a theory that explains the phenomena of concentration and deep enjoyment. According to

Csikszentmihalyi (1997), a person is considered to have entered into a state of flow when they are completely absorbed within an activity. Flow theory involves many different variables interacting within any environment in which a person is engaging in a task. Egbert (2004) described the flow experience as being “in the zone,” “blinking out,” or “having the touch.” To create an environment conducive to producing flow there must be a balance of skill and challenge, opportunities for intense concentration, clearly-defined tasks, and goal statements (Egbert, 2004). The learner will then want to further explore the experience to analyze the learning and success that occurred throughout the activity. Snyder and Tardy (2001) state that group flow can occur as a dialogue between teacher and student, and individual flow can contribute to the level of group flow within the proper environment. Flow experience can transcend social class (Allison and Duncan 1988). Csikszentmihalyi (1997) suggests that activities that support flow can also transcend culture when activities are personalized to invoke an intense interest within the task.

How students grapple with challenge and their perceptions of their own abilities or disabilities is the guiding question within the upper left quadrant. Looking at the phenomenon from the inside is very important because it enables the learning to have true perspective. The different mindfulness practices enable the learner to have a more pure and actualized understanding of challenge and the necessary role it has in their learning. Exploring challenge within the upper left enabled me to first look at and question students’ perceptions about challenge. This helped me take an informed swing down into the lower left and enabled me to have an informed view of the collective lower left.

Mindfulness and Challenge in the Lower Left (“Cultural”) Quadrant

Mindfulness in the lower left quadrant is expressed mainly in how teachers create a classroom climate conducive to embracing both mindfulness practices and challenge. According to Dweck (2010), teachers need to ensure they are directly teaching mindset and how the brain has the capacity to change itself to positively impact a learner’s mindset. Creating a challenge-based classroom, which embeds vernacular that encourages growth mindset, is discussed in the upper left quadrant. Proper scaffolding in the problem-based classroom is essential to the development of growth mindset.

Direct teaching of mindset. Dweck (2010) found that directly teaching students about incremental and entity theories, and how brains are trained by forming new neural pathways, could help develop growth mindset within the student and increase their overall grade point averages. Blackwell et al. (2007) demonstrate that a decline in ability could be reversed with incremental theory intervention through teacher messaging centering on the importance of taking on new challenges. Aronson, Fried and Good (2003) contend that directly teaching students about the theories behind mindset was an effective strategy. Students transitioning into junior high improved in math performance after learning about the expandability of intelligence (Dweck, 2006), while the gender gap in math and reading scores disappeared (Good, Aronson & Inzlicht, 2003). Good, Aronson and Inzlicht (2003) noticed that, after students were taught about the growth mindset, the greatest increases in academic achievement occurred in students who were at the greatest disadvantage or most susceptible to stereotypes. These students were exposed to both the incremental and reattribution intervention, which focus mainly on the malleability of intelligence. Pejorative statements had led to self-blame within these disadvantaged learners, and the development of growth mindset assisted in their understanding

that one's cultural situation is variable and can be controlled and changed for the better (Good, Aronson & Inzlicht, 2003). Learners developed a fixed mindset if prone to making social comparisons; teachers could best support learners in their development of growth mindset by prompting the learner to internalize their own personal progress (Schroder, Moran & Donnellan, 2014).

Role of Feedback and Praise. Teacher practices can be conscientiously shaped to emphasize the dynamics of learning and knowing, which helps develop growth mindset. However, teachers and parents can also sometimes enforce entity theory and therefore enforce a fixed mindset with the misuse of praise. Mueller and Dweck (1998) found that praising the effort rather than the ability enabled students to move to a more incremental framework because effort was something they had control of. A classroom structured around emergent knowing—which includes insights into the background of the people behind the knowledge rather than focusing solely on statistically-driven objectified knowledge—is conducive to building a growth mindset within student learners (Davis, Sumara & Luce-Kapler, 2015).

Blackwell, Trzesniewski and Dweck. (2007) emphasize that learning tasks should allow the learner to become the central agent in their learning. The freedom to be creative and depart from structured plans in order to dwell on concepts of personal interest and importance encourages ownership and the formation of an incremental framework of understanding. Students also need to be provided the time to think deeply about questions posed throughout curricular explorations. Teachers should encourage the use of “yet” whenever limitations are identified in a learning situation. Dweck (2006) suggests that this particular word provides a powerful way to help students develop an understanding that learning is a lifelong process worthy of persistent effort. She further asserts that teacher messaging and curricular delivery has

a profound impact on students' mindset. Incremental, or growth, mindset can be fostered if the teacher uses purposeful dialect, provides accurate information about brain growth, and focuses the classroom environment upon the idea of personal effort and not ability. The growth mindset is essential for generating authentically new and more deeply oriented academic understanding (Blackwell et al., 2007).

Jonas (2010) recapitulated Friedrich Nietzsche's and Jean-Jacques Rousseau's theories regarding pity and education. Educators altruistically try to alleviate student suffering in the classroom, which Jonas (2010) deems detrimental to learning. Compassion, according to Jonas (2010), must be carefully employed because compassion can usurp necessary educational suffering that, if left uninterrupted, will effectively build autonomy and confidence within the learner. Jonas (2010) summarizes Nietzsche's stance that knowledge must hurt to be beneficial. Mintz (2008) argues that many educators try to mitigate struggle for their learners and protect students from challenge and tension. Students are rescued too often, which is detrimental to their learning. Within the struggle is the learning, and the movement between the known and unknown is where students internalize their understanding. Both Rousseau and Nietzsche regarded education as a social institution that molds human beings into a prefabricated form rather than fostering self-disciplined courageous and autonomous citizens (Jonas, 2010). Jonas (2010) summarizes Rousseau and Nietzsche's agreement that, to avoid pity, students need to achieve self-mastery, since much of the suffering we find in students is good for them and should not be alleviated—and sometimes should even be promoted. The goal is to see students' difficulties not as moments of suffering but of self-mastery (Mintz 2008)—experiences serving to create an individual who is more autonomous (Jonas, 2010). The goal of an educator must also be to develop self-mastery within herself so she can likewise support the development of the trait in

her students.

Traditionally, Western classrooms believe that the best type of classroom is a positive praise-filled environment (Dweck, 2007). The student is seen as a vessel and the teacher as the primary agent ensuring learning occurs by pouring information into the learner in the most expeditious manner. Teachers have a long history of injecting their support in order to reduce any misunderstanding. Hattie and Timperley (2007) studied the timing of the feedback loop from teacher to student and student to teacher in accordance with the proper use of taught learner strategies. Opportune feedback was required to decrease the amount of corrective work after summative evaluations were conducted. Tenenbaum (1986) found teacher feedback and proper cuing essential to the learning process. If the teacher was effective in delivering the information necessary for the clarification of curricular concepts, the student could evaluate the correctness of their response and adjust their understanding accordingly.

Liu (2009) suggests that the use of selected teacher-taught strategies and feedback intertwined with instruction is the most effective way to reduce student misunderstanding. Feedback serves to tune and restructure metacognitive and domain-specific knowledge. Finally, Hattie, Biggs and Purdie (1996) note that specific teaching should decrease discrepancies between what is understood and what is not understood, and should situate itself around the processing, regulatory, and self-levels. Dweck (2006, 2007), Yeager and Walton (2011), and Yeager and Dweck (2012) have decidedly contrasted this notion by framing challenge in a different way. Within the traditional feedback chain, challenge is seen through a pathologic lens, promoting the notion that an effective teacher is obligated to successfully expunge any challenge the student might encounter. Hence, challenging work would be seen as a failure by the system and not embraced.

Problem-based Learning. Students engaged in problem-based learning (PBL) apply their learning to real-world problems. Hmelo-Silver, Duncan, and Chinn (2007) argue that problems should be presented in authentic work-type situations so students can orient their learning on a skeleton of a real issue. Within a PBL-based classroom, tasks are authentic in their design and each task reflects the complexity of the natural environment in which the task would be present. The learner also needs to engage with and commit to the constructed process he used to solve the problem presented (Rotgans & Schmidt, 2011). Each step of the process is designed to challenge the learner's preconceived notions. Students are encouraged to work through a process that tests their ideas against alternate thoughts or solutions. Within PBL-based classrooms, ample opportunities are provided to support reflection and introspection of the knowledge generated and the pathways presented. The teacher is a facilitator of knowledge within a PBL scenario (Schmidt, Rotgans & Yew, 2011), and assists in the activation of previous knowledge to help students discover new understandings, ensuring the problem presented is logically and defensibly solved.

Problem-based learners engage in theory construction through the development of an initial theory about the phenomena. Through research and discussion, students can then test their understanding about their initial assumptions. Problem-based learning “fosters a feeling of autonomy, engagement and empowerment” (Rotgans & Schmidt, 2011, p. 466). Schmidt et al. (2011) supported the notion that PBL promotes a higher level of engagement than teacher-directed models of education.

Scaffolding within IL and PBL. Problem-based learning (PBL) and inquiry-based learning (IL) are often mistaken for minimally-guided, constructivist learning. Raes, Schellens De Wever and Vanderhoven (2012) contend that all learning consists of the construction of

knowledge, and that problem-based learning is far from laissez-faire. Kirscher, Sweller and Clark (2006) argue that minimally-guided instruction provides little to foster learning. However, Schmidt, Rotgans and Yew (2011) suggest that students in PBL and IL environments learn content as well as subject-specific reasoning skills and practices, which they then apply to real-world problems. This process requires the student to become a sense-maker developing an evidence-based platform on which to communicate their understanding (Belland, Glazewski & Richardson, 2011).

PBL and IL share the same scaffolding philosophy (Wirkala & Kuhn, 2011), which incorporates some direct instruction, exposure to hands-on materials, and use of assessment strategies to inform and guide mini-lessons throughout the inquiry. Learning within these two models is co-constructed between the student and teacher (Belland, Glazewski & Richardson, 2011). This type of learning environment enables the learner to be involved in difficult tasks that are challenging and engaging, yet manageable. Scaffolding encourages that questions are offered as checkpoints throughout the process so the student not only masters certain tasks but can explain and defend why the task should be done that particular way (Wirkala & Kuhn, 2011). Scaffolding also enables opportunities for the work to be problematized (Raes, et al, 2012) and for understanding to be held up to scrutiny, discouraging mindless support or apathy.

Within the scaffolding process, teachers are far from a hands-off agent; their role is defined more as a provocateur and mentor rather than as a direct conduit of knowledge. Scaffolding strategies encourage sense-making, process management, articulation, and reflection. Disciplinary thinking becomes explicit in the scaffolding process, and the choice of how to demonstrate student understanding is salient. Providing instruction and support at the proper time is vital for student success. Teachers enter into the PBL structure when it is deemed necessary to

reduce the cognitive load by explaining certain baseline areas. The PBL learning structure is designed to allow students to free up their focus and enable more concentration on the most relevant information. Structures provided for students to record and document their learning while engaged in complex tasks enable students to visualize their progress and revise their learning goals (Rotgans & Schmidt, 2011).

Zone of Proximal Development. The zone of proximal development (ZPD) is defined as “the distance between the actual development level as determined by independent problem solving and the level of potential development as determined through problem solving with adult guidance or in tandem with more capable peers” (Levykh, 2008, p. 83). Vygotsky’s theory stands on the belief that learning leads development and where there is no struggle, there is no development (Harland, 2003). ZPD is a complex structure that is not just a sum of its parts. The parts are the participants within the learning equation, their interaction with their environment, and the type of learning tools and mediation used. ZPD is not only limited to the development of an intellectual self, but a conscious self as well (Harland, 2003).

Bodrova and Leong (2007) describe the zone of proximal development as the process of taking students lacking in self-regulation or “the ability to control emotion, attention and physiological responses to stimulation through cognitive and behavioural process and strategies” (Bodrova & Leong, 2007, p. 3). Self-regulation is needed for academic success and for bringing students into a process of mediation that increases their ability to self-regulate through planned opportunities and scaffolding. This process allows self-correcting and intrinsic-motivated improvement to occur, resulting in the creation of students who have more focused attention, deliberate memory, positive task orientation, and cultural tools (Hakkarainen & Bredikyte, 2008).

Vygotsky outlines how a struggle takes place between both the student and her learning

environment as well as between her high and lower mental functions (Levykh, 2008). Vygotsky acknowledged the negative and emotionally-laden connection to both forms of struggles or tensions Levykh (2008), but felt that this strained relationship was necessary for growth. Struggles within Vygotsky's theory of proximal development created new formations of intellectual and emotional "super systems," which "penetrate the deepest layers of the culturally developed personality, and emerge in every stage and process of the child's cultural development" (Levykh, 2008, p. 87). These newly-developed capacities allow for higher-order systems that are deeply connected to context and environment and replace simple, elementary functions.

The cultivated classroom culture is a phenomenon viewed within the lower left quadrant. Teacher practice, communication, and pedagogical stance determine what type of environment students will interact with each day. Students are also central agents within the classroom culture: they are numerous, interested clientele who shape the culture and determine tasks and topics. However, the lens through which the tasks and topics are presented and taken up invariably rests with the teacher.

Conclusion

It was the intention of this literature review to articulate the field of study that questions the impact of mindfulness practices on personal mindsets and student perception of challenge. The perception the learner adopts in response to challenge has a significant impact on academic and social success. If students can use mindfulness practices that are implemented within the scaffolding process of problem-based learning to embrace challenge, they will develop a growth mindset and therefore become more tenacious and resilient within their learning environment.

Chapter 3: Methodology

Introduction

The purpose of this Integral Methodological Pluralism (IMP) study was to examine, first, how school students perceive challenge and, second, the effects that mindfulness practices might have on developing comfort with challenge.

Challenge is often at the heart of many of the new and engaging delivery models presented in the classroom (Yeager & Dweck, 2012). Students are often required to be central agents and creators of their own knowledge as they participate in rigorous and meaningful tasks. Students need to familiarize themselves with the processes associated with being successful in task-designed environments, such as multiple revisions and iterated problem solving. Yeager and Dweck (2012) further noticed that in problem-based settings where answers are not readily available, students need to develop comfort with challenge while cultivating both emotional and academic stamina. However, many students are reluctant to actively engage in this type of learning. While some students seem to thrive within challenging situations, others completely disengage or become extremely anxious, seeming to conflate “challenge” with “inability.”

Questions readily arise from looking at challenge within a school-based setting. How can we develop a sufficient level of comfort? What type of practical strategies could be used to develop comfort with challenge? Why are certain students more comfortable with challenge? Can comfort strategies be taught? These questions are among those that arose through the process of solidifying the research proposed here.

Many of the guiding questions prompted me to understand that challenge is a perception—that the degree to which a task feels challenging rests on the participant’s cognitive response to that task. Since our perceptions are internal structures residing within our minds,

mindfulness or contemplative approaches could be soundly connected to our perceptions.

Mindfulness has been shown to allow perceptions to become apparent and tangible, enabling one to reflect non-judgmentally on how their perceptions interact with the daily world (Kabat-Zinn, 2003). This insight led me to wonder, first, whether a positive perception of challenge would benefit learners while they work within a problem-based setting, and, second, to what extent can mindfulness practices positively affect learners' perception of challenge.

This study was primarily concerned with experiential phenomena, as the previous discussion reveals. For this reason, I first focused on the interior personal (upper left) and interior cultural (lower left) quadrants of the AQAL model. Although this study was primarily concentrated within the interior left of the four integral quadrants, the right exterior quadrants were not ignored and were essential in informing and supporting research conducted within the left quadrants.

The research questions I investigated within the four quadrants were as follows:

- a) What perceptions do students have about the role of challenge within their learning process?
- b) How do teachers teach and create a culture of mindfulness?
- c) How is student behaviour impacted by mindfulness?
- d) How does the system influence the development of mindfulness practices within the classroom setting?

In this chapter, I attend to Wilber's ontological and methodological pluralism, explaining and connecting this attitude to my identified research questions. Focusing mainly on the left side of the AQAL model, phenomenological, structuralistic, hermeneutical, and ethnographic methodologies are explained and contextualized within the interior (left) quadrants.

Methodologies are discussed within the context of this research study and linked to each of my research questions. I also introduce the research site and describe the participants. The research cycle is explained and supported with a timeline; both elements are intended to help clarify the research project. Finally, ethical considerations, study trustworthiness, limitations, and delimitations of the study are presented.

Methodological Attitude: Integral Methodological and Ontological Pluralism

Wilber's (2007) construct of IMP emerges from his survey of the methodological landscape and consequent attempt to integrate and organize many of the accepted methodologies. As already presented, this construct uses four distinct quadrants divided into the interior (left side) and exterior (right side), and the singular (upper half) and plural (lower half). Crossing the axes of interior–exterior and individual–collective generates the quadric grid illustrated in Figure 5 below. Viewing a phenomenon from each quadrant enables one to have a different perspective of the same phenomenon. Wilber (2007) suggested that IMP can effectively enable individuals to explore the world interactively from their own experiences, as opposed to simply viewing it from the accepted collective experience. Together, the quadrants outline the four different “worldspaces” or perspectives one can take on reality. As indicated in Figure 4, the quadrants include the experiential “I” (subjectivity), the cultural “We” (intersubjectivity), the behavioural “It” (objectivity), and the systemic “Its” (interobjectivity) (Esbjorn-Hargens, 2008).

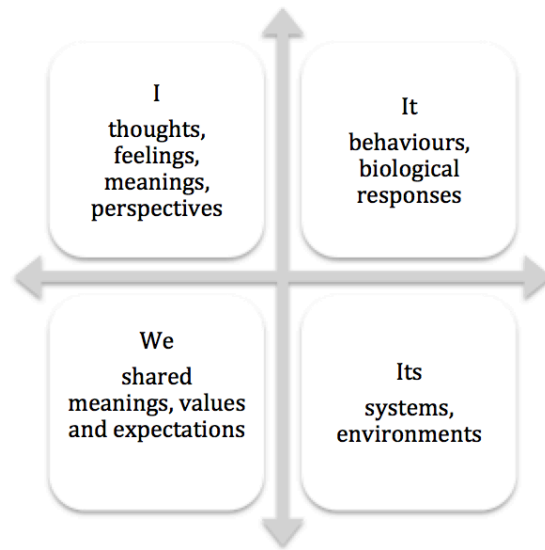


Figure 5. Wilber's quadratic grid. Adapted from *Integral Spirituality* by K. Wilber (2006).

IMP connects major methodologies within contemporary research, coordinating and organizing different approaches in an attempt to gain a robust understanding of a chosen phenomenon (Esbjorn-Hargens, 2006). Figure 6 demonstrates how the identified research questions were placed within the different integral quadrants. This approach emphasizes an assortment of fundamental perspectives, which align themselves with both modernist and postmodernist epistemologies, and focuses on studying phenomena and knowledge created from its occurrence in all four quadrants (Martin, 2008).

	Individuality		
Interior	<p style="text-align: center;">Consciousness Quadrant</p> <p>Phenomenological and structuralism view of the perception of challenge.</p> <p style="text-align: center;">Question: What perceptions do students have about the role of challenge within their learning process?</p>	<p style="text-align: center;">Behavioural Quadrant</p> <p>Empirical view of diagnostic and standardized assessment tools for assessing levels of comfort with challenge and impact of mindfulness.</p> <p style="text-align: center;">Question: How is student behaviour impacted by mindfulness?</p>	Exterior
Interior	<p style="text-align: center;">Cultural Quadrant</p> <p>Hermeneutical and <u>ethnomethodological</u> view of how mindfulness strategies are lived and embodied within the classroom culture.</p> <p style="text-align: center;">Question How do teachers teach and create a culture of mindfulness?</p>	<p style="text-align: center;">Systems Quadrant</p> <p>Systemic analysis of social <u>autopoietic</u> analysis of existing and needed supports for mindfulness strategies</p> <p style="text-align: center;">Question How does the system influence the development of mindfulness practices within the classroom setting?</p>	Exterior
	Community		

Figure 6. Specifying, locating, and situating my research interests. Adapted from *Integral Spirituality* by K. Wilber (2006).

Wilber (2007) further states that we cannot merely look at any phenomenon from one of the quadrants; rather, each quadrant has an inside and outside view of the particular phenomenon: “The outside view is how it looks, the inside view is how it feels” (p. 154). To enable a rich analysis of the impact of challenge and how mindfulness can impact one’s view of challenge, I would have preferred to engage with all four quadrants to investigate this phenomenon. But, due to time, resource, and other constraints, I focused primarily on my two questions within the left quadrants, and incorporated both the inside and outside views within

these quadrants. As for the methodologies employed, within the upper left quadrant I used phenomenology for the inside view and structuralism for the outside view. Within the lower left quadrant, I drew on hermeneutics for the inside view and ethnography for the outside view.

Challenge and mindfulness are multifaceted phenomena. Therefore, both should be considered multiple objects, not singular entities; they are real and complex in nature. Integral ontological pluralism is an attitude or way of seeing that complements research methods that aim to expose and explain the phenomenon in its natural and dynamic environment. Integral ontological pluralism is unique due to its inclusion of all three ontological positions its embrace of the idea of *enactment* (Esbjorn-Hargens, 2010). Enactment, according to Esbjorn-Hargens (2010), refers to “specific methodological practices that bring phenomena into being” (p. 146). To fully grasp the intertwined relationship of the role of challenge, mindset, and mindfulness within an educational context, a combination of approaches will be needed to extract relational or intricate points of data. Esbjorn-Hargens (2010) also stated that integral ontological pluralism guides the researcher towards choosing methods that participate in the enactment of realities rather than selecting methods that are limited to only discovering and depicting the phenomena.

Integral Methodological Research

Establishing a better understanding of how challenge is perceived by school students and of which mindfulness practices assist in building students’ capacity to deal with challenges led me to use a qualitative multi-perspective, pluralistic approach. There are differences between contemporary meanings of “mixed-methods,” “multi-methods” (or “multiple methods”), and Integral Methodological Pluralism research. For example, Creswell (2014) defines mixed-methods research as using and mixing both qualitative and quantitative methods in a single study and integrating the data. This definition is offered and often enacted without questioning the

nature of the phenomenon under study or the epistemological positioning of the researcher. Similarly, multi-methods research typically involves qualitative and quantitative projects that are already comprehensive on their own, and then brought together to create an understanding of the essential components, which are then triangulated to form a comprehensive whole (Morse, 2003). Both mixed and multi-methods research have different definitions and processes that differ from IMP, in that IMP research study does not use triangulation or data integration, but is paradigmatic; it employs long-standing methodologies and weaves them together through the use of three integrative principles: nonexclusion, unfoldment, and enactment (Rentschler, 2006). In particular, IMP is mindful of diverse sensibilities concerning the nature of knowledge and of claims to truth, seeking not to collapse diverse perspectives into a singular insight but to generate more nuanced understandings by preserving the integrity of insights generated through varied modes of inquiry and interpretation.

To that end, qualitative research methods were used on the personal and cultural left side of the integral model, since these methods were developed to observe and explain happenings in natural or naturalistic settings. This type of research is thus well fitted to this study, which was undertaken in learning settings consisting of real children being asked to engage in real tasks. Data collection techniques included direct interviews, contextual descriptions, and close observation, which allowed the local context to be highlighted, not disregarded (Creswell, Klassen & Plano Clark, 2011).

The right-side exterior quadrants were not explored through a traditional diagnostic tool to test for mindfulness, but rather through the combination of the exterior ethnographic lens combined with the exterior structural lens. The two exterior lenses on the right side of the quadrants enabled me to see student behaviour from an external view.

This research approach also permitted me to juxtapose the complementary ubiquity of certain factors involved within the known phenomena, and to search for crucial patterns of association of previously unknown processes and the range of their effects (Creswell et al., 2011). Methodologies were not siloed but cross-referenced in order to purposefully use the strengths of each associated method. The integration of data was essential within this study, and the desire to integrate this data was inspired by Wilber's integral pluralistic attitude. Qualitative research attitudes within this study also placed more emphasis on subjective experiences in social contexts, allowing more insight into how people think and feel about circumstances while avoiding passing judgment about whether the feelings are correct or valid (Creswell & Plano Clark, 2007).

Left Quadrant Methodologies and Methods

Upper Left (“Consciousness”) Quadrant.

Phenomenological 1st person view from the upper left. Within the individual interior (“I”) quadrant, I employed a phenomenological lens to examine how a student experiences challenge and perceived its role within her learning experience. The use of this phenomenological method of investigation engendered a rich understanding of how challenge is perceived by the school learner within a learning context. It was a goal to reduce my judgments, assumptions and theories to emphasize the participants' perceptions and different qualities of the experience. That emphasis assisted in examining the overall structure, or the Gestalt, of the encounter (Merleau-Ponty, 1996). Since emphasis was placed on consciousness as a medium or background for experience, which accentuated the ways that embedded structures give rise to particular contents (van Manen, 2007), phenomenology was considered to be a dependable methodology to investigate participants' perceptions of challenge.

According to Starr (2014), since phenomenology takes into account almost everything that creates a human experience, it creates a vivid picture of the experience explored. What makes an experience conscious depends on a certain awareness one has while living and performing throughout their daily life. Nonetheless, as Heidegger (1985) pointed out, we are often unaware of our customary patterns; thus, phenomenology has the power to explicitly unveil our semi-conscious and sometimes even unconscious mental activities. We are “thrown” into our experiences and we are unable to separate ourselves from them (Starr, 2014). We can only hope to have a shared interpretation of our experiences within a certain context. Van Manen (2007) described the pathic power that phenomenological reflection has for “in-seeing,” or getting to “the heart of things.” Lifting up an experience from pre-reflection and giving that experience context, awareness, and shape enables a primal awareness of the experience. Edmund Husserl (cited by Thomas & Pollio, 2002) offer the definition of “lived experience” as the inward perception of internal consciousness. Combining these definitions gives insight as to how a phenomenological analysis of challenge could provide a clear understanding of what challenge is in all its forms.

The phenomenological view from the upper left took into account the intertwined nature of the participants and the school culture in which they are involved (Mottern, 2013). This study built an understanding of how challenge was perceived, individually absorbed, and filtered through each participant’s lens of consciousness (van Manen, 2011). Within this study phenomenology emphasized experience and everything that experience entails: far past just sensory perception, phenomenology encompassed the full experience of fears, emotions, imagination, thought, and aspirations.

Phenomenological methods and data analysis. There were two different methods

employed within this quadrant: the Frayer Model, and in-depth interviews. I started in the upper left, using the Frayer model to help establish language associated with the phenomenon of challenge. Responses from the Frayer model were examined for relationship, commonalities, and frequency of terms. Once a general understanding of challenge was acquired I created semi-structured interview questions and used in-depth interviews with select members within the classroom community.

Data collection began by using a Frayer Model to construct a basic overview of the terminology that participants attach to the term challenge. The Frayer model is a graphic organizer used in concept attainment. It is a systematic procedure to uncover terminology, first used in social studies and mathematics in response to students demonstrating the inability to fully define and develop an understanding of contextual vocabulary (Munroe & Pendergrass, 1997). The model is broken into four quadrants that surround a central circle, which contains the subject or topic being defined. The top space is used to list all the essential characteristics and non-essential characteristics or supportive details. The bottom space is used to list all the examples and non-examples connected to the topic. Challenge was the central word used to guide the participant responses. Figure 7 presents an outline of the Frayer Model that was used. Once the initial Frayer Models were completed I collected and examined student responses. The collected responses helped guide the creation of the semi-structured questions used to conduct the in-depth interviews.

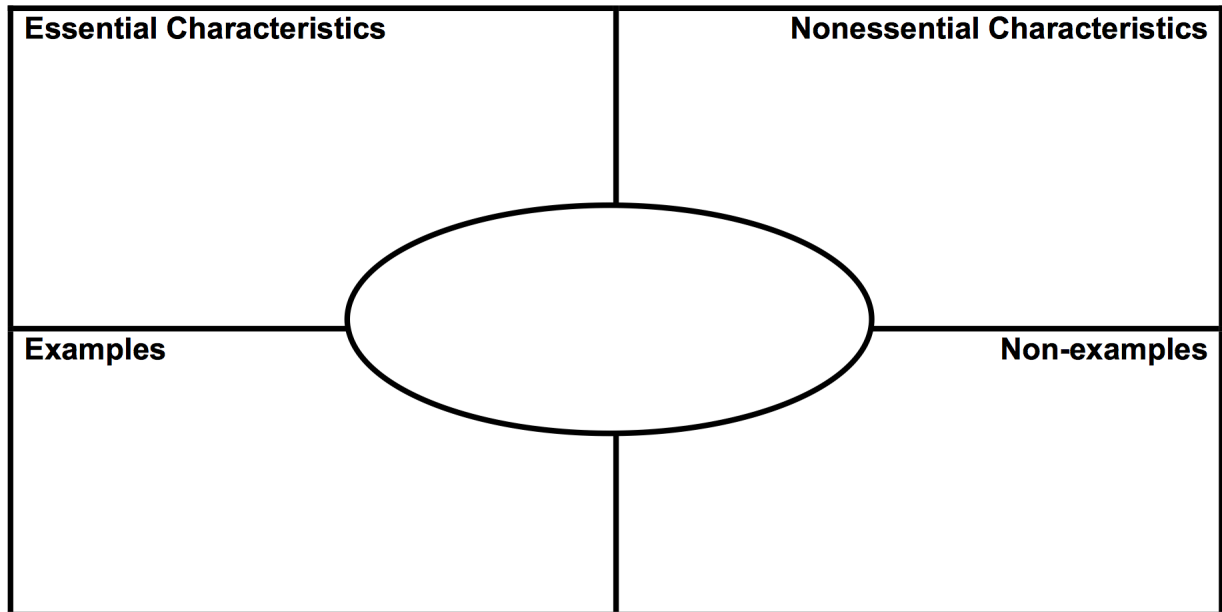


Figure 7. The Frayer Model. Retrieved from <http://oame.on.ca/main/files/thinklit/FrayerModel.pdf>.

Once semi-structured interview questions were created, I started by looking at my own pre-understandings of the phenomenon of challenge. This self-analysis helped me to recognize as many of my established preconceptions or modes of awareness as possible, readying me to step into the participant’s unique world and recognize the actual phenomenon (Dowling, 2004). This process aligned with the goal in phenomenological research, which is to distinguish the phenomenon as an experiential entity with its own meaning and structure (Hycner, 1985). I was aware that it is impossible to be purely objective or achieve complete bracketing; nonetheless, it was important to strive toward that ideal. To that end, I created my own journal to identify my own positionality and listed my presuppositions (Englander, 2012), which allowed me to become as reflexive as possible and illuminate my personal biases and realities in relation to the phenomenon.

Next, the interviews were conducted and transcribed. First, literal statements were used

and any paralinguistic communication were noted. It was important at this point not to connect any type of theory or research question to the transcriptions, and to focus on extracting the verbatim communications of the interview. Next, delineation of units of meaning were accomplished by reviewing words, phrases, sentences and paragraphs, noting significant non-verbal communication, and crystallizing and condensing larger language clusters (Hycner, 1985). This process assisted in bringing forth meaning units and developed a sense of the whole (Thomas & Pollio, 2002). Once the units of general meaning were identified they could be connected to the research question, moving the general meaning units towards units of relevant meaning. Units that had no apparent connection to the research question were eliminated. At this stage, I used independent checks to verify the units of relevant meaning, checking for consistent agreement. I then created clusters of relevant meaning by grouping together meanings that had similar patterns. Determination of strong themes within the data then helped to establish a central theme. Finally, I wrote a summary for each interview discussing and explaining the different themes that had arisen from the data collected. Once the transcripts were exhausted, the thematic summary was created and presented back to the participants.

Structuralistic 3rd person view from the upper left. Wilber (2007) characterized the difference between structuralism and phenomenology as follows: “phenomenology looks for the direct experiences and phenomena, structuralism looks for the patterns that connect the phenomena” (p. 55). To understand the word *structure*, one can look to Jean Piaget’s definition. Piaget stated that structure is made up of three ideas. The first idea is *wholeness*, in the sense that a structure is much different than an aggregate. It has a sense of internal coherence, and no actual independent nature outside the structure. The second idea is that *structure is transformative*, and all new material is processed through it and by the structure itself. Finally, *structure is self-*

regulating and sealed off from other systems (Hawkes, 2003).

Levi-Strauss emphasized the interdependence and intertwined nature of social elements, maintaining that none of these elements can change without also changing the rest of the surrounding elements (Dreyfus & Rabinow, 2014). Structuralism enables a researcher to see historical and social structures and the forces that either enable or impinge on our daily work. It also permits one to discover oppositional forces that are often unnoticed yet very present, and to demonstrate how populations reinforce and perpetuate these different structures. It may be said the true nature of things does not lie within the things themselves, but in the relationships that help to construct and connect the things (Hawkes, 2003). A phenomenon is determined by the relationship it has with the other elements within the context in which it exists, and will integrate into the structure, helping to define its form and shape. The goal is to not only identify the structure but also determine how it operates within the system.

Structuralism is a good methodology to develop a complete understanding of an outside, individualistic, interior view of challenge. In pragmatic terms, what this means is that I attempted to enable the students to look objectively at themselves as they defined and perceived what challenge was. This was the point at which challenge and mindfulness started to connect. While looking at the structures and social elements that support and create challenge, the social structures became apparent in the language the student and teacher participants used repeatedly and built narratives around. This process helped create a more accurate and robust understanding of how challenge is perceived within the school learner.

Structuralism methods and data analysis. Dreyfus and Rabinow (2014) have explicated Levi-Strauss's structuralistic method, which includes the task of clearly defining the phenomenon under study as it relates itself between two or more terms, both real and supposed.

Once again, participants responded to semi-structured questions and the interviews were then transcribed. Within this first stage, initial codes were assigned to help create a sense of the prevalence of certain terms (Saldana, 2015). The responses were examined and were represented by a singular descriptive noun. This process best fit within my interview setting because it created a sense of inventory. The descriptive process helped to clarify and illuminate challenge within a learning environment and helped create a catalogue of topics that were indexed and categorized throughout second-round interpretation. During this descriptive process, codes were moved beyond labels, and I prepared the data for interpretation.

In Vivo coding was the next type of coding used. This procedure involved the use of actual words and short phrases that were kept authentic to the actual response from the participant. This approach assisted in keeping the vernacular of the participant and included any slang and cultural terminology. The technique was used because it helped honor the student's voice. In Vivo coding also took leads from repeated phrases. The use of quotations was used to help identify and separate actual phrases from my researcher notes and assigned codes. Within process coding, verbs were attached to noticeable behaviors to create a larger picture of how the participants were engaging with their environment. Monitoring and coding for observable action was helpful to layer and develop a full description and critical observation of the participant. Emotional coding was used to assist in recalling emotional experiences connected to challenge. This assisted in uncovering intra and interpersonal relationships with other participants and the environment in which the study took place (Saldaña, 2015). When clusters were identified and came together according to similarity and ubiquity, a pattern was discovered and connections were made. Charmaz (2011) describes this process as “generating the bones of your analysis and then assembling the bones into a working skeleton” (p. 45).

The literal terms were taken and then grouped together to find repetitions within the language. Once repetitions were identified they were grouped to help create different identifiable classes. Once classes were identified they were organized into identifiable stages. The stages were then examined to ascertain whether or not there were any discernable patterns or structures within the data (Wilber, 2007). The next step within the process was creating a contrast table, which enabled a clear view of the possible transformations and arrangements between the terms (Hawkes, 2003). The examination of the table uncovered some connections created within the data (Warnick 1979). The connections between the data were then examined and summarized, which enabled me to pin down the unconscious structure within the social context.

Lower Left (“Cultural”) Quadrant.

Hermeneutic 1st person view from the lower left. I examined the collective interior (“we”) quadrant of classroom culture and teacher practice through the use of a hermeneutical lens, since the lower left questions focused on discovering the existing and evolving mindfulness culture within the classroom. Moules (2008) states that we could betray hermeneutics when we believe fixed definitions to be true or real, and we must treat definitions as contingent interpretations. Interpreting text created by examining experiences and disruptions in the “life world” of the classroom assists in better understanding implicit, unsaid and explicit verbalized daily occurrences. Interpretation needs to incorporate both meaning and truth to build understanding, and the process of creating understanding is never static—it is always changing. Interpretation should seek out both familiarity and search for things that have a common ring to them; it involves a recognition that things come from somewhere and are not fabricated. Gadamerian hermeneutics asserts that understanding is bound to language and is inseparable from self-application to the current situation of the interpreter (Moules, 2008). There is also a

solid belief that we are historical—that we belong to history and must account for tradition to help us become open to the future, to what is new (Gadamer, 1990; Moules, 2008). When seeking truth, it is paramount to understand that, within Gadamerian hermeneutics, truth is a meaningful account that corresponds to the experience and is not related to worth; truth is not about being repeated, as it is resonating or lasting (Hein & Austin, 2001).

Understanding was generated through the use of detailed stories with thick descriptions of classroom culture (Crist & Tanner, 2003). I attempted to decrease the distance between researcher and participant, which assisted in opening up dialogue and unveiling common experiences related to mindfulness and challenge within the classroom. Heidegger (1985) suggested that we seek a deeper, more intimate understanding of certain phenomena since scientific testing and knowledge gather alone is inadequate. Only a robust account of the phenomenon within its context and an understanding of the need to keep possibilities and dialogue open will celebrate our embodied nature (Crist & Tanner, 2003).

Since exploring and deconstructing prejudgments and prejudices within certain situations are at the heart of Gadamerian hermeneutics (Byrne, 1998), I feel it will help to depict how mindfulness helps build awareness and brings forth our own prejudices about challenge. Illuminating our preconceptions and prejudices enables us to better understand ourselves within the world and to understand the life-world of the student within the classroom (Dowling, 2004). Leiviska (2013) defined the life-world as a dialectic relationship between the human participant and the world in which they live. As the life-world is continually being created and recreated, a hermeneutical approach combined with ethnomethodological methods was used to capture this continually evolving dialogue. Ricouer considered how all human actions could be seen as text to be examined and interpreted (Geanellos, 2000). Being able to effectively capture culture

through text is essential when endeavouring to identify and report on challenge and mindfulness as they influence school classroom culture.

Hermeneutic methods and data analysis. While conducting the hermeneutical interview, I ensured that the interviewee was the central agent. Dowling (2004) discussed the importance of the development of hermeneutic sensitivity, which cannot be taught but developed with a sense of the common (p. 32). To do this effectively, one must be aware of personal limitations and build ethical sensitivity. Radford (1991) stated that listening to all forms of dialogue, verbal and non-verbal, creates pedagogical sensitivity and new understanding. It enables others to better understand and express their often buried inner knowledge. All verbal and non-verbal communication was considered valuable within this study and was used within the transcripts.

Wilson and Hutchinson (1991) discuss the importance of recognizing the polysemous nature of text, and therefore multiple linguistic aspects were considered. My interviews included the narration of events, objects and people. These narrations assisted in developing the full context of verbal and nonverbal communication. I also recorded interactions between the student and the interviewer, as well as student interactions with other people, as these interactions are an important element in creating a holistic picture of the context (Wilson & Hutchinson, 1991). Substantive communication was noted, which included any terms that seemed exaggerated or stood out from other words or phrases. Data analysis was conducted by carefully reading and rereading the text created by the participants in order to establish general interpretations, lingering topics, and things that surprise, resonate and perturb. The goal of data analysis was to expand the data into meaning and understanding, rather than to search for themes (Gadamer, 2008). This iterative process, the hermeneutic circle, helped develop a sense of the whole and avoid fracturing data. Moules (2008) described the hermeneutic circle as a metaphorical way of

conceptualizing understanding and the process of interpretation. The process propagates recursion between the whole and the parts, and happens through the reading and rereading of the text and then reflecting, writing, engaging in dialogue with participants, making interpretations, and “finding language to describe language” (p. 15).

Hermeneutic interpretation also involves dialogical-dialectical interchange among the interviewer, subject and the context (Gadamer, 2008). The interpretation then proceeded through iterative cycles that included an objective explanation of what was included in the text.

Interpretive writing in hermeneutics is heavily reliant on language, and since language is limited, it was acknowledged that some meaning was lost. The hermeneutic writing was exaggerated to avoid flattening out experiences. I then moved towards creating an understanding of what was important within the text. To do this effectively, I looked at conformity, congruency and generalization within the data, which assisted in developing a full understanding (Debesay, Naden & Slettebo, 2008).

Heidegger (1985) believed that, within hermeneutic research, understanding is not possible just through knowing something; rather, it is possible because of relationships formed. Heidegger’s term *Dasein* directly translates to *being there*, and describes “an awareness of one’s being, belonging to the world, availability and use of the world and relating to others” (p. 115). Gadamer (1990) stressed that it is impossible to lose one’s prejudices and therefore we shouldn’t attempt to absolve ourselves of our pre-understandings, since, in doing so, one might misunderstand meaning. Finally, I shared my understanding with the participants so together we developed some conclusions about how the phenomena of challenge and mindfulness interact and exist within the context of a learning environment.

While interpretive methodologies, such as phenomenology and hermeneutics, do not lend

themselves to the empiricist ideals of validity, rigor and generalizability, there are nonetheless standards by which they might be assessed. In particular, rather than objective validity I sought viability (e.g., Does the account have the “ring of truth?”), and instead of rigor I aimed at reasonableness (e.g., Is the account believable?). To this end, I employed other sympathetic readers to read and further interpret. (In the early stages, I did not discuss the interpretation with the participants, to keep in line with Gadamerian hermeneutical beliefs. However, as noted earlier, discussions with the participants were eventually brought into the cycle of interpretation.) And instead of generalizability, I was concerned with transferability, looking at future possibilities and connections to experiences within different contexts. And dependability relied on the documentation of the process in which the interpretation was made. To achieve these qualities effectively, I endeavored to blend together *rhetorica* (a good account) and *critica* (a critical attitude). I combined these emphases in the final summary, which helped develop a rich description of the culture of mindfulness within the classroom (Moules, 2008).

Ethnomethodology 3rd person view from the lower left. Ethnomethodology helps analyze social life and interactions, focusing primarily on natural language and actions within a given context. Heritage (2013) described ethnomethodology as a way to investigate the genealogical relationships between social practices and accounts of those practices. The goal of ethnomethodology is to make sense of immediate social surroundings, which enables one to highlight and examine taken-for-granted routines that are collectively constructed. The development of “reality generating mechanisms of everyday life” (Coulon, 1995, p. v) enables a population to analyze and critique their daily routines and cultural norms. It consists of the analysis of the methods or procedures people use to conduct the different affairs they accomplish in the daily lives. Garfinkel (2005) called it “practical sociological reasoning,” since

ethnomethodology utilizes conversational analysis to expose entrenched daily norms.

To enable a first-hand observation of the phenomenon, a researcher becomes an active participant, a part of the society being observed. The researcher becomes part of the context and strives for a mastery of the natural language, constantly searching for such culture-defining qualities as membership categorization. The goal of the researcher is to build social competencies equated with the context. The ethnomethodologist then utilizes competencies to gain a better understanding of the specific research field, constantly attempting to understand how one can “make sense of what is being observed and how the phenomena is assembled” (Davidson, 2012, p. 28). Coulon (1995) stated that a goal for the researcher is to make sense of the action being observed and to formulate ordinary life into an object to be reflected on. This process should move from self-reflection to analysis of the talk and action of the classroom. For ethnomethodology to be completely successful, it is the goal of the researcher to reach the acquired immersion that is necessary to form a true understanding of natural social constructs (Garfinkel, 2005). Being a constant part of the setting and embedding oneself within the phenomena helps researchers view phenomena from within the setting, thus generating a truer understanding of the research setting and the participants within that setting.

Ethnomethodological methods and data analysis. Methods used within ethnomethodology are reflexively accountable and rooted firmly in practical reasoning (Coulon, 1995). At the heart of the process is “participant accounting,” which involves explaining and describing participants’ everyday social world. “Actors,” as they are referred to in ethnomethodology, explain specific situations, which are indexical, and focus on unveiling unknown background features of everyday life that are so embedded they go unnoticed (Coulon, 1995). Keeping in line with ethnomethods, I was most concerned with the account and the

method by which the account was made meaningful.

Two different strands of ethnomethodological analysis were used: applied conversation analysis and membership categorization analysis. Applied conversational analysis focused on the institutional talk whereas membership categorization analysis looked at the relationships between the members within the group. All conversation analysis procedures had value both with verbal and non-verbal communication, which were considered equally important since together they exposed some of the undertones of discourse. Garfinkel (2005) states that conversation analysis leads to creating verbal descriptions that help one to make sense of the world. The goal was to view events as objective facts and to be able to identify both the products and processes within the school classroom. The product was considered to be a common understanding or shared agreement between the participants, while the process concerned when and what the participant said or did, and whether that behaviour was recognized to work within the established system of rules (Davidson, 2012).

The first step in applied conversation analysis was to record the daily routines and happenings within the classroom. Once the record was created, I focused on utterances and any non-verbal behaviours that were connected to social actions within the research setting. All interactions between teacher and student, student and student, and student and their physical environment were noted. This record then enabled me to decide if any of the practices were distinctive. Practices were deemed distinctive when they stood apart from the other dialogue or actions contained within the transcript. Once utterances and actions were documented I uncovered any sequence of actions within the research setting. Sequenced actions were considered actions that were dependent and responsive to other social stimulus in the research setting. Next, since sequenced actions somewhat appeared to follow stable and recurrent patterns,

I recorded and identified patterns that occurred. Once patterns were recognized I wrote a summary for each of the transcripts. The summaries illuminated the different elements that made up the classroom culture being investigated.

Methodological summary. By way of overview of methodologies that oriented and informed this research, Figure 8, outlines and connects my research questions with established research methodologies and the associated methods that were employed.

Question	Methodology	Data Collection and Analysis
What perceptions do students have about the role of challenge?	Phenomenology	Zone #1: Frayer Model and semi-structured interviews.
What perceptions do students have about the role of challenge?	Structuralism	Zone #2: In-depth phenomenological interviewing of participants focusing on past and present experience with the phenomenon. This will help to establish the essential experience with the phenomenon.
How can teachers embed mindfulness within scaffolding practices to foster comfort with challenge?	Hermeneutics	Zone #3: Hermeneutic interviews with participants and use of hermeneutic circle.
How can teachers embed mindfulness within scaffolding practices to foster comfort with challenge?	Ethnomethodology	Zone #4: Ethnographic observation and description and conversation analysis.

Figure 8. Aligning research methods to research questions, and locating them in the “Zones” of the AQAL Model.

Contextual Considerations

Because the study began with a phenomenological view of challenge, the initial selection of participants was based on whether they had experienced challenge within an academic setting. That limitation was a purposeful sampling method, following the advice of Englander (2012), who stresses that phenomenological data methods focus less on “How much?” or “How many?” and more on ensuring that participants have had a specific experience with the phenomena.

During the organizational phase, categories were created, and some of which were eliminated to avoid any type of overlap. The reporting phase enabled coverage of all selected data. Sampling provided saturation and was convenient, purposive, theoretical and within case (Creswell, 2012).

I ensured that my sample provided a representativeness (Englander, 2012) of experience, aiming to reach a saturation point with the data collected. The selected participants had experienced challenge within an academic setting within their eleven to thirteen years of organized education. Given that challenge is universal, multifaceted, and pluralistic in nature, I had many participants to choose from. The participants were located within a school within a large school district in Western Canada, and were enrolled in classes that purposefully taught mindfulness. Participants were well acquainted with challenge and mindfulness, and therefore were able to provide rich accounts of both phenomena.

As for sample size, the study drew from approximately 65 students, four teachers, and two educational assistants across four different classrooms within the division IV school. I purposefully selected two teachers and eight students with whom to conduct the phenomenological and hermeneutical interviews, and observed all 65 students, collecting 65 Frayer model responses. The participants I conducted interviews with were purposefully selected based on their initial Frayer Model responses. Selection of student participants was based on whether they were able to clearly define challenge and articulate both examples and non-examples connected to challenge. My research cohort sits within Creswell's (2013) suggestion that, when working with qualitative interviewing methods, a sample size that would elicit a good response would sit between two and twenty participants.

Figure 9 outlines the research cycle I followed throughout the study. I identified the problem or issue as discomfort in response to academic challenge. My reflections were

connected to the influence that a mindful-based setting might have on a student’s perception of challenge. I did not limit myself to only these topics of reflection; I only used these general themes to help guide my initial observations. I then started to look closely at the questions I had while working through the previously outlined methodologies and methods. I then collected and reflected on the data. I placed this research plan into a cyclical graphic because I revisited all of these steps throughout my research process, which helped ensure I had the most robust and complete picture possible within the timeline presented.

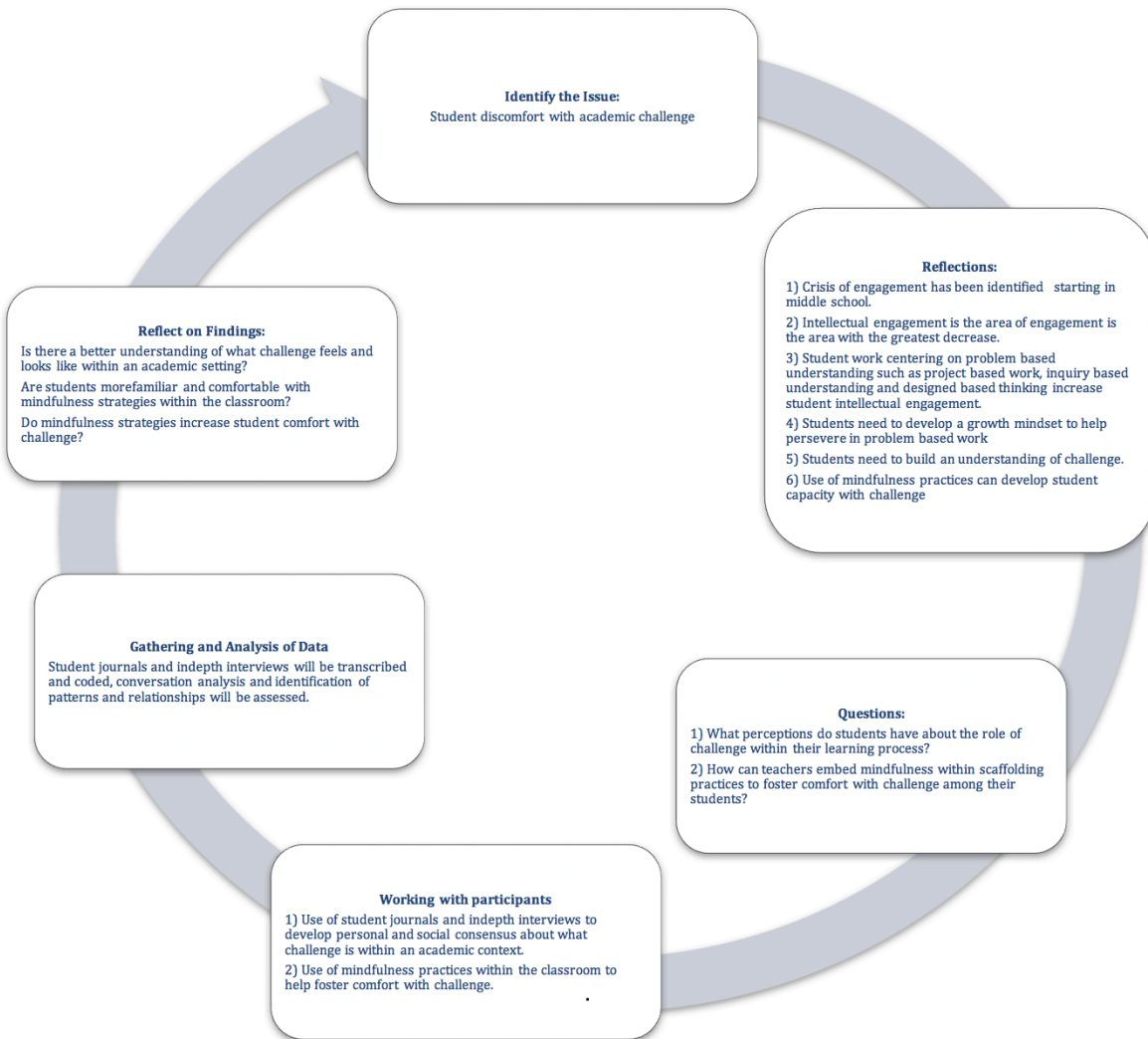


Figure 9. An outline of the research cycle.

My timeline is presented in Figure 10. As illustrated, the research began with phenomenological and ethnomethodological methods, components of which involved administrating the Frayer Model, conducting semi-structured interviews, and observing student and teacher activity within the classroom. I concurrently collected ethnomethodological data. All necessary data for phenomenology was collected within eight weeks. I then started my structuralist coding of interviews and began creating a contrast chart between Week 8 and 14 while simultaneously conducting hermeneutical interviews, which were anticipated to take approximately eight weeks to complete.

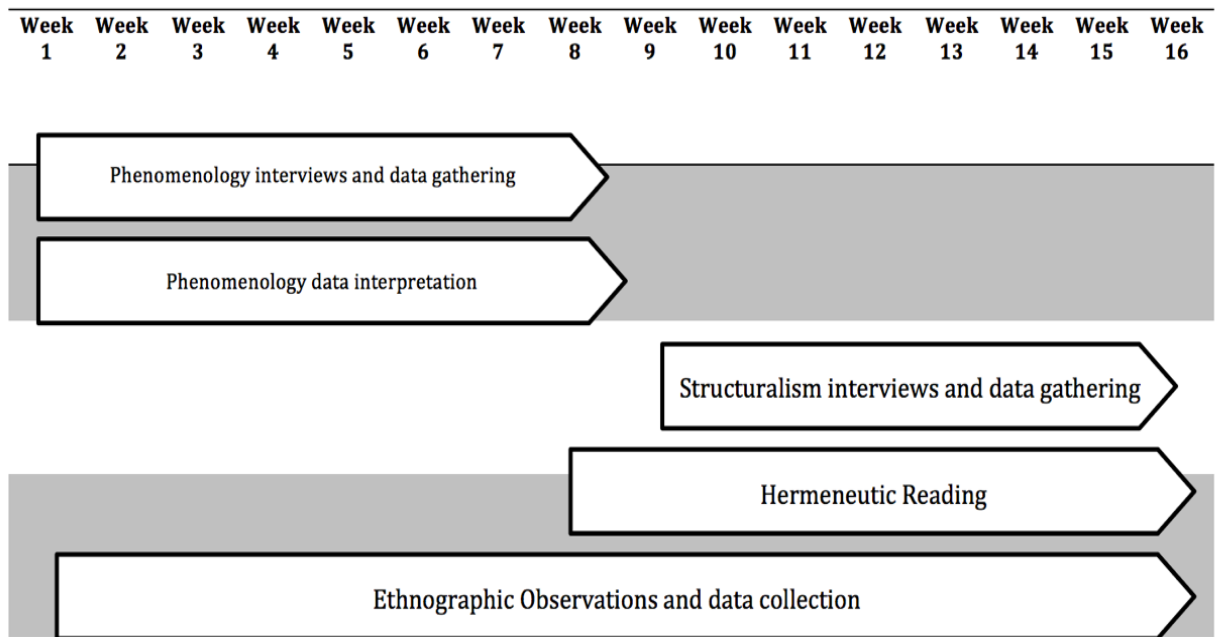


Figure 10. Timeline for gathering and interpreting data.

Research Setting

This research was conducted in a large High School located within a larger school district in Western Canada. It has a student population of 1252 evenly distributed across Grades 10 through 12. The school follows a traditional calendar, and is on a regular track with no program of choice within the same building. The school places emphasis on co-construction of learning,

problem-based learning, and personalized education through the use of digital assistive technologies.

The average annual income in the four Northwest communities that surround the school is \$98 453.00, with 8.9% population accessing low-income housing. The high school currently reports that 21.2% of the population is foreign or Canadian-born coded ELL students (City of Calgary Census Report, 2016).

The high school was part of the High School Re-Design model that focused on the removal of the Carnegie Unit, which is a time-based measure connected to educational attainment of credit. The Carnegie Unit requirement for Alberta High Schools typically involves 25 hours of face-to-face instruction per credit, and therefore a five-credit course requires 125 hours of instruction.

My research study took place within four different classes: Yoga 15, Yoga 25/35, Natural Science 10, and Natural Science 20/30. Both Yoga and Natural Science were part of Health and Wellness Complementary (HWC) courses and the Natural Resources within Career and Technology Studies (CTS). CTS and HWC courses are part of the complementary course model, and therefore students chose these courses because of their interest in the different course outcomes. Students must have a minimum of ten credits with CTS or complementary courses to graduate with their High School Diploma.

Ethical Considerations

I ensured that I attended to all ethical considerations, especially considering that the study involved human participants under the age of consent. I had the proposed study reviewed and approved by the University of Calgary Conjoint Faculties Research Ethics Board and I completed the Tri-Council CORE tutorial before conducting any research.

Informed Consent and the Calgary Board of Education Consent to Publish was obtained from each participant's parent or guardian. At the beginning of the research, all participants, teachers, educational assistants, and students were informed and were verbally debriefed and supported with written documentation regarding the nature of their involvement and the general details of the study. This helped to create an understanding as to why there was an observer in the classroom and what their contribution would entail. Some specific information was withheld to avoid creating bias in the findings. The participants were also fully debriefed throughout the research process, as many of my methodologies required continued acquaintance with the participants. They were also informed of the results at the end of the research. The participants were informed that they had the right to withdraw at any stage throughout the study, right up to the final submission of the dissertation. As of this date, none of the participants have withdrawn.

This study ensured that all measures of confidentiality and anonymity were taken. The participants' real names were not used, and any work or photographs produced were obscured. The student participants' descriptions will be general enough to ensure anonymity, consisting only of research-pertinent information.

This study demonstrated respect for all participants throughout all stages of the research process. I attempted to ensure all questions and feedback were gender and culturally neutral. The research environment was safe, as it was conducted within a Calgary Board of Education school following strict work place safety guidelines. In addition, the study was embedded into the regular classroom setting and therefore did not put the participants at any additional risk or cause any undue stress to the participants.

Trustworthiness

The study employed different safeguards to ensure trustworthiness. Schwandt, Lincoln

and Guba (2007) deem trustworthiness within qualitative inquiry as findings that are worth paying attention to. Ensuring credibility, dependability, conformity, and transferability creates trustworthiness within qualitative analysis. To establish credibility I needed to create a description of the participants that was thorough, layered, and accurate. Since I looped between the upper and lower left quadrants, the data was collected and analyzed many different times, which helped to develop desired stability within the results. I developed congruence between two or more independent people concerning the accuracy or meaning within my data, and this agreement helped developed conformability and transferability in my research and strengthened my ability to extrapolate meaning. I was able to do this by sharing my work with separate readers (Schwandt, Lincoln & Guba, 2007).

To establish credibility and congruency with reality I utilized multiple well-established research methods and methodologies. This was achieved through the use of IMP, which is rooted in established methodologies and methods with specific procedures and investigative techniques. Researcher familiarization of school environment assisted in gaining an adequate acquaintance and trust with the participants and school community.

Limitations

My study contained various limitations that were consistent with the multi-method research design chosen. I attempted to account for these limitations and tried to reduce their impact on the study. I used the left side quadrants, which do not include empirical and systemic research. I am attempting to minimize the impact of my purposeful exclusion of the right quadrants by using those quadrants as informative speculative areas through which future research around challenge and mindfulness can be conducted.

A second limitation of the study is that it was conducted within a high school and

therefore excludes division one, two and three students who might respond differently to mindfulness practices. However, since there were six different methodologies employed to investigate the phenomena of challenge and mindfulness practices, the data yielded was plentiful and robust, and therefore allowed for transferability across many different populations. Students involved in the study also might not have answered the questions truthfully, leading to inaccurate results. Meeting, journaling, and interviewing participants multiple times assisted in building rapport with the participants and myself, which assisted in eliciting more truthful responses. This connection was further supported through the use of multi-method research, which required me to be placed within the field. I acted as a participant researcher, which provided close proximity throughout the research stages.

Another limitation was that students might have misunderstood questions due to English Language Learning issues or Learning Difficulties. I responded to this limitation by utilizing alternative journaling techniques such as sketches and diagrams, which reduced the amount of misinterpretation caused by language barriers. This impact was also reduced by my use of purposive sampling, which enabled me to select participants who were most able to engage easily and authentically, which ensured that I could obtain the most complete and in-depth understanding of challenge and mindfulness within the four high school classroom contexts.

Delimitations

While planning my research I chose to delimit my research in several different ways. Firstly, I chose to conduct my research in a Calgary high school that focused primarily on delivering curriculum in an interdisciplinary problem-based learning model. This delimitation enabled me to focus on students who were within the identified age group in which intellectual engagement starts to drop. Another delimitation was that the study used Integral Methodological

Pluralism (IMP), and therefore research was guided by the eight basic irreducible methodological categories. I further delimited this methodology by utilizing only six of the methodological categories located within the left interior and right exterior quadrants. The reason for placing this condition on the study was to ensure that my research could be conducted within one high school semester.

The scope of this study will focus primarily on mindfulness-based classrooms within a high school implementing many of the high school re-design components. This type of learning environment readily presented mindfulness and challenge, making it a fruitful environment for my research into this particular phenomena.

The final delimitation of this study is the focus on the issue of developing comfort with challenge and how teachers scaffold mindfulness practices into their daily classroom routines to assist with students' perceptions of the role of challenge. The study paid no attention to how this emphasis might impact standardized measures of student achievement. The reason for this delimitation was due to the restricted timeline I placed on the research, as I felt that investigating this aspect would take the research far out of the achievable doctoral research timeline. However, this area is discussed both in the literature review and within future suggestions for research.

Summary

Throughout my eighteen years of teaching in school classrooms, I have noticed significant changes. Some have been inspiring, theoretically sound, and productive, while others have challenged forward thinking and best pedagogical practices. Some of the positive changes include our movement to regard the student as the central agent in the learning structure. We now better understand how students can present their understanding in a multitude of different ways and can celebrate their unique lived experiences and representations of understanding. We

have technological supports embedded in an interdisciplinary way, which expose students to information that was inaccessible two decades ago. We have also moved towards more formative dialectic assessment practices with adjustment cycle feedback loops that guide our planning and professional development.

The recent Alberta Ministerial Order (Alberta Learning, 2013) has charged educators to develop and ignite holistic competencies, and has motivated teachers to work more purposefully in their task designs. These are just a few of positive advancements and, like any entity that sits within a complex system, all of these advancements are a part of one another. These advancements, however, have moved the student to work in more problem-based, generative learning environments that are dynamic and unfamiliar. The systemic acceptance and deployment of these advancements has cast a shadow and created some complicated challenges for educators. Misunderstanding of practice and unfamiliarity of new optics within scholastic realms has spurred a backlash from some interest groups who demand a back-to-the-basics approach. Opposition to progressive pedagogy and practice is mired in nostalgia, which is a detriment to any educational advancement. There is a noticeable rise in anxiety among Alberta student populations, and many students are using dysfunctional coping mechanisms such as task-avoidance to overcome their overwhelming feelings of self-doubt and stress.

These problematic tensions within our current educational environment have created fertile ground for research. This research study is an attempt to isolate the two phenomena of challenge and mindfulness, and investigate their influence within Alberta's educational context. I feel that the role of challenge within the learning environment is greatly misunderstood. Many confuse challenge with being unskilled or ill-prepared; this is not what challenge is. Challenge is in the forefront of most of our current advancements, and if we are to properly place challenge in

the learning equation we must first recognize it in all its forms and build an understanding of its necessity in cognitive and affective advancement.

Mindfulness has risen in popularity within Western culture and has started to be embraced both in and outside the classroom. Given that the perception of challenge is deeply rooted within the mindset of the learner, I feel that mindfulness practices can likely have a major impact on students' perception of challenge. By purposefully and iteratively cycling through the upper and lower quadrants, I hope to illuminate and capture the effect that supportive mindfulness strategies have on students' comfort with challenge.

Chapter 4: Findings and Discussion Part 1

The findings from both ethnographic and hermeneutic methodologies are discussed in this chapter. Since the Exterior LL (ethnographic) observations were gathered throughout the entire research study, these findings will be presented first in the form of a thick descriptions. This comprehensive explanation of the field experience contextualizes different cultural and social relationships that were present within both classroom environments. Hermeneutic interview findings will then be deliberated in response to different emergent themes that became evident within both Yoga and Natural Science classrooms. Differences between classrooms are then examined and summarized.

LL (“Cultural”) Zone 4: Ethnographic Observations

Figure 10 outlines the LL “cultural” quadrant question, the Zone 4 exterior themes that emerged from ethnographic observations, and a thick description that was created by describing the behaviours, conversations, and context of all four classroom settings.

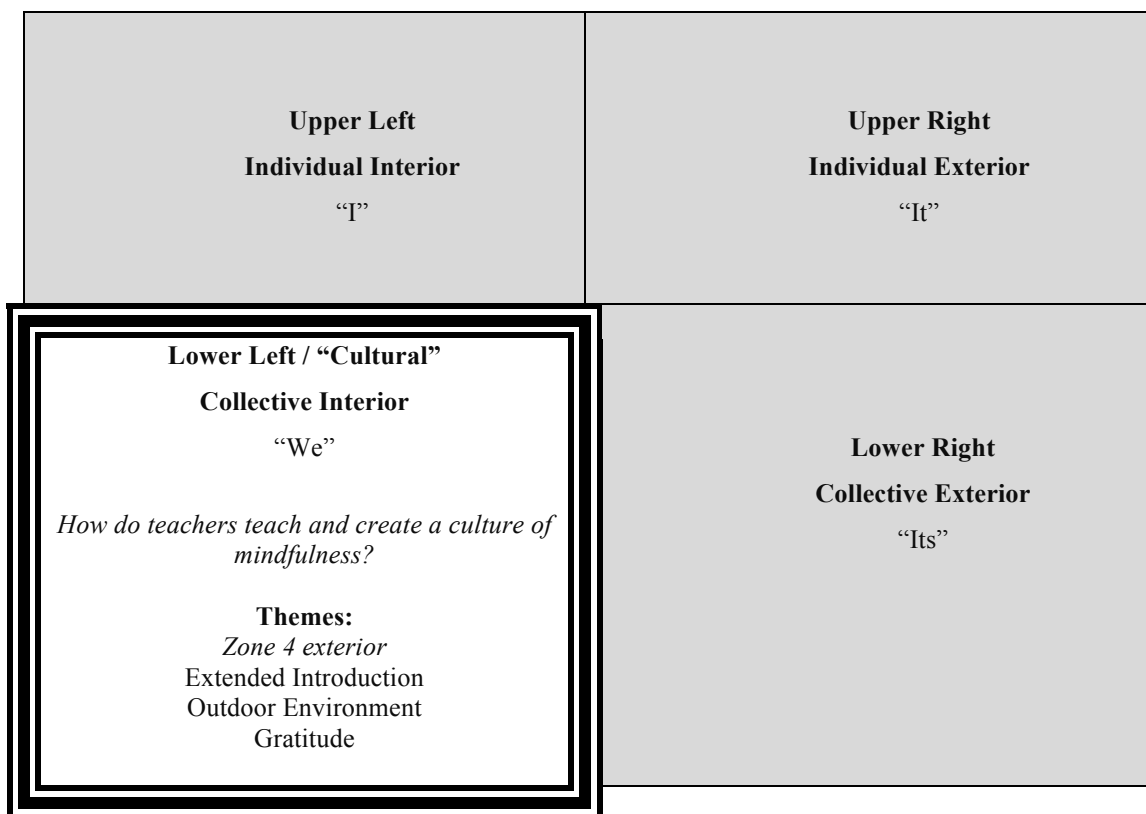


Figure 10. Research question and Zone 4 themes within LL quadrant.

During my research, I spent the most time viewing participants – both students and teachers- through the zone four the lower-left ethnographic lens. Since the central aim of ethnography is to study the behaviour and social interactions within groups, the methodology was useful to track and characterize aspects that helped create the classroom culture, such as the regular routines, events and activities within the Yoga and Natural Science classrooms. I spent an extended period of time within the classroom of the observed groups in an attempt to document and capture the daily milieu and culture of each classroom’s shared environment.

Importantly, while an ethnographic methodology cautions against transformative engagements with cultures under study, it does not position the researcher as a fully inactive, inert or invisible observer. During the research, I carefully watched and listened to members of the classroom interact, while also participating in the established flow of classroom practices

when appropriate. This engagement allowed me to understand cultural practices from gathering observations as well as through different experiences within the classroom.

I also conducted interviews with the teacher and student participants within these classrooms. I used more informal or semi-structured interviews, which required a combination of semi-structured questions and directed conversations with the participants. My goal was to create a thick description that could take the reader into the classroom culture, to enable the reader to understand this environment beyond the general accounts within the classroom and become well-acquainted with the flow and context of the shared space.

Ethnographic Observations: Yoga 15 & 25/35

There were some very clear learning goals set out for the participants within the Yoga 15, 25/35 courses. These outcomes were identified within the course outline at the beginning of the semester and were also made apparent throughout the work that student and teacher participants were involved in throughout the semester. Students within Yoga 15 were introduced to basic postures, foundational breathing techniques, and meditation practices. They also explored the historical roots of yoga and basic anatomy and physiology as it applied to the discipline. Students were given strategies to help develop an enhanced appreciation for and acceptance of their bodies, and experienced the physiological benefits of increased flexibility, strength, and focus. Finally, they worked on developing a deeper level of concentration and non-judgmental awareness about their own and others' yoga practice while learning relaxation practices that help relieve stress.

Yoga 25/35 had the same learning outcomes as Yoga 15, but involved a deeper scope and sequence. Yoga 25/35 developed more advanced postures and breathing techniques, and students established a more consistent meditation practice that deepened their self-understanding. The

students then shared this knowledge through leadership and collaborative opportunities. They studied alignment, anatomy, and the physiology of the physical postures to assist in building complementary yoga sequences. The focus also shifted more to building self-knowledge and self-care, with an emphasis on an awareness of the importance of balance in one's personal environment. Finally, students were able to view yoga, school, and life work as integral components that contribute to their overall sense of wellness.

Ms. K., the Yoga 15 & 25/35 teacher, had been teaching with the Calgary Board for fifteen years. She began her teaching career teaching high school English and the dance option, and has been teaching Yoga since the school's second year of operation. Ms. K. was once a competitive ballerina and has been a certified yoga instructor for eleven years. She also teaches at several different studios and is a Lululemon ambassador. This was the first year Ms. K. was able to exclusively teach Yoga without having to teach either Dance or English. Ms. K. taught four different Yoga blocks each term. Each class had 23 to 24 students enrolled, meaning that Ms. K. would have taught between 190 and 200 students—approximately 15% of the total school population during the 2015-2016 school year. The Yoga classroom had the same amount of time per day and number of classes as all other classes throughout the semester.

The school used a tumbling timetable from Monday through Thursday, meaning that class times would change each day so that students didn't always have the same subject at the same time each day. Each class was 75 minutes long except on Friday wherein classes did not tumble and were 60 minutes long to enable an early dismissal time. This timetable was consistent throughout the entire school so, therefore, Yoga and Natural Science classes had the same amount of classroom time.

Both High School Yoga classes observed within this study were located in the same

location. Yoga classes shared the same space as the dance option; the classroom was originally built to be a dance studio, as Yoga 15, 25 and 35 was not offered when the school originally opened. The ceiling height was over fifteen feet and was painted in light green tones. The room was lit by a bright LED lighting system that was controlled by motion detector technology. Since it was an interior room, it had no natural light; when the weather was warm and there was low wind speed, the class would be conducted outside on the west-facing field. The studio had two sets of mirrors with bars that ran down the entire length of the studio. Ms. K., the yoga instructor would always face the front of the class towards the wall that had no mirrors because “Yoga is meant to be about creating a clear understanding with your internal dialogue and I feel students get pulled outwards, distracted, some are self-conscious when they are constantly looking at themselves and others while practicing.” The studio was kept at a normal school temperature, so no hot yoga was conducted in any class. The class was equipped with mats, blocks, bolsters and straps that were stored in a cupboard at the front of the class.

Students within Yoga classes were expected to be on time and changed for every class, and they practiced yoga every single day. When the class arrived, Ms. K. would take attendance by first asking a question of the student as she went down the list. The question would change each day, examples of questions were, “if you were an animal, what animal would you be and why?” “What super hero power would you want to possess and why?” or “How would you rate your level of stress today between one and ten?” Some days Ms. K. would invite students to create the question that would be asked. As the term went along and the students became more familiar with the other students and their teacher, they would offer up more questions. All questions suggested by students were used—although Ms. K. would sometimes modify the questions so they were easier to answer and were never connected to any larger morality-based

conversation. The students all had the option to answer the question and explain their thinking or to pass on the question, and Ms. K. would thank them for their presence and then move onto another student.

One morning in a Yoga 15 class, the students were responsible for researching and presenting on the different forms of yoga. This particular Yoga 15 class began at 8:30 am on a Tuesday and was a 75-minute class. Vanessa, who was sharing her learning artifact about the practice of Moksha Yoga, was dressed in black athletic pants and a purple sweatshirt, hair tied back with no shoes on. She was sitting in a circle with the other students. She placed in the center of the circle a yoga mat that had a tree painted in the center of the mat; each branch of the tree represented the seven pillars of the Moksha Yoga community. She seemed nervous when she first started to speak, but soon relaxed when explaining what she had created in fine detail. Vanessa discussed each of the pillars on the image, and carefully explained the symbols she had drawn on small circular disks that hung by the tree branches, flipping them around to reveal bulleted points listed on the back. Vanessa explained her artifact:

The first pillar is “being healthy.” Yoga practice makes it easier to make healthy choices in life. The next pillar is “being accessible,” which is welcoming all members of the community, no matter the background. I really like the “live green” pillar since in Moksha Yoga the people feel they are a community who are passionate about environmental conservation so they make it a mission to take care of the earth. The next pillar is “live to learn,” which means to always take the opportunity to learn and everyone needs to continue to learn in this community. The “reaching out” pillar means the community has a deep commitment to raise different types of funds to help change lives and the “community support” pillar is when everyone in the community should be

supported by each other, the term sangha is connected to this pillar. Finally, the “be peace” pillar means they support peace for lasting change.

Ms. K. praised her work and discussed how sangha, the term Vanessa used in connection with Moksha Yoga, means community, and how the class has become a close community within a very short period of time. Vanessa then continued to discuss how the sand and the silhouettes she drew that surrounded the tree represented the forty separate poses Moksha Yoga uses and the hot temperature in which this form of yoga is practiced.

Rhea, another student within the class, asked which pillars most interested Vanessa or whether or not one could pick one pillar over another. Vanessa discussed that the intent of Moksha is to not only practice but also create a healthy lifestyle outside the yoga studio and so all pillars need to be addressed because they help create a more balanced life. Ms. K. posed the question to the entire class, “Do you think that's true? Not just for Moksha, but also for us this semester? Do you think it is essential to be able to transfer what you learn in here about health, balance and community to your outside world?” Fourteen of the seventeen class members expressed assent either by nodding their head or by verbalizing their agreement. Marlo stated the following:

I think that just since we started yoga, my eating has changed. When we started yoga, I didn't eat very well I guess, just bad food. Since we started yoga, I almost feel guilty for eating that. Like, I did so much work today. If I keep eating junk like this it's going to totally contradict that. I should eat something that's going to help me through my day. I eat breakfasts that are healthier and stuff since I started this class.

Ms. K. then asked whether Marlo felt she had a deeper recognition of different choices she made outside of the class and indicated that one needs to start to really become conscious in

order to build a type of sustainable practice within different yoga communities. Casper, another student, quickly jumped into the conversation and spoke about how you have to become aware of what your body is telling you and listen to what it needs now. The discussion then turned to the concept of what actually mindful eating actually is. Ms. K. let the conversation continue for an extended period of time, far longer than the usual discussion after a student presentation. There was a feeling that this conversation became more important than what was originally planned as Casper talked about how he believed mindful eating was just being aware of what you are putting in your mouth rather than just eating without thinking. Ms. K. added the following:

Yeah, you're listening to your body a little bit more? Sometimes when I listen to my body, I have to eat Jelly Belly jelly beans, but when I really savour those, I take the time to really take the one in and I really grab a hold of it, that's when I'm listening to my body going, "Yes. Okay. I understand that's what you want so I'm with you this time." When I do this, I need fewer; I am satiated.

Ms. K. then finally stood up and walked out of the circle of mats and turned on the music. This prompted the students to spread out their mats and rearrange them into rows facing the front of the class so the class could then start their yoga practice, which in this particular class was Vinyasa Yoga.

It was a Wednesday afternoon and the Yoga 25/35 class started at 12:30 pm. The students came into class and gathered in a circle with bolsters, blocks and mats. Ms. K. welcomed the students and took attendance by asking, if you could be an animal, what kind of animal would you be? Once each student was called by name, they answered the question. Only two students chose to pass and not answer. These two students didn't seem disinterested; rather, they seemed calm and somewhat tired, which was accepted by Ms. K. by a nod of her head and, "Thank you

for being here.” Shawn, an energetic and talkative student, was then called upon by Ms. K. to discuss the form of yoga he had studied. Shawn walked up and quickly placed in the centre of the circle a black poster board with a picture of a galaxy and the silhouette of a person sitting in the lotus position. The artwork was very detailed and finely drawn in chalk pastel. Ms. K. complimented Shawn on its aesthetic value, which Shawn seemed proud of, explaining that he loved to draw but didn’t take art as a CTS option anymore, so this was really fun for him to do. He then started to discuss mantras and Raja Yoga, and explained his artifact:

What I’ve gathered about a mantra is that it’s based on a word or a phrase or like a thing that you think about while you practice your meditation and focus. Raja Yoga is sort of moral yoga and you are a king within this practice. You’re the ruler of your spirituality and your body throughout the kingdom or something like that. That’s why I drew a galaxy, because your mind is considered a vast universe. Mantras came before Buddhism, and because it’s the spoken word or unspoken word in eternity, it was said to be from Indonesian magic from a long time ago. I thought that was kind of cool.

Ms. K. then quickly added that mantra is based on finding a higher power either internally or externally, and is often used to offset different types of stress, and you can find a lot of peace when using mantras. She then explained to the students that, when starting with mantras, one repeats the mantra out loud, then mouths it, and finally finishes by silently thinking it. Ms. K. next asked the students why they thought Ms. K. didn’t use mantras in class:

Great, great. I don’t use a lot of mantra here, do I? Does that make sense? Are you curious about that? You know why? Or can you guess at why? Why do you think I don’t use mantra in class? I try to just do it minimally, right? There’s no Sanskrit mantra, right? Why do you think?

Sarah answers by stating that a lot of mantras tend to have religious themes within them, so, since it's a school, you can't really do that. Ms. K. then responded:

Yeah, it's a public school, right? If you're ever interested, there are a couple of mantras that I can share with you outside of our class. There are really beautiful mantras and sometimes they're sung and some of the voices are stunning. They're all in Sanskrit, but they do often refer to a god, right? I try to keep our class as open as possible to every type of denomination. We're not going to, "Yep, this is the way to do this." Yeah? When I offer mantras, I'll offer them in English and I'll ask you to create your own instead of listening and, "You're going to say this." Instead I offer "I am" mantra and leave the rest for you to fill in so that it is your creation.

Ms. K. then suggested that the class use a mantra that one of the students Willa created after the class began studying Restorative Yoga. Willa nodded and agreed, asking, "Do you guys remember it? I was talking about being a better version of yourself." Ms. K. reminded Willa that it was connected to her belief about what Restorative Yoga had the potential to do, that it was a mantra and that anything at all can be mantra if they really think about it. Siam asked, "What kinds of religions does it tie into? Is there like a specific religion?" Willa then answered, "Mantra originated from India, but it kind of ties into all cultures. There's not like one specific religion. Raja, it is more of an internal thing, so I guess it could go with anything."

Willa commented that she doesn't want to offend anyone, but if you look at lots of religious scriptures, you're going to notice a repetition of sayings. Ms. K. then asked if anyone was offended by the mention of religious scriptures. She paused for an extended period of time to check for agreement or disagreement with the statement, looking around at every student, waiting to receive a verbal or non-verbal response. All participants in the class quickly shook

their heads no, or give a verbal no. Kaitlyn then put her hand up and mentioned that she was a Christian and it reminded her of certain prayers she had said before in church and at home. She noted that a mantra seemed shorter but they were still quite the same in what they were meant to do.

After this conversation ended, Ms. K. then prompted the students to move their mats into lines and to start to grab the bolsters, blocks, and straps so they could prepare to practice Restorative Yoga. Ms. K. then put on soft music and turned off the lights. I joined in with the class and we started to practice.

It is a Thursday afternoon and the Yoga 25/35 class gets started at 1:45 pm. Ms. K. started the class off again with questions as she did the attendance. The question today was a scale out of ten question asking how tired everyone was feeling—ten meaning they are ready to fall asleep and one signifying “very alert.” All seventeen students answered the question and all students indicated they were feeling between a seven and a ten. This indicated that the entire class is feeling very tired. Ms. K. responded with the following:

I think we don't do enough sleeping do we? I think this is something we need to work hard to fix. Sometimes it is completely within your control to ensure you are going to bed when you should—to be able to get enough hours in—and sometimes it is out of our control because our brains can be full of worry and stress so we can't go to sleep even if we want to. What we do in this class is hopefully going to help you develop strategies so your brain isn't burdened at night with the challenges of the day, so you can go to sleep when you actually get to your bed.

Ms. K. then asked Rebecca, one of the students, to discuss her research on Yin Yoga. Rebecca started her presentation first with a question to the class about Yin Yoga. “I have a

question about Yin, but I'm going to let everybody else go first, so does anybody else have a question about Yin Yoga versus Restorative Yoga? Anyone have questions about that?" When none of the students answered the question Sarah stated the following:

Yin is more of an art than an exact science, and Yin Yoga, from what I learned, is more a type of art you're supposed to learn about yourself from doing it. It is supposed to awaken a really gentle and a really calming energy, chi. It's based on Chinese medicine and philosophy rather than Hindu philosophy and practices.

Rebecca then compared Yin to Restorative Yoga by discussing how all the props used within Restorative Yoga are intended to ensure that participants are supported so they are then able to fully release their stresses, whereas in Yin Yoga, the students are expected to put active stress on the ligaments, on the joints. And the word pain came up a few times from different students, which is common from those discussing Yin Yoga. Ms. K. then discussed how it has to be that *green light* pain and not that *red light* pain. "It's not even the yellow light pain. It's going nowhere near the red light pain, which is your edge." Sarah then asks the question of how does one know where their edge is. Ms. K. replies that you need to really be present and listen to your body and when you work out and you feel it's like a light burn, but you can still smile, that's what it is. She further explains the second someone feels anything close to pain, then it's kind of harder to smile that is when one needed to get out or ease back.

Ms. K. then started to discuss how knowing your edge wasn't just contained within the physical but within the mental as well. She explained how everyone benefits from challenging themselves daily—to do things that are difficult and even a bit scary—and how being uncomfortable is a way to promote personal growth. Ms. K. further stressed that people also need to know their mental edge and recognize whether they are overstressed or overwhelmed.

Knowing your mental edge is the same as knowing your physical edge. The only way to recognize it is to have a close relationship with one's own thoughts and personal feedback. Ms. K. also discussed the difference between Yin and Yang:

I love this idea that the darkness is in the light and it's essential for that point of darkness to be there in order for us to recognize the light. Then the light is also in the darkness. This is very helpful when you think about yin and yang in yoga and in life and in the challenges that we experience. Whenever we're feeling overcome by something, there's got to be some light in there in order for it to really create that contrast. When we are in a place of absolute happiness, there is always going to be that small point of darkness, and that's not a bad thing because it just demonstrates and really brings forth or anchors and makes us appreciate the light or the joy.

With the final comment Ms. K. prompted the students to spread out and get ready to practice, and that it was time to create this deeper relationship with the body and the mind.

It was Friday morning so it was a shorter class, and therefore Ms. K. took attendance without a longer question, asking instead, "Name something you are grateful for today." Many were thankful for the weather because it was very sunny and warm outside. Two students were thankful for being in yoga. One was thankful for their car, and three were thankful that it was close to the weekend. The students moved into Restorative Yoga and grabbed the regular supports needed. Once students were settled they started off with ten deep belly breaths. Ms. K. explained that the goal is to try to come to physical stillness to the best of one's ability—to move towards the parasympathetic nervous system. The students took another deep inhale, and, as they exhaled, they assessed whether they were capable of reaching a pose that was just a little further. Ms. K. then guided them:

The more still you become with your physical body, the more you will hear internally, the more you will hear about what's happening inside. We're so typically pulled around by all of the external expectations that others have of us, or that we have of ourselves, interactions with other people, the roles that we play... But, restorative yoga, or any type of contemplative practice, allows you space to connect with that internal landscape that we all possess. The more that we connect with this place, the more that will have a ripple effect on all of our relationships and choices.

Ethnographic Observations - Natural Science 10/20/30

The Natural Science 10 course was an introduction to a program examining the management and conservation of the environment at the local, provincial, and national levels. Students also developed an understanding of how humans interact and impact the environment, investigating the concepts of stewardship, sustainability, connectivity, biodiversity, and plant growth and development. To extend this understanding of connectivity with environmental corridors the teacher engaged the students in different types of indigenous knowledge and pedagogy, which highlighted practices of connecting to the land through reciprocity practices that developed a deep understanding and respect for plants, animals and the local ecological space.

The Natural Science 20/30 course expanded upon the stewardship principles introduced in the previous Natural Science 10 course, but continued discussion on sustainability issues, including a study of renewable and non-renewable energy sources and the sustainable development of the environment. The program also continued discussion of the work in greenhouse management and plant growth and production. Course outcomes were covered within both class- and field-based experiences. Approximately one-third of course work was

completed within the field, and these field experiences ranged from walking within the school grounds to researching natural corridors located within neighbouring parks, communities and conducting field studies within Peter Lougheed and Kananaskis Provincial Parks and Stoney Nakoda First Nations land.

Mr. W., the Natural Science teacher, has been teaching for 24 years and was hired to create the Natural Science program when the school first opened. He was hired specifically for his experience and passion for Natural Science and his experience taking students out into field experiences. Mr. W. was also teaching a Biology 20 and a Biology 30 course during the term I was observing his class. He has been a high school science teacher for the entirety of his career. There were 21 students enrolled within the Natural Science 10 course and 19 students enrolled in the Natural Science 20/30 course. These enrolment numbers were similar to those of the first semester, so therefore Mr. W. taught approximately eighty Natural Science students within the 2015-2016 school year.

The Natural Science classroom was located on the third floor of the school and was located at the end of a hallway on the far west side of the building. The space was always intended to be a Natural Science classroom, so therefore it had significant sources of natural light. Many different sinks and work areas were spaced throughout the room, and there were three separate areas with full-spectrum lighting systems. Near the entrance, the west side of the room had 10-foot windows that ran the entire length of the wall.

Situated right in front of these windows was a long bank of six-tiered wooden racks that housed seedling plants. Over half were bean plants, one quarter were ferns, and the remaining were spider plants. These seedlings were being propagated to the living wall that was situated in the middle of the central large learning commons. A student had created a system of tubes

controlled by a manual valve to irrigate the seedlings. Two-foot ledges sat in front of the windows, which were full of four different types of herbs. There was also a tall herb garden that had full-spectrum lighting surrounding it, and, within this particular herb garden, there was a large amount of both sage and dill growing. Ian, a Natural Science student, proudly discussed the success of the dill growing within the herb tower:

I definitely have developed my passion for gardening actually over the summer, and I had asked my dad if we could start a little herb garden, and we started dill from seed and mint and a whole bunch of other plants and taking a whole bunch of pictures and bringing it back to Mr. L and showing him, this is what I grew over the summer. When he saw the dill pictures that I grew, because it had grown four feet tall, a huge stalk, he was so awe struck because he had such trouble growing dill himself. Dill is so temperamental so if I thought if I could do this not just for him but also for other people, I would be able to provide for others and that would be amazing. Mr. W. says I have a talent for growing dill but it seriously is just about developing certain sensitivity about how damp the soil should be. You have to really pay attention and feel the soil. I know it sounds crazy but I have actually taught others how to do it. Mr. W. gives us that time to learn through our own experience, it is amazing.

There was a door located on the south side of the building leading out to a 20-foot by 10-foot roof top patio. The patio had four small tables on each end, with three large wooden planter boxes that ran north to south. The planter boxes were three-feet by two-feet by two-feet by five-feet and had beans, kale, carrots, zucchini, Swiss chard and tomatoes growing in them. In the middle of the classroom was a set of tables that were arranged in a U-shape and faced towards a SMART board and two white boards. A teacher's desk was situated behind the U-shaped tables,

filled with papers, a laptop, books and binders.

On Thursday afternoon around 1:30 pm, the Natural Science 20/30 students started walking into class. Soft music was playing behind Mr. W.'s desk. It was hot outside and the room was really bright since the sun was directly shining through the large, west-facing windows. The door to the rooftop garden was wide open and, as the students entered, they left their knapsacks and bags on top of the tables or on the chairs in the middle section of the room and moved to one of the five different areas in the room. The students didn't take any materials with them when they split off and started to work within their selected area. There was no discussion between the students and Mr. W. or among each other. The students seemed to have a sense of where they wanted to go, and they started to quickly engage in some sort of task. Some students started the class by looking at the irrigation system at the front of the room and moving things around to ensure that water was flowing properly. At the back of the class a student named Brent was removing three spider plants from a planter to add them to the living wall.

Over half of the class went out to the rooftop garden to check on the different plants. Benjamin, a student who was working on one of the planter boxes, revealed that most of the students were primarily concerned about the tomato plants getting droopy even though the students had moved them twice and added wire to the planter to support the stems. Mr. W., their teacher, was assisting two students in constructing a railing that would support some hanging plants on one side of the room. The students continued to come into class, which didn't seem to have a traditional and identifiable beginning. Mr. W. explained the reason for the more relaxed start:

When a class first enters I purposefully don't teach anything for the first ten to fifteen minutes; the kids are just bombing around the classroom, getting grounded, slowing down.

They can decide to just sit and breathe or dive in and get their hands dirty taking care of plants and spending time on the deck. I let them have that time. So I know there are lots that would say, well what are you doing with those teachable minutes? I feel this is a really important time—they are just readjusting within the space, becoming present with the space, and they guide themselves during that time with reflection and some real purposeful personal work.

The Natural Science 10 students worked within different areas of the Natural Science lab for the usual fifteen minutes at the start of class. Mr. W. then called the students over to the cluster of tables within the middle of the room and discussed the two different videos the students were about to watch:

We are going to watch a few videos that are linked to a gratitude project currently set up online. The creator of these videos is a guy named Louie Schwartzberg and this is called the Gratitude Project. He calls these running pictures, which he has created through the use of time-lapse photography. This is all I am going to say for now, I just want you to watch these two short videos and then we will start to discuss the significance of this work.

The students started to watch the two different videos. The first one was called “Fantastic Fungi.” It explained the how important fungi are to our planet—they help heal, feed, and explain the mysteries of the universe—and these simple organisms are just under your feet. The time-lapse photography showed different forms of fungi growing and sprouting up within their natural environments. The next video, from the website “Gratitude Revealed,” specifically focused on the importance of gratitude and the gratitude work done by the Greater Good Science Centre. This short clip on gratitude also showcased Louie Schwartzberg’s photography and highlighted nature photography throughout.

Once the two videos were done, Mr. W. asked the students to turn to a neighbour and, in five minutes, discuss the two videos and how they were connected to the work the students were involved in within the classroom and their outside field work. After five minutes, Mr. W. asked the groups to share what they had been discussing. Brendan responded, “I think it is about how important it is to take time to notice the small things that are in nature, and even though they are like really tiny and seem sort of insignificant, they are so important to us and to our planet.” Claire, another student within the class, stated, “We need to feel grateful for the tiny things in life; it helps us to really pay attention to plants and nature because they are really important and we are connected to their success.” Mr. W. then discussed how gratitude work would be included within the students’ nature journals:

In Grade 10, we keep nature journals—we’ll let’s back up a bit. You will start writing with me in Grade 10 and then you will bring these journals along with you in Natural Science 20 and 30—if of course you choose to continue within Natural Science. Some of it is formatted so I will give you some standard nature journal activities to complete. I have actually defined what is expected in the nature journals in our course outline, which we will go through. It is a combination of a sketch journal with descriptive and accurate field notes and reflections. We will then also add the gratitude piece onto that so it is rolled right into your observations. The gratitude piece I feel is the game changer. It is the anchor for the journal because it connects all other items within the journal. It also puts you into a certain mindset that helps you become more observant and, more importantly, compassionate with the natural world around you.

During an afternoon class, Mr. W. and the Natural Science 30 students were out on the rooftop deck discussing the importance of designing a naturalized space for everyone within the

school to use as a retreat. Whether students want some quiet time to work, to meditate, or just to get their hands in the soil and grow something, a natural space seems very useful. Throughout the conversation, the students discussed what the space should look like, where it should be located in the school, what should be placed within the space, what time the space could be accessed, and how to let students and teachers know about the space.

The students also discussed who should be the caretakers of the space. There was a strong feeling that the Natural Science students should be the caretakers of this space, and that creating and managing this space could be part of their course work, which Mr. W. agreed to. Mr. W. and the students had already decided to call this project The Nature 360 Project, since the goal was to see at least one natural object, whether indoors or out the window, if you were to turn in a 360 degree circle. After the conversation with the students, Mr. W. discussed this project:

We need to work together on a community garden, a learning garden, somewhere people can kind of get back in touch with their thoughts, to slow down and reconnect with themselves and nature. I am super excited the students wanted to get so involved. We need to build a gathering space for teachers and students who are not even involved with our program. We have discussed how it could be modelled from old First Nations wisdom. The students came across a lot of different mindful spaces while in Kananaskis and really wanted to re-create some of those spaces within this building. This building has lots of potential since it is so new and really quite untouched. I reminded them of our discussion about how these spaces are designed so no one is excluded, which would probably mean it is much more of a circular design with a central focus. This really aligns itself with traditional indigenous ways of knowing and being. Knowledge-building circles and circle protocols are constantly being used within the different Indigenous cultures. The students

really seem to attach to these types of practices.

The Natural Science course outline described how students would develop an understanding of their environment so they would become stewards of the natural ecosystems surrounding them. However, the curriculum lived beyond this original plan and a culture of awareness and sensitivity was created for both the environment and the personal student. The relaxed classroom practices ensured space and time was provided so both Mr. W. and the students could successfully navigate the planned and the lived curriculum. Mindfulness was consistently connected to ecological study and was implicitly embedded into the scientific field journals, interactions with plant life and classroom conversations connected to challenge. This culture seemed to promote deep engagement in hands on tasks and empathy for the eco-based environments the students were working within.

Discussion of LL Zone 4 Similarities

Zone 4 requires the researcher to view, from the outside, the plural values of the cultural quadrant. By doing this, I was able to focus on the daily undertakings, routines, rules, and traditions functioning within the setting. There were notable differences and similarities between the two classrooms' approaches to mindfulness, which became evident while analysing my collected ethnographic observations and creating the thick description of the cultural context. Figure 11 summarizes the similarities and differences noted while viewing the mindful classroom from the exterior while situated within the interior collective quadrant.

Yoga	Natural Science
Differences	
<ul style="list-style-type: none"> • Cultivation of traditional (Eastern) mindfulness strategies of yoga, meditation, breath work • Started class with questions and conversation • Mindfulness is an identified part of curricular outcomes • Development of four separate recognized mindfulness skills (observe, describe, attention, non-judgmental awareness) • Cultivation of mindfulness connected to Eastern traditions • More frequency and length of time spent on mindfulness 	<ul style="list-style-type: none"> • Started class with “tinkering” on personal projects • Mindfulness is not part of curricular outcomes • Cultivation of Western mindfulness connected to nature, land-based and First Nations traditions
Similarities	
<ul style="list-style-type: none"> • Long introduction at beginning of classroom in beginning of the classroom time • Development of wellness literacy was planned and purposeful • Explicit teaching of compassion • Class discussion focused on social emotional themes • Use of gratitude journals • Frequent use of outdoor areas as learning spaces 	

Figure 11. Similarities and Differences between the Yoga and Natural Science Classrooms.

One of the most notable differences between the two different classroom settings were the methods used to create a culture of mindfulness. Within the Yoga 15/25/35 class, mindfulness was part of the curricular expectations, and therefore was explicitly taught and assessed using both formative and summative assessment practices. However, within the Natural Science course, mindfulness was more implicitly taught. In this course, mindfulness was more of an embedded strategy rather than an outcome to be assessed. While mindfulness practices were clearly defined and modeled by the teacher and then employed by the students, they were never seen as the primary or solitary learning goal.

The school in which the research was conducted is within the a large school district in Western Canada which, through the Three-Year Education Plan, mandates that all reporting is to

be firmly connected to the outcomes within the Alberta Programs of Study. Four distinct reasons why the CBE promotes outcomes-based assessment are that it is more accurate, consistent, meaningful and overall better supports student learning. Hattie (2012) has posited that accuracy of reporting is improved by basing a student's grade exclusively on academic factors. Using only academic factors helps create a clearer picture of what the student has learned in relation to the outcomes from the Programs of Study without the influence of other factors that would inaccurately influence the grade. Outcomes-based reporting is also reported to create more consistency within reporting by enabling expectations for mastery to be made clear in relation to outcomes, which are more objectified and therefore reliable in determining student achievement (Cooper, 2011).

Outcomes-based work is also thought to be more meaningful since outcomes-based assessment grades are connected to the general front matter, general learning outcomes, and specific learning outcomes of courses rather than teacher-developed assignments, quizzes, tests, or homework, which are considered too capricious and subjective to be meaningful for students (Stiggins, 2004). Finally, basing reporting on outcomes better supports student learning in that it focuses on the material that has or has not been learned, rather than on accumulating points to reach a certain total.

Another noted difference was the Yoga 15/25/35 class, which clearly outlined and researched the four different mindfulness skills of observation, description, attention, and non-judgmental awareness. However, no standardized baseline such as the Kentucky Inventory of Mindfulness Skills (KIMS) or the Mindfulness Attention Awareness Scale (MAAS) was used to assess growth within the four mindfulness skills. This is consistent with research literature on how mindfulness-based interventions are growing, and yet assessments of mindfulness have

received less attention. Brown and Ryan (2003) argue that one cannot claim to truly teach mindfulness if it is not thoroughly evaluated. Baer, Smith and Allen (2004) further emphasize that it is essential to assess mindfulness for three different reasons. The first is that one cannot correctly identify the different mechanisms behind mindfulness if they are not actually measured. Secondly, we need to better understand how the explicit teaching of each of the four factors impacts students and, to do so, one must track progress. Finally, many mindfulness skills are taught in tandem with other social emotional learning strategies and identifying the actual active ingredients within teaching the affective domain could increase the effectiveness behind planning and implementation.

Another noticeable difference between the two classrooms was the origin of the mindfulness techniques used within each class. The Yoga classes used more Eastern traditional mindfulness approaches originating mainly from Buddhist, Tibetan, and Hindu traditions. Ms. K. referred to the oldest written references for the notion of mindfulness, the *Pali Cannon* of the Theravada Buddhist branch, and explained that all other Buddhist traditions have their origin within this tradition. Even though these practices were from an Eastern origin, the Yoga classes did use a more Western definition of mindfulness that incorporated the four mindfulness skills mentioned previously. The different forms of yoga—Restorative, Yin, Vinyasa, and Hatha—as well as the different types of meditation techniques and breath work, all followed Eastern traditions. Natural Science, however, connected mindfulness more to First Nations nature-based mindfulness, which serves to foster a deeper connection to the land. Strategies used within Natural Science were talking circles, knowledge-building circles, nature star-fishing, use of sit spots, and giving thanks to the creator. All of these mindfulness approaches were primarily used by Natural Science students within their fieldwork experiences rather than during class time.

The time devoted to mindfulness practices in terms of both frequency and duration was another notable difference between the two classrooms. The Yoga classes practiced mindfulness with higher frequency: in every single class students practiced yoga, breath work, and meditation. This was not the case in Natural Science. The length of time spent in mindfulness activity also differed. Curricular outcomes were outlined in Yoga 15/25/35 at the beginning of the term, and the students practiced different forms of yoga and meditation throughout the entirety of the term. But, since within Natural Science mindfulness was something that was more implicitly taught and was never outlined within the curriculum or the course outline, the Natural Science students did not start practicing any type of mindfulness until just before their first field experience.

Discussion of LL Zone 4 Similarities

There were many similarities noted within the two classrooms' approach to teaching mindfulness. Again, certain themes or categories emerged from daily observations recorded within both classrooms. The similarities observed were the extended class introductions, the use of the outdoor environment, and the use of gratitude.

Both Yoga and Natural Science teachers had an extended classroom introduction. Ms. K., the Yoga teacher, would begin class with questions and conversation and Mr. W. would allow students a 15-minute grounding time. Both teachers would clearly discuss with the students the reason behind why they were choosing to start the class this way. Ms. K. stated that the students needed to be recognized and heard, whereas Mr. W. stated that students needed to come down from the faster pace they were used to within other class settings. On average, this 15-minute period added up to approximately one fifth of the class time. During Fridays it didn't vary far from the fifteen minutes, which means that this open-ended time was actually one quarter of the time spent within class.

Both teachers used the outdoor space as a learning environment. Connection to nature was something both teachers deemed important, and both ensured to engage students with the outdoor environment as much as possible during class time. Both teachers had students compare outdoor and indoor learning spaces, and would have students discuss what they noticed both in their journals and within class conversation. It became evident through these classroom conversations and journals that students overwhelmingly preferred the outdoor learning environments.

In Natural Science there was more discussion around the science of ecopsychology and its findings than in Yoga. Mr. W. discussed and defined biophilia, which is connected to Edward O. Wilson's (2006) description of the human urge or need to connect to other forms of life present on our planet. Mr. W. also referred to the positive effect that nature has on people and their ability to concentrate, think creatively, and develop a bond with the natural environment, which helps build an important foundation for environmental stewardship (Chawla, 2002). The Natural Science students would use the technique of nature star-fishing, in which the students would make a star shape on the ground so they could reconnect with the earth, or use a sit spot to help ground themselves to the space they were in. Mr. W. would discuss how each student was to know the spot by the day, by the night, in the rain, the snow, in the heat of the summer and in the cold of the winter (Louv, 2016).

Ms. K. also engaged the students with mindful tasks that would ground them to their space. However, she also used five senses grounding and meditation practices that invited students to follow the sounds around them, feel what surrounded them, and then try to pull their minds back away from the external so they could follow their breath again and then again back out to the surroundings. Ms. K. also discussed the benefits of being connected to the outdoor

environment but focused more on the importance of being able to notice the beautiful world around, including the landscape, the view of the mountains, the sound of the birds and the wind—but also to try and tune the distractions a natural environment presents. She emphasized the ability to focus on the organic world; therefore, dynamic outdoor environments deepened the students’ practice, as they became more durable practitioners who could weather changing temperatures, outdoor noises, bugs, and windy environments. This outcome was aligned with the Yoga Sutras of Patanjali, which supports the notion that any yoga practice is only improved when it is unaffected by the dualities presented within life (Bryant, 2009). It is important to note that outcomes-based assessment comes into effect once again in the outdoor environment; however, the outcomes are more directly connected to Natural Science than to Yoga.

Both classes also used gratitude journals, albeit in different ways. The benefits of being grateful were also discussed in both classes and were supported with different sources, such as Ted Talks videos, blogs, and websites dedicated to gratitude work. This work in both classrooms was deeply rooted within positive psychology research. Gratitude has been connected to positive psychology and happiness literature (Lyubomirsky, 2008) through positive communication research. The act of expressing gratitude is a form of health communication associated with health benefits such as the ability to alleviate one’s own feelings of stress, and is also linked to decreased depression (Emmons & McCullough, 2003; Froh, Bono & Emmons, 2010; Lyubomirsky, 2008). Teachers within both classes also discussed the benefits of gratitude and its impact on stress and depression, and pointed out that individuals who regularly engage in gratitude work can benefit significantly by employing more protective measures in their lives. These measures are identified as engaging in regular exercise, eating a healthier diet and more regularly seeking out physical and psychological supports (Emmons, 2003).

Historical roots of gratitude were discussed and connected within the Yoga class, which traced the practice back to Buddhist teachings. The yoga class also dedicated a part of each class to the appreciation of life and contemplation of how life changes each day, reminding students to embrace these necessary changes. Within Natural Science, gratitude was connected more to Indigenous ways of knowing and being and how gratitude connects one back to the earth and the indivisibility between humans and natural spaces.

Both classes also used a gratitude journal to help create a token of gratitude that both students and teachers could revisit and use for reflection. Within Natural Science, the gratitude journal was something included within fieldwork. It was guided by the “Gratitude Revealed” and “Mastering Gratitude” website resources created by Louie Schwartzberg. Gratitude journals were to be specific and were to have more depth than breadth, encouraging the addition of details and context-specific words. Personal connection was highly recommended and the students were to write regularly while they were out within field experiences. Mr. W. emphasized that the gratitude section of the nature journal was never going to be assessed; it was something to assist in creating positive internal connections between the student and natural spaces.

Within the Yoga courses, Ms. K. created a gratitude journal project for both the Yoga 15 and 25/35 classrooms. The students were to write in their gratitude journals daily for two weeks. Once the two weeks were complete, the students were to look for repetition and patterns within what they journaled and then explore the resonant theme. Once the student had identified the significant theme, they were to create and share with the rest of the class. This gratitude artifact was summarized on a small card and the students were encouraged to share this particular artifact with whomever or whatever was at the centre of the artifact. Unlike Mr. W., Ms. K. graded the gratitude journals and the artifact, but the assessment was based on completion and

effort.

LL (“Cultural”) Zone 3: Hermeneutic Interview Findings

Figure 12 outlines Zone 3 interior themes that emerged from hermeneutic interviews. The interviews were interpretive conversations that created a collective understanding of questions asked in connection to the LL quadrant question of how teachers teach and create a culture of mindfulness.

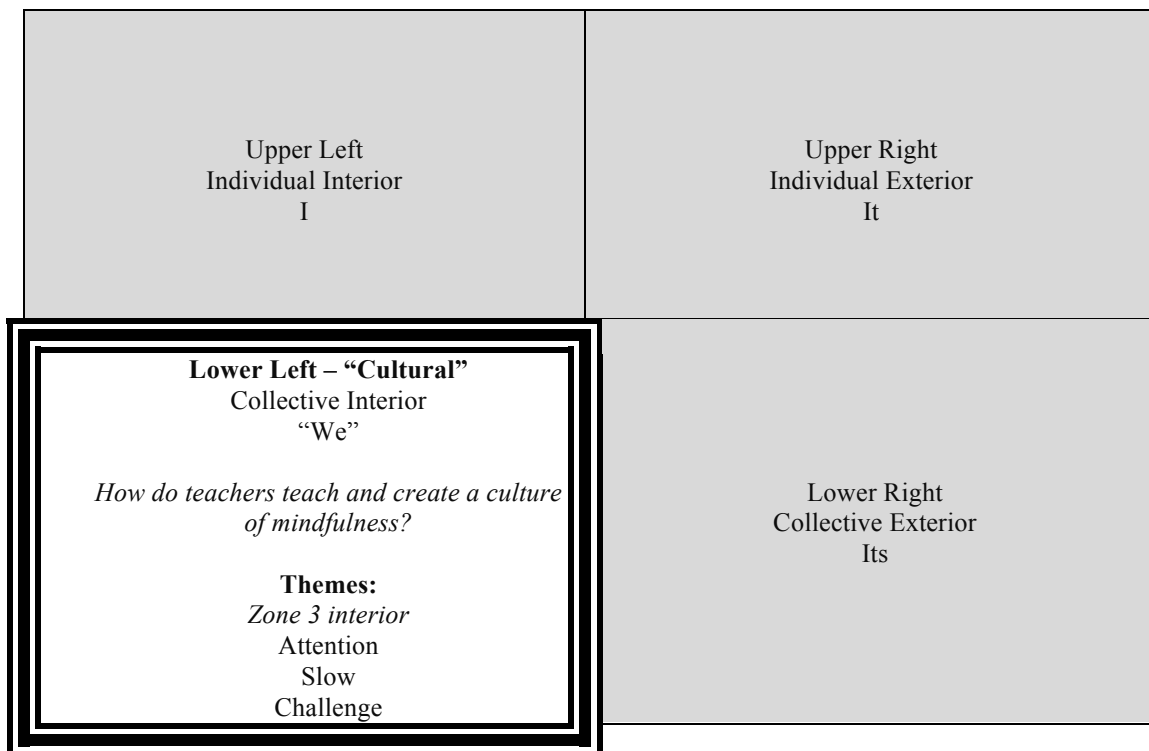


Figure 12. Research question and Zone 3 themes within LL quadrant.

The Zone 4 exterior third-person point of view assisted in creating an understanding of the different landscapes within the two different mindful classrooms. While I was generating ethnographic observations I started to also look at these mindfulness classrooms through a Zone 3 interior first-person point of view. This lower left interior lens enabled me to develop an understanding of the different linguistic meanings and intersubjective dynamics that were in play within these classrooms (Esbjorn-Hargens, 2009).

While looking through the transcripts, I attempted to siphon through the inconsequential to become aware of the consequential and uncover the significance within the “taken-for-granted” (van Manen, 2007). It was my goal as a researcher to work within Gadamerian hermeneutics, and therefore I discussed my pre-understandings with three separate teacher colleagues before I started research. Throughout the entire project I was engaged in the hermeneutic interviewing process so my prejudices could be provoked and recognized. Entering into the hermeneutic circle, as Geanellos (2000) defined it, enabled me to stay oriented to the phenomenon I was studying.

I reviewed the information provided by interview transcripts to gain an understanding of the phenomenon, and, since within hermeneutic inquiry the researcher doesn’t attempt to see through the eyes of the participant, I endeavoured to create a shared understanding, or what Lamnek (1995) called “hermeneutic difference.” Each time I would meet with a participant I would review my summary of the previous interview and ask the participant to comment on whether they felt if it was an accurate interpretation of the transcript. Frequencies, patterns and themes emerged throughout this iterative process concerning how participants were personally viewing the culture within a mindful classroom.

LL – Zone Three Theme 1: Culture of Attention

The theme of developing attention was evident within the Yoga and Natural Science classrooms with both internal and external awareness. When interviewed, students and teacher participants discussed how they were engaged in tasks that would require them to be more aware of the smaller, more granular things, Mr. W. discusses the importance of creating awareness:

I feel when students build a better relationship within their own personal understanding of themselves, right from the inside out, they can also build a better understanding and appreciation for the natural world around them. Being mindful is essential for students as

they create compassion for the natural world around them. This is so important because they are going to be the ones making decisions about our natural corridors and actually fixing the mistakes the generations before them have made. So that is the reason my classroom environment is all about building a relationship with the outdoor environment.

Sarah, a Yoga 15 student, discusses how focusing on small changes in her body has helped improve her overall attention:

I feel like I have been missing out a bit; I really haven't noticed things so much. When Ms. L. guides us through yoga and how you follow your breath and choose to shift your attention back within your belly, inside of your belly and the outside, holding and releasing the belly, and how we feel of the stomach and to just really watch the rise and fall of the belly as you breathe has made me think more about the more simple things, it has helped me notice things in my body more.

Emily, a Yoga 25/35 student, discusses applying attention strategies learned during Yoga to her other classrooms:

If I feel my attention going a bit, I use what I learned in Yoga. I look at my arm and then notice my forearm, and then I become aware of my wrists and stop to hold my awareness in the palms of my hand. I then see my fingers and let my energy out the tips; once I draw my attention down my arm I feel like I have kind of reset my brain when I need to.

Mr. W. discusses why it is important to develop students' attention spans and an awareness of the world around them, and how using the practice of nature star-fishing can help to develop these skills:

With students I feel there is a piece in there about how they—well actually how we all—have lost the ability to be still. We always have a computer going or music in the

background, there is always something, so when was the last time that people were just able to find a time in the day, just for 15 minutes in the day, to be absolutely still without knowing that you have to be anywhere. So I am starting to incorporate that idea into a nature star fish activity where we go out into an area and have the kids lie down into a star fish shape and not move for 5 to 10 minutes. They can close their eyes, they can focus on their breathing, they can meditate and they can just keep their eyes open and focus on sounds, smells, what they are touching, sights they are seeing. I want something simple to hold their attention, to build an awareness, otherwise life will pass them by and they will miss it.

Ben, a Natural Science 10 student, discusses how the practice of nature star-fishing helped build an awareness of the area around and hold his attention to the present moment:

You just spread out over the forest floor and it feels nice because you don't feel like there is a billion things going on around you, the forest holds your attention. You feel like you are very in time, and with the whole being present thing, you feel very present with nature and you feel that you are one—not only growing as a person in your soul, but you feel like you are growing as an individual yourself, like you are a plant in that forest and you are really connected and you are able to lay down and experience it and see everything happen around you in the forest and you are one with the forest.

Ian, a Natural Science 30 student, discusses how gratitude journals helped create more awareness of the smaller species within the outdoor environment:

I think I have a pretty good awareness but I do think it does help, definitely writing the gratitude journal has levelled it up and has made me aware of not only the small but of some of the bigger priorities in life and what is more important and sometimes going to

parties or hanging out with friends isn't going to give me what I want.

Ms. K. discussed why she felt working on attention skills with her students was extremely important and why it was important for it to be a part of the curriculum:

I have cultivated my ability to be aware and to attend over the years and I feel so blessed that I have done that because I have created these little anchors in my life, and luckily I have had these little anchors and I have little road signs that keep me going in the proper direction in life, and if I wasn't paying attention I would have blown right past them; they helped me stay on track. I really try and teach my students to pay attention and to become aware of both internal and external signals around them, because if they do they will be able to make better choices for themselves. I think it needs to be in all areas of the curriculum; we can't just hope students will have these essential skills, because they are proving they don't and that is why I think anxiety is on the rise. A brain that isn't able to attend is a breeding ground for anxiety.

Ella, a Yoga 15 student, discusses how learning attention strategies in her yoga class transferred to her extracurricular activities:

I skateboard a lot—it is probably my favourite thing to do—and so I was skating yesterday and I just kept thinking about what Ms. K. was doing with us in class. I don't know what you call it, but while we were meditating she kept telling us to notice the inside of our body, to kind of see it in our minds, like explore it I guess. We were to slowly imagine our pelvis and how it sits and how that can affect our posture and how it is connected to our legs and so on all the way down to our toes. So when I was skating yesterday I just thinking of Ms. K. saying to think and notice the inside so I started to square my hips and think about squaring them kind of forward. I have never really

thought about one body part before but it really helped my balance, it just kept replaying in my head.

Nadine, a Yoga 25/35 student, discussed how cultivating attention enabled her to be more aware of how to work with others around her:

I think we are more attentive because we have practiced paying attention to lots of different things, both big and little. I think this has helped us all to kind of learn to accept each other and we understand what we want a bit better and how to communicate with each other better. I think this is because we listen more and are maybe picking up on non-verbal stuff that we probably didn't even notice before, which I think is super important because lots of communication with others has lots of stuff that is not said. Not noticing things can really get you into trouble if you are trying to get along well with others.

Moods change really quick in High School, especially with girls, and if you are like walking around and not even noticing you will probably not be a really good friend and you won't get along well with others.

Emily, a Yoga 25/35 student, discussed how learning to pay attention assisted her in her ability to notice her different thoughts:

I used to get overwhelmed by my thoughts a lot. They kind of came to me at night or if I was starting something that was hard or I was embarrassed or stressed—they were just this massive thing that I couldn't really see. It just seemed like I couldn't concentrate and my thoughts were, I don't know, I guess they were just too much for me. I can kind of now, well not all the time, but sometimes I can now see the thoughts individually because Ms. K. has taught us to pay attention to small thoughts as they come, which helps me break them down so it is not a huge wall. The thoughts are smaller parts that I can deal

with.

Discussion of Culture of Attention

During hermeneutic interviews, both student and teacher participants in Yoga and Natural Science discussed the importance of developing attention. Student participants in both classrooms could define and give examples of when attention was discussed within their classrooms. However, between the two classrooms there was a significant difference in how attention was actually taught. Within the Yoga classroom, attention was cultivated in a systematic way that was connected to different yoga practices and daily meditation. Yoga students discussed how attention was drawn inwards towards the body and to the close stimulus around the body, such as small sounds or a change in wind speed or the pressure of something interacting with the body from the outside. Both the teacher and student Yoga participants went beyond discussing how important attention was; they were able to discuss how they were developing this skill during each class. Attention was seen as a skill to be acquired through daily practice.

Natural Science students discussed how attention skills were developed through noticing small elements within a natural environment, and interacting with plants and their soil. The students and teacher participants from Natural Science discussed how important it was to be attentive to your surroundings; however, participants referred only to nature star-fishing as a strategy to develop attention.

Cultivating attention is something that has been connected to both Eastern and Western mindfulness practices. The definition of mindfulness includes focusing one's attention in a nonjudgmental or accepting way on the experience occurring in the present moment (Kabat-Zinn, 1994; Marlatt & Kristeller, 1999). The objective within mindfulness is to “avoid having attention

wander a preoccupation with memories, fantasies, plans or worries, and behaving automatically without awareness of one's own actions" (Baer, Smith & Allen, 2004, p. 191).

The benefits of the cultivation of attention has been discussed within mindfulness-based stress reduction (MBSR; Kabat-Zinn, 1990) and mindfulness-based cognitive therapy (MBCT; Segal, Williams & Teasdale, 2002). Engaging fully in the present thought, action or activity enabled participants to enter wholly into an experience in a deeper way. Posner and Peterson (1990) conceptualized attention as a multifaceted construct made up of three overlapping networks of alerting, orienting and executive attention. This research concluded that executive attention is the glue that holds together all self-regulatory processes (Posner & Person, 1990). Attention has also been linked to a reduced amount of rumination, which has been defined by Smith and Alloy (2009) as perseverating on (often self-focused) negative thoughts and emotions,. Rumination has been linked to depression, anxiety and cognitive inflexibility (Hertel, 1998). Since fostering attention has been connected to self-regulation and cognitive flexibility it would be important to ensure it was taught with intention. Yoga students could discuss both the reason why and how they were developing attention, whereas the Natural Science teacher and students discussed mainly why attention was important but not about how to actually develop the skill. Proper planning and assessment of attention would likely need to occur to enable students to adequately develop this skill.

LL – Zone Three Theme 2: Culture of Slow

Hermeneutic interviews also revealed a theme of a classroom culture that was designed to move at a slower pace. Students and teachers discussed how both classrooms had a different pace than other classrooms. Mr. W. discussed how he specifically creates a slower-paced class culture in which students have more time engaging in hands-on:

I like to let them slow down and really take their time when they are working with the plants. I think it gets them out of their heads a bit if they are connecting with the soil because they are so overwhelmed with their lives. When they are planting and they have their hands in soil they are present, and I think it gives them a release and I think it stops them from having to worry about all those other things that are happening, and you know just the ability to know that with their own hands they are able to accomplish something and get it to grow.

Ms. K. discussed the importance of allowing a slow start to the classroom, she stated the following:

I just want to recognize students as they arrive, to take the time, however that looks, to make sure they feel recognized. There is so much value to slowing the pace down; they are expected to pack so much into their lives that it is really important they have a place to take the time to be grounded. I never want them to feel like they have entered or exited the room without recognition, I want them to know I see them.

Beth, a Natural Science 20/30 student, discusses how the culture within Natural Science is different from her other classrooms and how she enjoys the slower pace of the class:

There is a lot less structure to this class, which is a good thing because you can come in slowly and really take your time to get started, take a breath and get down to task when you are ready. You would think people would abuse this but they don't. I think everyone likes it because there is choice where and when to start. This allows us to kind of follow our passion rather than rushing in and staring at a white board while the teacher tries to cram in a bunch of stuff.

Mr. W. discussed an activity that values slowing down:

We watched a video in class that showed a river in stop-motion photography, and if you ever watch a river and try to understand a river you would have to sit there for hours to pick up on the complexity of the river. What he did was put a camera on it so now in a fifteen-minute period you could see what you would have to actually watch in weeks and he calls it moving art. He did one on flowers and kids think that flowers are pretty but they are boring. I asked if they have sat around long enough to really look at them you would know they are anything but boring. So he took moving photography and the students are in awe because they never realized there was that much movement. Plants are not sedentary things; they are actually quite busy and they are amazed by that and we are missing that—we are missing the amazing things that happen in that particular moment.

Ethan, a Yoga 15 student, discussed how he slowed down in his extracurricular activity and how it helped him make better decisions on the field:

My coaches said I was making better reads on the field and with better reads I was getting more yards in and more touchdowns. Yeah, but it is kind of a funny thing because I think it was because I slowed down more, not on the field because that would be bad, but when I would get to a game, I would actually move away from all the noise and chaos and do things more slowly, which made me more calm so I could think. I think I also apply it more in the stuff I really don't like to do and it gets to the point where you say, "I don't really like to do this," but then I think back to Ms. K's class and I think, okay, just slow it down and I can push through.

Nadine, a Yoga 23/35 student, discussed how using slow deliberate movements assisted her in becoming calmer during class:

Certain types of yoga practices are meant to be done really slowly and I think Ms. K. really likes that they are slow because then we all slow down. She always is talking about how important it is to slow down, that we are all moving way to fast. Yin Yoga almost drove me crazy because my brain couldn't handle it at first because it was so slow. I thought it was boring but Ms. K. got us to do it four different times and it is hard to think fast when your body is moving so slow and holding positions for so long; by the end I didn't mind it, it was kind of nice to not have my mind racing because it always does, so that was good I guess.

LL – Zone 3 - Discussion of Culture of Slow

Honore (2004) discussed the co-existence of two speed-oriented perspectives: the Jovian perspective of contemplation and reception and the counterbalancing Mercurial perspective of hurrying and skimming. Many people within school-based settings strive to use time as productively as possible since accountability measures have thrust schools into the practice of marking student work output against the measurement of time. Within these two classrooms there was a definite decision made to break away from some time restrictions and extend the introduction of each class. “Grounding” into the environment was a term both teachers used when discussing this particular block of time with their students.

The slow revolution, or cultural deceleration movement—which includes the *slow food*, *slow city*, and *slow education* movement—has gained momentum throughout the last two decades (McReynolds, 1997). The slow education movement has been connected to Socratic methods and is meant to be an adaptive and non-standardized approach to education. Slow education is also about a connection to what is considered real learning: bringing forth meaningful skills while doing no harm to the planet by having respect for all living and non-

living things. This approach has been connected ecological education (Louv, 2008).

Slow education is a response to the overwhelming stress that teachers and students are feeling in response to expansive curriculum demands and standardized measures of assessment. Both teachers in this study have discussed the importance of slowing down to first enable an opportunity for students to build awareness of what they are doing in the present moment and to help decrease the amount of stress students feel within their lives. Student participants reported within their interviews that their teachers were constantly reminding them of the importance of slow walking, eating, and taking slow breaths.

Kabat-Zinn (2003) found that people who regularly practice mindfulness meditation are able to change and slow down their relationship with time. This is due to cultivating awareness and attention, which enables one to notice finer details and minimize the feeling of different stimuli racing by. However, Droit-Volet and Wearden (2016) found that experienced meditators felt time flew by during a meditation session: participants felt that a one hour session could on average feel like a five to ten minute session. These same participants then discussed how they could then slow their minds down outside of their meditation sessions. Brown and Ryan (2003) discussed how slowing down was connected to decreased levels of stress and anxiety. Therefore, the practice of slowing down could be considered quite beneficial to the learners within both classrooms.

LL – Zone 3 Theme 3: Culture of Challenge

Challenge was the topic examined within the UL individual quadrant, which enabled me to understand student and teacher perceptions of challenge. However, challenge was a theme that also surfaced in the LL cultural quadrant within hermeneutic interview analysis. Challenge was frequently discussed by both teacher and student participants.

Mr. W. discussed how students can learn from their mistakes and how failure is naturally built into any natural cycle of life:

In grade 10 we talk a lot about plants and the science of it but most of it is very experiential, so one of the things you learn from nature is that failure happens all the time. Not everything survives and they find that even with your best efforts they are not going to, and they have learned some valuable lessons from that—it is real trial and error.

Ms. K. discussed how the class is a place to make mistakes and take on challenges. She shared the following:

This classroom is a place where students can make mistakes and let things just happen. I really want to create an environment where students feel they have permission to let go, and I think students so often feel they can't. They often feel they will be dropping something that if we let go, something will go in a way other than they would like. But really, when they let go, that's likely when the most growth occurs for them, and the most possibility.

Mia, a Yoga 25/35 student, discussed how Restorative Yoga was a way to let go and release:

Ms. K. talks all the time about how our classroom is a place to release, because she says we are like little tight balls of stress that are so scared of making mistakes. I think she purposefully asks us questions that don't have the correct answer and she kind of challenges us to make our answers sort of clearer. At first I didn't know what she was wanting from us, but now I get that some of the questions are meant to be hard and you can't answer them for a while. We are so used to having to come up with answers like super fast in other classes.

Mr. W. explained an activity taken up in class that created a conversation about the importance of challenge:

So yesterday we were doing a film called “Revolution” and it was about changing mindsets in how people tell you that you can and cannot do certain things, and at some point you have to make up your mind to what you are willing to accept. You look at what challenges are out there, and you are going to be told you are crazy to even attempt to make change. I want students in here to not only care about the environment but to learn to be really durable when trying to save it. The environmentalists need to be tough, to really learn to not take no for an answer. Fighting for a cause is tough, especially one that has no voice.

Beth, a Natural Science 30 student, discussed this activity. She noted:

After we watched the film “Revolution” we had a really good conversation about how you've got to decide what is important for you to do, and steps to doing something, and there is no such thing as being too late or too early time to do that, and we talked about the difference between generations, and it's going to be my generation that has to come up with very unique solutions that are up there, and we talked a little bit about global warming because that was part of it, and it was about what is happening with our oceans right now. The big message was about what we do when we come across a challenge or a roadblock, how we have to kind of see our way through it because it matters. We are going to have lots of no's in our life so we need to move past them.

Discussion of Culture of Challenge

Challenge was a theme that was again touched on; however, this is the LL cultural view of challenge rather than the UL perceptive view of challenge. Challenge was considered to be

essential and so teacher participants discussed how they purposefully created environments that placed difficult challenges in front of students. Many one-on-one and full class conversations focused on the value of making mistakes and embracing challenges that are not easy to overcome, using real-life examples of how mistakes and failure is a common practice, especially within Natural Science.

Helping a student acknowledge their ability to overcome challenge was emphasized by both teachers within the mindfulness classroom. Both teachers placed importance on creating a cultural climate in the classroom that celebrated the trial and error process. Student participants recounted classroom conversations that focused on how they can change their brains through embracing challenging situations (Blackwell et al., 2007). Teachers discussed how they planned to implement tasks that would develop comfort with ambiguity and the process of “failing forward” (Maxwell, 2000).

Within Yoga, Ms. K. would invite students to embrace falling over and out of a yoga pose so students could get the feeling of an actual fall. Both teachers reported that they didn't feel students had experienced enough failure within their regular lives so they didn't know how to deal with failure when it would invariably arrive. Therefore, both teachers discussed the purposeful introduction of failure into learning tasks and classroom conversations. Mr. W. discussed how he actually enjoyed when the students killed their tomato plants by exposing them too early. He wanted the students to understand how the most natural way to learn is through repeated trial and error. Many student participants discussed that particular incident and how they were quite upset at first but, that they also learned so much from the experience.

The culture of challenge was something both teacher and student participants felt was both essential and rewarding. Students commented on how they became more comfortable with

the idea of challenge and failure as the term progressed. Students also remarked that they felt supported within the classroom and therefore felt more comfortable taking risks within the Yoga and Natural Science classrooms than they did in their other classes. Students within the Yoga class revealed that they would use breathing and meditation exercises to help themselves prepare for challenging learning tasks. Taking on challenges together and making communal mistakes was something students also discussed. They also felt safe taking on challenges because they felt everyone was set up to struggle and fail the first few times. Students also appreciated the explicit language in which teachers explained challenge and failure, and how difficult something was going to be before the students even entered into the specific learning task.

Summary

Examining mindfulness through the LL interior and exterior cultural zones uncovered some tensions between the two different classroom cultures. The ethnographic study revealed many similarities between the two classrooms. Long introductions into classroom work, intentional language development, use of gratitude journals, and the use of outdoor learning spaces were some of the practices shared by both Yoga and Natural Science classrooms. The differences between the two classrooms outweighed the similarities, and were mainly marked by how purposefully mindfulness was taught. Within Yoga, mindfulness practices were outlined, scaffolded and assessed based on explicitly-stated curricular outcomes. The students also engaged in mindfulness activities more frequently and with longer duration in Yoga compared to Natural Science. Considering that the observations were made within two high school classrooms, these are significant differences.

Hermeneutic interviews revealed different cultural themes, which were discussed by both teacher and student participants. These interviews uncovered the three different themes of

attention, slowing down, and the celebration of challenge. Attention and the celebration of challenge were commonly and continually discussed, and had associated tasks and activities. Slowing down was a large theme because both classes used such a different pace than other classes. The teachers also continually discussed why slowing down was important and how they purposefully implemented a slow pace introduction.

Where the tensions lie are within the lack of differences within the hermeneutic interview responses. The pattern of responses and themes that emerged were not vastly different from one classroom culture to the next, bearing in mind that Yoga was taught with the explicit intent to systematically develop mindfulness skills, and Natural Science was aimed at developing an understanding of environmental conservation and stewardship. This contrast might prompt one to conclude there would be a significant difference in the participants' personal experiences across the two cultural climates. However, that was not the case. This issue becomes more amplified when adding in phenomenological and structuralistic analysis within the UL quadrant, which is discussed within the next chapter.

Chapter 5: Findings and Discussion Part 2

The findings from both phenomenological and structuralist methodologies are discussed within this chapter. The chapter begins from the view of the interior individual Zone 1 and the themes that emerged from phenomenological interviews, through which research participants' views of challenge were explored. The discussion then moves onto a structuralist comparison of the similarities and differences within the phenomena of challenge and mindfulness within the two different course environments. The focus of the structuralist comparison was language and the intentions were to better understand and to characterize the structures of these complex phenomena. The chapter concludes with a summary of the phenomenological and structuralist tensions that arose throughout the research and analysis process.

UL (“Consciousness”) Zone 1 - Phenomenological Interview Findings

Figure 13 outlines Zone 1 interior themes that emerged from phenomenological interviews that discussed students' individual perceptions of challenge.

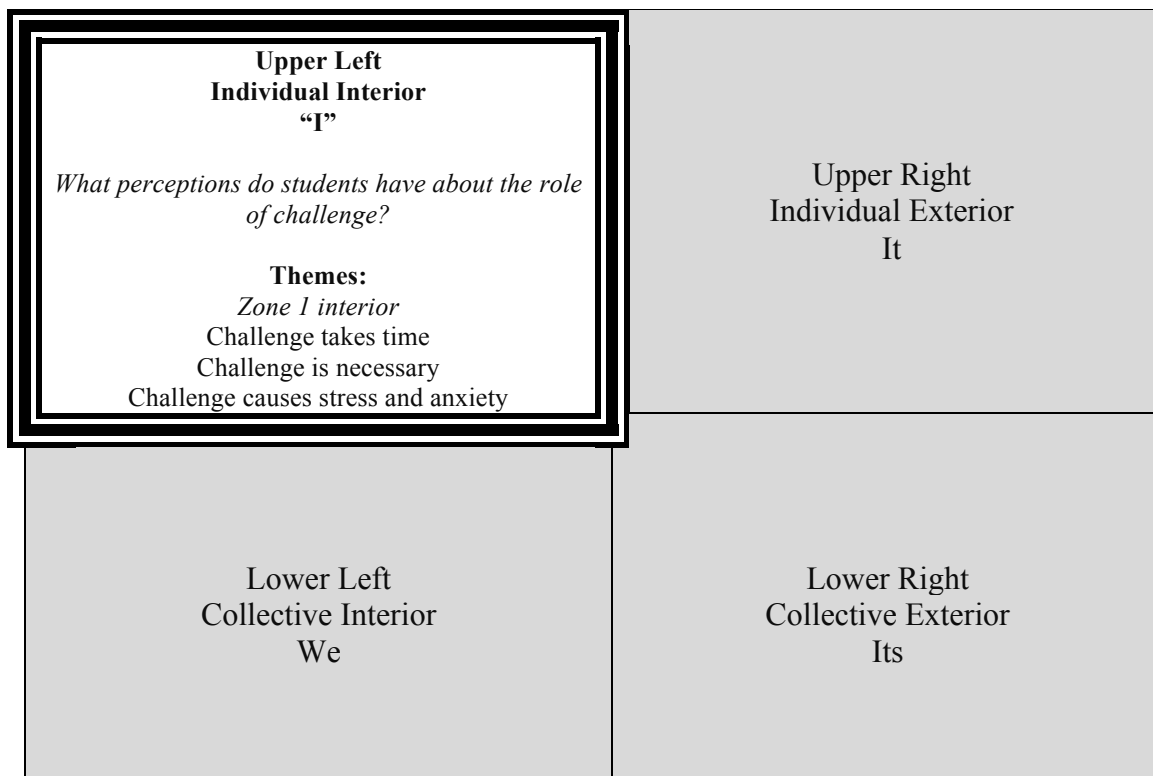


Figure 13. Research question and Zone 1 themes within LL quadrant.

In this chapter I concentrate on the upper left and right quadrants, focusing on individual experience and response to experience. Insights into personal experiences with challenge were gathered through the use of phenomenological interviews and ethnographic observations. Inquiry was centred on the realization that we attempt to see meaning or derive meaning from our personal experiences: we desire to make sense of the experiences we have in our lives (van Manen, 2007). Therefore, rather than primarily looking at themes, I used phenomenological research and analysis to report on lived experience, to examine pedagogic life with the phenomena, and to create the most robust description of experiences

In an attempt to align with the phenomenological view of the theme of challenge, my analysis moved past frequency count or the coding of terms. Frequency counts and coding did start the initial investigation of data, which then moved toward a more narrative, theme-based understanding. To understand how to support learners while they experience challenge within

their lives, one must first understand learners' actual experience with challenge. Themes are considered to be the experience of focus, of meaning, of point (van Manen, 2011). Theme formulation, at best, is a simplification. Creating themes is the process of invention, discovery and disclosure. Phenomenological invention is the creation of an interpretive product; discovery is then the interpretive product held up within the context. Finally, disclosure is the meaning of the interpretive product given by the context itself. Phenomenological themes that were created within my analysis were not meant to be just objects or generalizations, they were meant to be "knots in the webs of our experiences, around which certain lived experiences are spun and thus live though as meaningful wholes" (van Manen, 2007, p. 91). Investigation of the transcripts produced many sententious phrases that revealed some fundamental meaning and significance. Statements that were considered essential or revealing led to further conversation and questions, which helped uncover how student and teacher participants encountered and knew challenge.

Students responded to a journal question about how they would define challenge. The question was initially framed through the use of a Frayer Model. Once the Frayer definitions were examined, more specific personal examples of challenge were captured within phenomenological and structuralist interviews. The Frayer Model requires a participant to define the term, discuss characteristics attached to the term, and provide examples and non-examples. The responses from the Frayer provided a general definition of challenge and then themes emerged beyond the general definition, which assisted in guiding the phenomenological interviews. The definitions of challenge discussed are from a combination from the Frayer Model and phenomenological interviews.

UL Zone 1, Theme 1: Time

The theme of time was noted not only because of its prevalence but also because of the depth of description given within phenomenological interviews. Many personal anecdotes about time were discussed in connection to participants' experiences with challenge. Both student participants and adult participants shared multiple personal examples that included the theme of time.

The length of time needed to overcome a challenge was predominant in the interviews; however, student participants mostly discussed short-term timelines, whereas teacher participants discussed both short and long-term timelines. Only a few student participants discussed longer timelines connected to lifelong learning. Participants' anecdotes were connected primarily to the current year or previous year of study. Emily, a Yoga 25/35 student, stated:

Trying to overcome something that is challenging or hard to learn can be both a positive and negative experience, because you want and need to learn that skill, but you can feel really frustrated if it takes more time than you think it should, or it takes more time for you to learn the skill than, say, your friends. I always get more frustrated if I feel that I need to take more time to learn something than somebody else.

Student participants often felt that their peers externally dictated the suitable amount of time needed to overcome a task. The participants who commented on the suggested time for completing tasks stated that they often compared themselves to their closest peers as opposed to average classroom norms. Nadine, a Yoga 25/35 student, commented:

I couldn't move forward with the assignment and I received a competent and I was devastated by that; it hurt me, and everyone, like, all of my good friends were moving on with their project and they got one hundred and I was stuck with a seventy-five and that bothered me so much. It bothered me because I had to take so much more time to figure

everything out. It also bothered me because I took way more time at the beginning of the assignment to take down notes for the lab; it just didn't seem fair.

Time was most often associated with mastering a skill within an academic subject, or acquiring technical skills within activities outside of school. The time it took to overcome a task had an overall negative tone and most participants indicated a preference for less time needed to take on a skill-acquisition challenge. A recurring perception was that more difficult tasks required more time to complete. Many participants felt that they were at a point in their lives where the time required to overcome a challenge was at its highest point, and that it would continue at this level throughout post-secondary work and then decrease throughout life. A nostalgic tone emerged when discussing early learning situations in which challenges did not take a long time to master. Ian, a Natural Science 30 student, stated:

When I walk into my academic classrooms I feel so behind. Like in Math class where it is my worst subject because it takes me so much time, more time than all my friends to understand, that totally stresses me out. Thankfully, I have teachers that could help me get through it, um, but I just remember some days when I was younger I could do my math so fast, it was easy, one step stuff. That is when I felt I could actually do math. I miss those days.

Time was also connected to overcoming social challenge, and the length of time needed to work through social problems was frustrating to some of the participants. However, participants still considered the large amount of time needed to overcome social challenges was essential. Student participants stated that the time required to overcome social challenges was more of an individual trait and varied more between people than challenges associated to skill acquisition, which many participants felt was more associated to a certain age. Emily, a Yoga

25/35 student, commented:

One of the big “aha” moments was that I was becoming more patient with myself and with others and the amount of time it took to get over things when you are mad at your friends. I have kind of learned and seen my friends in a new light. They are uptight about this and this and this, and I can see that now. It has helped me realize you need to relax sometimes. You need to take time for yourself and take the time to really understand what has gone wrong between you and the friends you hang out with.

Another theme participants commented on regarding time and challenge was the lack of time needed to build up strategies to help one feel competent, confident, and motivated while working through challenging situations. Many participants indicated that they were grateful to have the time in Yoga and Natural Sciences classes to discuss and learn certain mindfulness strategies such as meditation, body scanning, breathing techniques, nature walking, and starfishing. However, student participants didn't feel they had the necessary time to apply these strategies to their largest potential in their core academic classrooms. Many student participants also indicated that, as their lives got busier, they didn't have sufficient time to apply these strategies outside of the school and within their real lives. Later on in the term, some student participants stated they were more willing to build time into their schedule as they had more exposure to the strategies learned within their classes that concentrated on mindfulness practices.

A Natural Sciences 30 student, Nathan, commented:

This class feels like home, and to me it gives me that sense that I am in a space where I belong and a place I can take the time to reflect and reconnect with nature the way Mr. W. taught us. Sitting out there in the sunrise and drinking my coffee, it feels very euphoric because of watching everything happening around you, and it feels very uplifting and it

feels very good. I wouldn't have the time to do this at home; it always feels rushed at home.

Discussion of UL Theme 1: Challenge and Time

Time associated with challenge was considered to be negative, and many students indicated frustration with how much time was needed to overcome some academic challenges. Students used external rather than internal measures to validate how much time certain academic challenges should take. The external measures discussed were peer performance, timelines indicated within course syllabuses, and parental expectations. Duncheon and Tierney (2013) discussed how certain schooling structures require children to follow strict schedules, and how these school structures celebrate a Westernized temporal awareness based on linear clock-based time. This perspective supports the notion that schools reinforce a white middle-class structure of time-management that is often compartmentalized and associated with a certain monetary value, and, therefore, spends too much time on something that is considered ineffective and wasteful.

Student participants discussed how they were very aware of how long it took their close friends to successfully complete an academic task. There were no discussions about their peers being unsuccessful, or not fully engaging within the task. Student participants did not report on peers "blowing off" a task or quickly completing and then receiving a failing mark. There was an overall feeling that if their peers completed the academic task quickly they were successful within the task. When asked about how peers were doing in class there was a common theme within all but one student participant: that students would never inquire about what marks other students received, and therefore peer performance was perceived rather than confirmed by actual information. Maxwell (2000) found that homework effort and quality were linked to achievement rather than the quantity of time devoted to homework completion. Therefore, clock

time research suggests that time spent on work completion isn't the main indicator of student ability, and that success related to time spent on a task is only one aspect of the nuanced connection between time and academic achievement.

The course syllabus was principal to student participants as a measure of acceptable time limits for course work. Student participants indicated a feeling of powerlessness in negotiating timelines within different academic courses. This perception is surprising due to the fact the high school employs the school redesign model, which includes flexible academic timelines as part of school planning. Duncheon and Tierney (2013) found that many administrators epitomize a monochromic view of schooling, which reflects the capitalist focus of worker productivity and accountability measures. The measurement of time is often the way administrative policies strive to maximize achievement outcomes. However, according to Dweck (2007), working through academic challenge is often a complex, recursive process and, consequently, a polychromic experience. Therefore, the monochromic goals of administrators run counter to the polychromic experiences of teachers and students, a disconnect that can cause tension within the learner and cause the misplacement of success indicators.

Some high schools and districts have embraced proficiency-based teaching and learning approaches (Perkins, 2014), such as the school this research was conducted in. Within the High School Re-Design model, time structure is guided by teachers to best fit their particular learning environment. Students should feel more in control of where, when and what they learn, with a deep focus on engagement. These initiatives evaluate student learning based on mastery of content standards instead of traditional Carnegie units, which represent the total amount of time the student is exposed to the content. Proficiency-based teaching is an attempt to remove temporal restrictions on students' academic progress, allowing learners more flexibility and

autonomy. Acknowledging that many time-perceptions exist enables schools to better meet students' academic needs (Perkins, 2014). However, when questioned further about the use of flexible timelines many students felt asking for extensions would be frowned upon, or would end up causing more stress because students would feel behind in their work. The date set was always the most significant marker for the student.

Parent expectations were another external gauge student participants used to measure whether or not the academic challenge was within acceptable timelines. Three separate student participants indicated that finishing academic tasks quickly was very important to their parents. Two of the student participants discussed how their parents were new immigrants to Canada and believed that academic tasks should be performed quickly and with little effort. This was an indicator of success within their culture. This expectation seemed to cause tension within both student participants. Dweck (2007) posited that equating success with speed of task completion is an inaccurate measurement of student achievement and can create a fixed mindset within the learner. Plant, Ericson, Hill and Asberg (2005) found that the utilization of time, rather than time spent, most impacted student learning, and that class and homework effort and quality are associated with achievement rather than the quantity of time need for work completion.

Teacher participants responded differently regarding the theme of time associated with academic challenge. While student participants negatively perceived time committed to work, teacher participants felt that it is essential and beneficial for students to take their time to properly work through academic challenges. Dweck (2010) stated the following when discussing how long learning should take:

Teachers should also emphasize that fast learning is not always the deepest and best learning and that students who take longer sometimes understand things at a deeper level.

Students can learn about many historical figures who were not regarded as “fast” learners in childhood. Albert Einstein swore that he was slow to learn and that’s why he pondered the same questions year after year—with, as we know, excellent results. (p. 217)

Both teacher participants indicated a desire to create academic tasks that foster patience with academic challenge, and recounted many conversations related to assisting students in navigating academic timelines. Both teacher participants taught Career and Technology Strategy (CTS) courses and indicated that they felt more flexibility within their timelines. However, both teacher participants also taught core subjects such as Biology 10, 20 and 30 and English 10, 20 and 30. Even though they felt they valued flexible timelines and fostered patience with learning outcomes within these core subjects, the students took the timelines more seriously in the core subjects than they did in the CTS courses of Natural Sciences and Yoga.

Case and Gunstone (2003) found that the main influence on how a student allocated their time was how they perceived time. If students felt they were in control of time they were more likely to take the time to understand the concepts on a deeper level and connect these concepts back to real-life contexts. However, students who felt time was out of their control would focus on completing easier, smaller tasks. Therefore, learning environments with less emphasis on time would better support deeper student learning.

Zone 1: Phenomenological – UL Theme 2: Necessity of Challenge

Both student and teacher participants discussed how challenge was an essential part of growth, and was necessary to be able to accomplish a goal. Participants felt that challenge was essential when increasing a knowledge or skill base within an academic or extra-curricular area. The acquisition of new skills or information was common in almost all responses. However, participants shared more information when focusing on how a challenge enabled participants to

acquire personal strategies necessary to take on future challenges. When discussing the development of personal strategies, participants used more personal and specific examples, and took more time in their explanation. Ms. K., discussed how she initiates discussion within her class to focus on the importance of recognizing challenge and the importance of challenge within life. Within the course syllabus there were three separate academic tasks connected to exposing and exploring personal challenges and strategies to deal with these challenges. When interviewed, Ms. K. indicated challenge was essential:

It can easily be an opportunity for growth. I think challenge is also an indicator towards growth, so it is sort of shining a light on an area where you have opportunity, and I guess it is an education of how you can sort of be stretched, and an education in becoming who you are. We need to open up the conversation with students so they don't feel blindsided by it and they can recognize what it is and have confidence to move through both academic and personal challenges. I have built my course around it.

Mr. W. discussed the importance of challenge and how he purposefully creates challenging situations within his class:

Surrounding the students with people who work organically makes them more comfortable with ambiguity and the organic nature of things, which is really important.

Whatever I was going to do tomorrow can wait; we will embrace this. And really the kind of teaching I have done in here is: I base it on a journey. Creating this comfort with ambiguity and by purposefully placing challenges that take longer to work through is something I think is necessary for student growth. The key however is to ensure you discuss this process with the students so they understand this is not just happenstance; it is something they need to call forward and out in their life.

Beth, a Natural Science 30 student, discussed how one of the personal characteristics she acquired while working through challenge was developing better personal awareness through self-reflection:

I think you have to have challenge because otherwise you just slide through life and you wouldn't know how to overcome challenge, you wouldn't develop a sense of individuality to access how you would react in different scenarios and things like that. It helps you become more aware of who you are and what you can actually do. Without it we wouldn't really understand ourselves.

Student and teacher participants shared that most personal reflection happened in retrospect, not necessarily while presently working with challenge. Some participants went further to give a personal evaluation of how they dealt with the challenge. Many participants felt in hindsight they could have been more patient with the process or with their own abilities. Mia, a Yoga 25/35 student, stated:

It helps us learn new things and grow as people in all different ways. It helps us experience life, and I seem to know that after I have worked through a challenge, but I get really stressed when I am in the process. I need to get better at calming down when working through challenging school work.

Nathan, a Natural Science 30 student, shared about his experience with challenge when failing to transplant tomato plants outside:

The question that I have is, what can I do now? Can I replant, and can I start over again? Mr. W. always says nature is all about starting all over again, and I think that is connected that back to seasons. In grade ten we talked a lot about plants and the science of it, but most of it is very hands on so one of the things you learn from nature is that

failure happens, it is necessary, it is a valuable to understand we grow from natural trial and error, from failure and challenge.

Participants felt challenge was necessary because it was part of their natural growth. The term growth was the second most used term when participants discussed and defined challenge. Ella, a Yoga 25/35 student, stated, “A challenge is necessary for growth; it is a task that pushes you to do better, to make you more aware of yourself and what you are actually capable of.” Both student and teacher participants’ responses indicated a variance in growth from challenge between individuals, and expressed that overcoming challenge was quite a personal process. Both groups of participants also felt that growth was expedited when challenge was more difficult to overcome; the more difficult the challenge, the more growth an individual would encounter—but only if they were successful within the challenge. Ethan, a Yoga 15 student, stated, “yes, definitely challenge is necessary, and given me the hands-on experience that I like and I can learn it for myself. I am way more confident in other areas making mistakes because I know that is okay.”

Discussion of UL Theme 2: Necessity of Challenge

The idea that challenge is necessary was included in all student participants and teacher participant definitions and interview responses. The necessity of challenge was evident throughout teacher participant interview responses and within classroom conversations. Observed academic tasks within both classroom settings explored both academic and social challenges. Challenge was seen as both positive and negative but was overwhelmingly reported as essential to life, and a necessary component to learning in both traditional and non-traditional academic settings.

Student participants enrolled in Yoga and Natural Sciences reported that challenge was

more explicitly discussed and explored within these two classes than within the other academic classes. Student participants within these two classes also noted that, within these classes, time was committed to explore and discuss personal challenge, as well as how personal challenge enables personal growth. Teacher participants discussed the different academic activities and tasks they had planned to assist in recognizing challenge within both social and academic realms. Dweck's (2007) research supports the necessity of challenge, in that learning tasks are only meaningful if they challenge learners in some way. Coasting through work without needing to put in much effort can cause a fixed mindset, which engenders the false belief that one is only intelligent if academic work is effortless. Students who have a fixed mindset feel threatened by challenging learning tasks and will avoid taking risks within their learning, which significantly reduces academic potential. Problem-based learning has been built on the understanding that, when students confront different problems or challenges, they develop effective, life-long problem solving skills (Barber & King, 2016).

McNeill, Gosper and Xu (2012) state that problem solving, critical thinking, and creativity are essential skills to ensure success within post-secondary settings—but these skills need to be developed by students before they arrive at post-secondary campuses. Challenge-based or problem-based learning needs to be scaffolded within middle and high school learning environments to foster skills needed to be successful beyond grade school levels.

The development of entrepreneurial spirit has been outlined as one of the goals within the Alberta Ministerial Order (2013). “Entrepreneurial spirit” has been defined as follows:

An individual with an Entrepreneurial Spirit is motivated, resourceful, self-reliant and tenacious; continuously sets goals and works with perseverance and discipline to achieve them; through hard work, earns achievements and the respect of others; strives for

excellence and personal, family and community success; is competitive and ready to challenge the status quo; explores ideas and technologies alone or as part of diverse teams; is resilient, adaptable, able and determined to transform discoveries into products or services that benefit the community and, by extension, the world; develops opportunities where others only see adversity; has the confidence to take risks and make bold decisions in the face of adversity, recognizing that to hold back is to be held back; and has the courage to dream. (p. 2)

Isenberg (2010) suggests that the design thinking process is one of the most effective ways to develop an entrepreneurial spirit. The five interdependent phases of the design process—empathy, interpretation, ideation, prototype, and test—are all essential and centred on a challenge. Problem finding, solving, and testing are the basis within all design challenges. Embracing ambiguity and learning from failure are two of the nine design mindsets that focus on challenge as being a necessity for growth. A mindset that embraces learning from ambiguity involves developing a level of comfort in not knowing the outcome and having trust that one will always find the next step and figure out where to go next. A mindset that embraces learning from failure fosters an understanding that failure is necessary, and that one must fail before learning how to properly iterate and improve. As stated by Gobble (2014), “Design thinking is the confidence everyone can be part of creating a more desirable future, and a process to take action when faced with a difficult challenge. That kind of optimism is well needed in education” (p.60).

UL Zone 1, Theme 3: Stress, Anxiety and Challenge

Both teacher and student participants from all three classes reported that challenge was one of the main causes of personal stress or anxiety within the academic learner. Definitions of stress and anxiety varied between teacher and student populations. Student participants defined

stress and anxiety as the same thing, using the terms interchangeably. The teacher participants, however, made a distinction between the two, defining stress as a response to different situations that arise, and anxiety as a feeling you get from stress. Therefore, I will discuss the two terms' interchangeability when discussing student responses, and discuss stress and anxiety separately when discussing teacher responses.

Student participants discussed the physical symptoms and feelings of stress and anxiety resulting from academic challenge. The physical symptoms were often described as heightened breathing patterns, upper body muscle tension, recurrent periods of crying, inability to sleep, and increased heart rate. Sarah, a Yoga 15 student, stated, "I know personally I start to fidget and move around, I can literally hear my heart in my ears because it is beating so hard. I know that if I don't get a question on a test I start to freak out and I grab something and my leg is shaking, I just get so tense." Nadine, a Yoga 25/35 student, stated:

I would do anything I could to get out of my thoughts, rid of my negative thoughts, and if that doesn't work I would then just go over things and too much over thinking that is necessary. I would completely out-mind myself and sometimes I would just start crying and think that I can't take it and be an emotional mess. I don't have that emotional stamina thinking I can't do that.

Student participants also indicated experiencing symptoms impeding executive functioning skills, such as an inability to concentrate or prioritize tasks, thought perseveration, or an inability to recall previous facts or understanding concerning the learning task they were working with. Beth, a Natural Science 30 student, discussed how stress impacts her within the classroom: "I definitely think my mind is slowing down in some situations and I am able to concentrate, but when I am anxious my brain tends to speed up and think about too many things

and my brain isn't focusing as it should.” Emily, a Yoga 25/35 student, stated, “I think my brain goes all over and it can't focus and can't think through things, but through challenge or if you're anxious your brain shuts down because you are just going through something but you can't think about it. Or you actually think about it too much.” Ethan, a Yoga 15 student, commented on how he feels when he is attempting to organize his thoughts while feeling stressed or anxious:

When I get stressed my brain is going crazy trying to figure out what is going on, what to focus on, what to do first. I am a kind of guy who likes to do things in order—like I need to do this first then this second—and that is what my brain does a lot, so when I get stressed it what I need to do first.

Most participants made a distinction between academic and social challenge when discussing personal growth. Academic challenge was connected to an academic class within a school-based setting and not discussed when describing working with a supportive program such as private tutoring work. The academic class was defined as a graded class that students were enrolled in and attended during regular school hours. Further description mainly listed the four main core courses connected to academic challenge. All four core academic courses were discussed, but Mathematics was the course most connected to challenge by the participants. Nadine, a Yoga 25/35 student, offered this point:

Most challenging? All of them obviously. I will be completely honest, all of them are really challenging and tough for me, but I guess most of all probably Math, because I don't have a sense of how well I know the material and I have a test today—I have two tests today actually, and I am so stressed out, and the only resource she gives us to study is online practice tests, and when you do too many of the online practice tests they don't really make sense, and when you do the actual test they don't give you the same questions,

and if it is from the beginning of the year you don't know how to study for that because I have been so engrossed on the online practice tests.

Three student participants noted that language classes, French and Spanish in particular, provided academic challenge as well. None of the student participants included any other option classes within their definition of academic challenge.

Academic classes that offered up different challenges were connected to a growth in knowledge and skill sets. Ethan, a Natural Science 30 student, stated, “Academic challenge is doing something in class that you have never done before; you are learning new things, but it is necessary to increase your knowledge and experiences connected to the particular class.”

Both teacher and student participants defined social challenge as challenge that involved a personal experience connected to friends or family or work. Social challenge was associated with personal relationships and challenges that occurred outside the academic setting. Social challenges were viewed as obstacles occurring throughout life. Mr. W. defines social challenge as “a roadblock in your personal life, which can be difficult to overcome, but you grow more confidence in yourself when you get past the challenge and you didn’t just lay down and let it roll over you.” Student participants more often reported that larger growth happened during a social challenge than during an academic challenge. They felt that this type of challenge created more personal growth in the form of personal stamina, resilience, and an increase in the belief that you can be successful. Most student participants did not feel academic challenge had the same amount of impact on personal growth as social challenge.

Mia, a Yoga 25/35 student, discussed the different between social and academic challenge:

I think both academic and social challenges are necessary but they are not the same at all.

Like if someone goes through a big challenge in their real life—like if someone you love dies, or you have a really hard time with friends, or you are really poor and can't buy things you really need, or you are homeless, and overcome those challenges you have way more growth than if you just were able to overcome a learning challenge or do really well in a subject you weren't really great at because you worked really hard. I mean, academic challenge is really good to have, but you don't change nearly as much as you do with social challenge.

Within student responses, even though both academic challenge and social challenge was connected to stress and anxiety, academic challenge was discussed most often. Math, Biology, Chemistry, Physics, English Language Arts, French Second Language and Social Studies were all subjects mentioned when discussing academic challenge. Math was the most referenced subject, followed by English Language Arts, Social Studies, Chemistry, Biology, Physics and French Second Language. Responses in relationship to the student participants' enrolment were consistent, in that all participants were enrolled in English Language Arts, Math, Social Studies, and at least two sciences within the year. Only three of the student participants were enrolled in all three science classes. The most prevalent combination was Biology and Chemistry, followed by Physics and Biology. Only one participant was enrolled in both Physics and Chemistry. Only three participants were enrolled in French Second Language. Math was discussed almost two times more than English Language Arts and three times more than Social Studies and any science-based course.

The cause of stress was identified and connected to two separate categories: academic workload and low academic self-efficacy. Academic workload stress was connected most often to English Language Arts, Biology, and Social Studies. Student participants noted the cause of

stress was often because one felt tired or drained after working through something that was deemed extremely challenging. Sarah, a Yoga 15 student, reported:

I never feel like I can't understand LA or Social if I work hard at it; it just seems like there is so much writing and reading to it. I like the assignments but they just take so long to do. I always start with my hardest subject, which is usually Math, first because I need more brainpower for that. But then by the time I work on my LA homework I already want a break, but there is always so much to do. I never feel done.

The feeling of being tired and having to push through to finish a challenging academic task was a common narrative within many different student participants' responses. Student participants expressed how little sleep they were getting when working through academic challenges. Lack of sleep was one of the most cited reasons for feeling stressed. Students noted that sleep was something they really wanted but weren't able to get enough of. Students also reported that they had little balance in their life due to their academic workload. When questioned further about why the work was taking so much time, very few commented that they didn't feel competent to do the work; it was just that there was too much work to do. Many student participants felt the amount of work wasn't deepening their understanding of the concept. Many felt it was redundant and had a "make work" feel to it; this caused frustration and stress.

Ella, a Yoga 25/35 student, stated:

Sometimes I feel like we are just doing work for the sake of having homework. We write a lot of stuff out that we could just have a conversation about. I don't know if it is because we need to have written proof of what we know, but I sometimes have a hard time understanding why we need to do so much writing.

Writing assignments were reported to be the most time-consuming activities and were

connected most often to English Language Arts and Social Studies. Writing within Biology was considered to be more prevalent than within the other science-based courses, and took a longer amount of time because of lab write-ups and the completion of notes. Student participants had fewer comments about workloads associated with preparing for tests within these three particular subject areas.

Lack of self-efficacy was the cause of stress when student participants were discussing Math, Chemistry, Physics and French Second Language. The subject of Math was most often invoked when student participants discussed stress and anxiety within their learning. Student participants reported that Math presented the most challenge because they felt unable to understand the work. Stress and anxiety was commonly connected to Math, both in and outside of classroom work. Math class was often described as a place where confusion and tension was commonplace. Student participants reported that their stress and anxiety when completing homework tasks was connected to the feeling that they didn't understand how to complete the work and did not have enough resources (print, digital, or human) to successfully complete their work.

When actual marks were discussed, all student participants were receiving passing grades within that school year, and all but two participants had marks over 75%. When asked to compare their Math mark to their other core subject marks, over half of the student participants listed Math as one of their top two marks. This illustrates that student perception regarding their Math learning tasks is lower than their actual abilities.

Discussion of Challenge and Anxiety

The discussion concerning challenge and anxiety highlights the contrast between the participants' acknowledgement of the need for challenge and their discomfort with the amount of

personal stress or anxiety it creates. I differentiated the definition of stress and anxiety as stress being a response to a threat and anxiety as a reaction to the stress (ADAA, 2012). However, as stated before, the student participants interchanged the terms *stress* and *anxiety*, whereas the teacher participants' use of the two terms more or less conformed to their standardized definitions.

Research connecting the academic learner and stress, coping and pathology outline health complaints such as headaches, issues with sleeping, nervousness, unrelenting feeling of worry, increased incidents of asthma, eczema and abdominal pain (Currie, 2004). When symptoms are experienced cumulatively they have been connected to psychological maladjustment, which include depression, risk-taking behaviours and behavioural problems (Hampel & Petermann, 2005). Stress, anxiety and depression are closely related within their symptoms. Kraag, Van Breukelen, Kok and Hosman (2009) stated that stress is strongly correlated to anxiety and anxiety to depression within their overlapping symptoms. A combination of high levels of stress with inadequate appraisal, support and coping skills increased the risk for developing long-term health problems (Ingram & Luxton, 2005; Rutter, Kim-Cohen, & Maughan, 2006). Olbrich (1990) found the development of proper coping strategies had protective factors and could moderate the effects stress has on health. Folkman (2013) differentiated between the two fundamental types of coping, namely, “problem-focused” and “emotion-focused” coping. Problem-focused coping is associated with changing or controlling the actual source of stress, whereas emotion-focused coping centers on regulating the emotions connected to the source of stress. Since challenge was often reported to be the source of stress within the student and teacher participants, one could argue that a problem-focused coping strategy would focus on eliminating or reducing academic and social challenge. Since all teacher and student participants

within this study emphasized that academic and social challenge is vital for personal growth, emotion-focused coping strategies should be utilized to reduce the amount of stress and anxiety within the learner. Effective coping has been defined as the flexible and appropriate reaction to different stressful situations and is essential in mental health promotion (Wenzel, Glanz & Lerman, 2002).

Mindfulness is one of the most effective protective strategies to combat emotional stress. Mindfulness mitigates the impact of stress by diminishing the negative appraisal of stress as it arises, and by facilitating coping within stressful situations (Keng, Smoki & Robins, 2011). Increases in mindfulness over an eight-week mindful-based stress reduction (MBSR) course were connected to declines in anxiety, mood disturbance and stress (Brown & Ryan, 2003; Shapiro et al. 2007). Brown and Ryan (2003) also found that mindfulness can be connected to lower levels of negative affect within both student and adult communities. Mindfulness can foster an enhanced capacity to adaptively cope with situations that are perceived as challenging. Since participants indicated a need for academic challenge but are also feeling anxious and stressed because of academic challenge, emotion-based strategies such as mindfulness would be an effective in creating academic and personal buoyancy or everyday resilience.

UL Exterior Zone 2: Structuralist Findings and Analysis

Figure 14 outlines Zone 2 exterior themes that emerged from structuralist analysis of semi-structured interview questions. The interviews were interpretive conversations that discussed participants' general overall experiences within high school. Themes emerged in relationship to commonalities and differences within language.

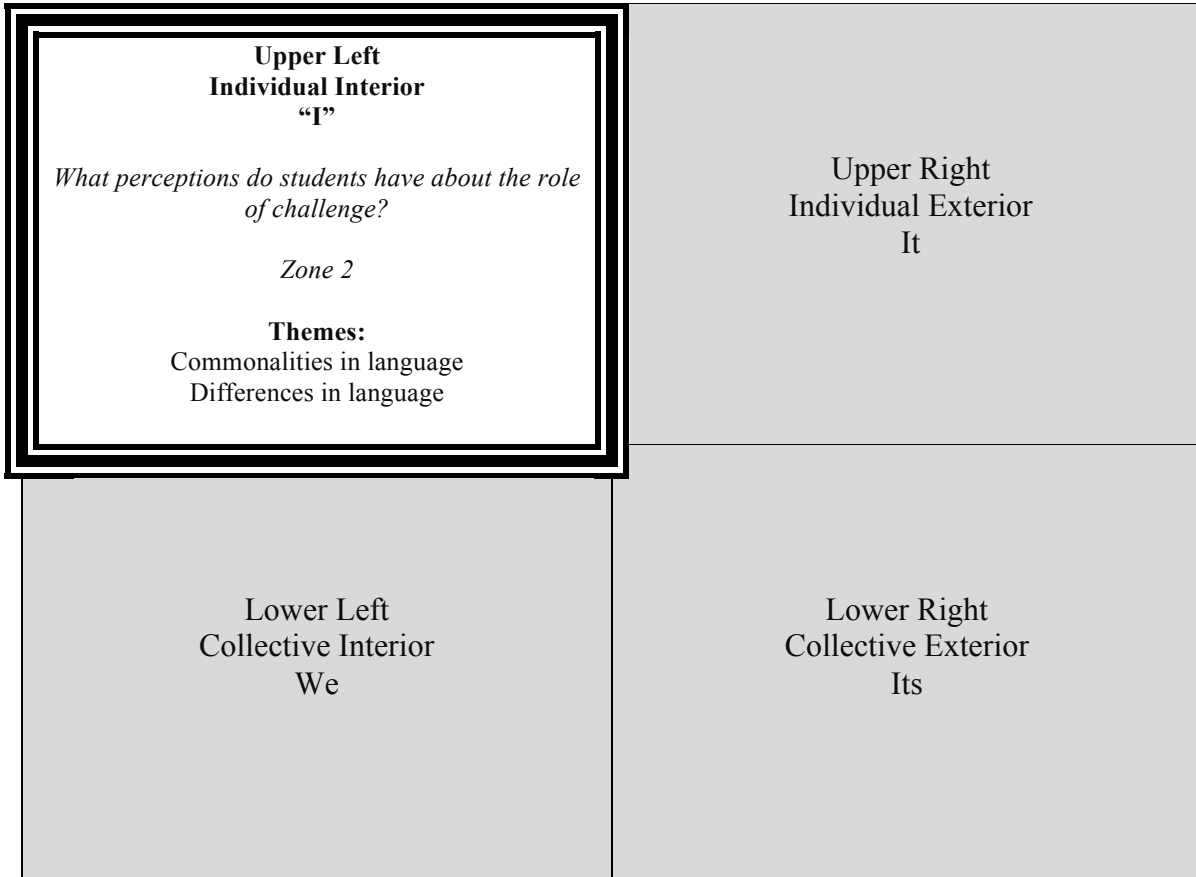


Figure 14. Research question and Zone 2 themes within LL quadrant.

Upper Left exterior structuralist findings investigate the different structures participants are entrenched within and how these different structures uphold personal experiences. These findings focus on investigating patterns within participant phenomenological interview responses in regards to their experience with challenge and looking to see if any particular patterns arise. One of the main differences between phenomenology and structuralism is that phenomenology

looks at the awareness of the phenomena, whereas structuralism looks at the pattern the phenomena follow (Wilber, 2007).

Using a network map created from the transcripts from narrative interviews, I attempted to conceptualize and create a structuralism analysis of the participant phenomenological experience. Some of the questions that guided my structuralism analysis were:

- a) Are there certain terms that are used more frequently than others?
- b) Are some terms more connected than others?
- c) Are there any subsections or clusters that appear ?
- d) Are there any connections between these clusters?
- e) Are there gaps or holes?

Comparisons between Natural Science and Yoga Student Participant Responses

I began by looking at shared terminology among student participants within Natural Sciences and Yoga settings. The terms used within both classrooms were stress, anxiety, ambiguity, calm, gratitude, compassion, focus and breath. There were other similar terms used; however, the frequency was very low so for my analysis I chose terms used more than twenty times between the two different student participant groups. I have listed these terms in the order according of frequency. Figure 15 compares shared and exclusive terminology that was unique to the different subject discipline classes between Yoga and Natural Science students.

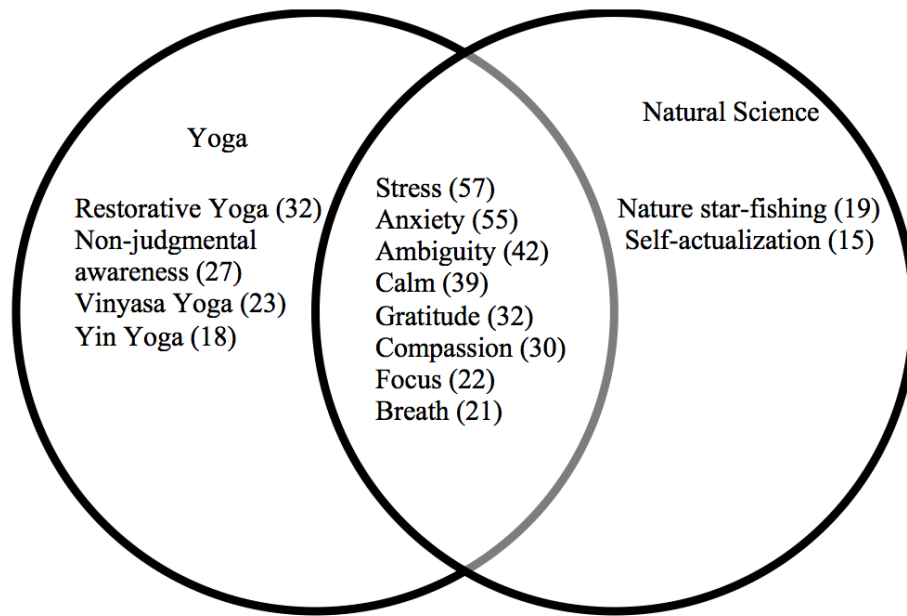


Figure 15. Frequency and comparison of similar and distinctive terminology between Yoga and Natural Science student participants.

Shared terminology between Natural Science and Yoga Student Participants

Stress. When examining terms for frequency, the term used the greatest amount within discussions about social and academic challenge was *stress*, followed closely by *anxiety*. Stress was discussed both as an internal feeling and as an external atmosphere or environment. Stress was also connected to very tangible external physical symptoms. The symptoms listed were jittery movement such as shaky hands and legs, more rapid heart rate, feeling hot, feeling flushed, and crying. Terms related to compromised internal cognitive capacity and reasoning were also linked to stress such as feeling overwhelmed, inability to focus, and lowered cognitive ability.

Beth, a Natural Science student, discussed environmental stress: “In a stressful environment everything feels just heavier and no one seems happy and no one is talking and there is stressful energy, you can definitely feel energy and I don’t want to be in a room with that

energy.” In contrast, Emily, a Yoga student, described internalized stress connected with challenge: “My parents have always said that about me, and I know it, I can feel the stress inside and I always get really uptight about things that I think are hard to do. I feel when I am getting more stressed, it kind of goes through my entire body.” Student participants in both courses also discussed how if more students within the school were experiencing internalized stress the more external stress was created. Ian, a Natural Sciences 30 student, comments on how internal stress creates a negative and stressful environment:

I feel like it definitely depends on the time of year. I know during exam time I am out and meditating and relaxing and then when I go back into class I can feel the stress of everyone else and then it is hard. When people are stressed out you can feel it throughout the entire classroom. Even the teacher feels stressed out and it definitely is not a great place to be.

Anxiety. As discussed previously, the occurrence of the use of the term anxiety was very close to stress; when comparing the two terms they were not vastly different within their meaning. The one noted difference between stress and anxiety was that students used the term anxiety when discussing strategies that lowered levels of anxiety. Students within the three different Yoga classes discussed lowering anxiety levels more than Natural Sciences students, but both sets of students did discuss this theme repeatedly. Ian, a Natural Sciences 30 student, stated, “I definitely think my mind is slowing down in those situations but when I am anxious my brain tends to speed up and think about too many things and my brain isn't focusing, as it should. When I am star-fishing it allows me to collect my thoughts and decrease how anxious I feel.”

Ella, a Yoga 15 student, discussed anxiety and shared the following:

I think that yoga has really been able to help my level of anxiety especially in school. Like in the first semester when I wasn't doing yoga I felt so stressed out and when I got home I

didn't know where to begin with my homework but now with yoga I am way less anxious and I can go home and take a minute to do some yoga and then do my homework.

Ambiguity. The third most recurring topic discussed by both Natural Sciences students and Yoga students was difficulty with ambiguity. I use the word topic rather than term because Natural Science student participants were the only ones who explicitly used the word ambiguity. However, Yoga students used the synonymic terms of *unknown* and *uncertainty* to discuss the same topic. The sentence structure surrounding these words indicated that the students were discussing the same thing.

Nadine, a Yoga 25/35 student, discussed discomfort with the unknown. “I hate when I don’t feel like I know what is going on, I feel really out of control if there is uncertainty within what is expected of me. I think the unknown is the thing that drives me most crazy in class, especially when it is to do with assignment expectations.”

Skylar, a Natural Science 10 student, stated:

We need to have more comfort with ambiguity in real life because you don’t always know what is going to happen. Letting things just naturally happen is really important and I think that is the biggest thing working with natural things like plants has taught me. We can only control certain things and then wait to see what happens. If the result isn’t what you want, it isn’t the end of the world. I really struggled with this for a while because I am a math and science kind of person so I really like to know what is going on, but I think I am growing a lot in this area.

Calm. Both sets of student participants discussed the term calm and connected the term to both calm environments and as an internal feeling of being calm. Both sets emphasized the difference between the Yoga or Natural Science classrooms and their other classrooms. All

student participants who discussed the state of being calm or calm environments indicated a preference for a classroom purposefully designed to be calm. Students who discussed calm environments described tangible external structures that were put in place to help create a calm environment. Music, living plants, garden areas, water features, and lighting were all named in connection to calm environments. Ian, a Natural Science 30 student, describes the rooftop garden:

There are some days when I walk in with a coffee at 6:45 in the morning, sit out on the garden deck, watch the sunrise over the city and just enjoy my time there because I don't get that at home because I am just surrounded by other people. This special place has been created for us and I guess kind of by us, it is a place that is so calm, and I need that kind of place right now.

Mia, a Yoga 25/35 student, discussed the difference between her Yoga class and her other core academic classrooms:

They definitely feel different, when you walk into Yoga you definitely feel a warm environment, it is calm, the lights are turned off, with soft music. Whereas if you walk into a different class you feel that you need to sit down and you need to get work done, learn something and pay attention so you don't miss out. The lighting is harsh, so it kind of feels harsh.

Gratitude. Gratitude was discussed by both sets of students; however, it was discussed only in connection to gratitude journal work. The terms “being aware” and “awareness” were connected to the gratitude journal by both sets of student participants. Both Yoga and Natural Science classrooms did extensive work within gratitude journaling, and the term gratitude was always connected to this work and was not used on its own. Even though the gratitude journal

work was very differently within the two different types of classrooms, there was very little discrepancy between the two different sets of students. Beth, a Natural Science 30 student, stated:

Throughout the semester we have continued doing our nature journals, we have actually done them for three years. We journal freely about everything we see and we have now been using it as a gratitude journal to make sure we are really enjoying our time and being aware while we are outside. It is not so much that we are focused on one thing for one final project. We are out there exploring it is our journal for our own personal use and being about to connect to what we are seeing and feeling.

Emily, a Yoga 25/35 student, shared her experience using gratitude journals:

Gratitude journaling helped to create more balance with both my thoughts and being more grateful and for being more aware of what is going on everyday. They are more for our own personal growth and not necessarily to get a good mark. I think they just it helps to build that perspective.

Compassion. The main difference between students in Natural Science and Yoga when looking at the use of the term compassion was that Natural Science students only discussed compassion for others, whereas Yoga students also discussed compassion for oneself. Natural Science students included environment and animals, whereas Yoga students did not discuss the environment, but expanded beyond external compassion to also include self-compassion. Nadine, a Yoga 25/35 student, discussed self-compassion: “You need to have self-compassion so you can be kinder to yourself. I really need to grow in this area because I can be really hard on myself. I am learning, but I do slip into negative talk sometimes.” Skylar, a Natural Science 10 student, discusses compassion for others: “Because we started to understand what each other needed and

that it was different from each other. This made me have compassion for others, this can be extended into natural things as well.”

Focus. Focus was used in a very similar way between both sets of student participants. Focus was something students had a desire to increase and connected this term directly to mindfulness strategies learned in class. Sarah, a Yoga 15 student, discussed how focus was very important to have: “Yes, absolutely, I want to have more focus, to pay more attention. If I am really tired I struggle with this and get impatient with myself, but I think I am better at it because I am using some of the stuff I learned in yoga.” Ethan, a Yoga 15 student, discussed how yoga helped with developing better focus on the football field:

I have noticed especially in football, I have noticed on the field, you gotta make quick decisions, you’ve gotta focus and recognize what is going on and with yoga class, with the whole meditation it really slows down the brain and its helped me be able to realize quickly and let me focus on what you need to focus on. I have noticed that for me this year has been a lot better than other years.

Beth, a Natural Science 30 student, discussed how she developed better ability to focus from strategies used in class:

I can get stressed and have a difficult time focusing and figuring out what exactly is going and what is most important to do first. I needed to think about how to put things in order so I can focus on one thing at a time. I use some breathing techniques I learned in class to help me slow down and focus on what is important.

Breath. Breath was a term used very consistently between the two different types of mindfulness classrooms. Breath work was consistently connected to self-calming statements and the words growth and strategy. Students discussed how breath was something that assisted in

being focused and calm. The term breath was also connected to growth and comfort, in that students developed more comfort with challenge and felt the most growth within this particular mindfulness strategy. Sarah, a Yoga 15 student, described breath work:

Definitely my breathing, because honestly the first couple of classes our teacher was telling us to breathe and I was like, I am breathing, and then after I thought about it and I noticed I wasn't really doing the proper kind of breathing and that when I actually did it properly it calmed me down and made me think and assess things, it really helped.

Ian, a Natural Science 30 student, stated:

It was good, we learned how to breathe with the star-fishing that we did and we were able to do our breathing within an outdoor space, which really was cool because we were able to combine all the things we were doing in Natural Sciences and Biology 30 because we studied the endocrine system.

Shared terminology between Natural Science and Yoga Teacher Participants

The terms used by both teachers in order of frequency used were stress, being present, breath, building consciousness, calm compassion, gratitude, meditation, and anxiety.

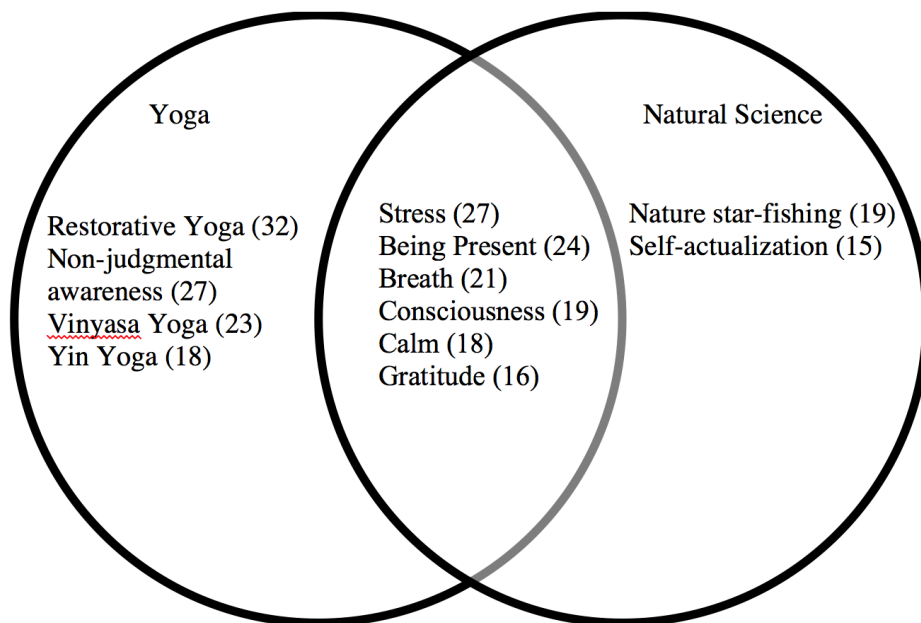


Figure 16. Frequency and comparison of similar and distinctive terminology between Yoga and Natural Science teacher participants.

Stress. Teacher participants both used the term stress the most when discussing challenge within their classrooms. Discussions using the term stress focused on different causes of stress within student lives. Both teacher participants discussed in great detail how the sources of stress for students were numerous and seemed to be on the rise. Teacher participant responses concentrated on increased stress levels in students and how they have more stress than the teachers personally had as students. Both teachers also discussed how stress levels within students had significantly increased since they started teaching. Mr. W. the Natural Science teacher discusses stress and anxiety:

I have never been in a building where stress and therefore anxiety levels have been as high as they are here. I mean I have been in different places, and say the conditions and the situations that cause stress were there say in Canmore for example, but you never had

levels of anxiety like this and I think it is just because there are so many things in an urban setting that you won't find in a rural setting.

Ms. K., the Yoga teacher, in this reference differentiated between stress and anxiety:

The quiet girls usually have a very vivid internal world and are really academic. They are very successful but have many different types of stress within their lives, some of it good but some are bad. There is so much more stress within students lives and now I have seen these students start to struggle with anxiety. They are perfectionists and some have already been to the anxiety clinic and recognize this is getting in the way of their academics they know they need to reduce and manage their anxiety.

Ms. K. discussed where stress occurs in the brain, she explained:

There are two elements of the autonomic nervous system, we have the sympathetic nervous system, where we are in a constant state of fight or flight or freeze. This stress response is appropriate, and likely in our evolution, very appropriate when trying to outrun a sabertooth tiger, but I feel students are in that state all the time, even when facing an exam, or in certain social circumstances, or if they are late for school. I need the students to learn the strategies to get out of their sympathetic nervous system faster so their regular stress doesn't turn into toxic stress.

Mr. W. discussed two students he had in his Natural Science course for all three years and how he felt they had become better at dealing with stress:

They were stress cases in grade 10 since lot of people feel they are not going to finish and there was a tremendous amount of anxiety. I notice these two students I am think of don't have that as much anymore and both of them are doing very well in an academic course that is way over their heads. They are in such a better place, I mean in their headspace

than they were in Grade 10 and some of that is that they have had a space and they have had a connection to that space. There are a couple of examples I can think of right now, and I have had five kids in that particular class that have come through Natural Science class and not one of them am I worried about performing in that academic class and you can see it in them, that internal fortitude. I can pick out those kids and a lot of who they are is because they have been associated with this space.

Being present. This was a term that was used by both teachers with great frequency.

When examining what they were meaning by *being present*, the teachers were giving examples that were very similar. Being present meant giving weight to your intentions, focusing on what needed to happen at the moment and not allowing the mind to float ahead or behind. Multi-tasking was something that both teachers felt worked against being present and therefore they wanted the students to work on singular tasks without distractions. Mr. W. discussed how he noticed how both teachers and students have difficulty being still and quiet:

There is a piece in there about how we have lost the ability to be still, we always have a computer going or music in the background, there is always something so when was the last time that people were just able to find a time in the day, just for 15 minutes to be in the day to be absolutely still without knowing that you have to be anywhere so I am starting to incorporate that idea into nature star fish where we go out into an area and have the kids lie down into a star fish and not move for 5 to 10 minutes they can close their eyes, they can focus on their breathing they can meditate and they can just keep their eyes open and focus on sounds, smells what they are touching.

Ms. K. discussed how she had the students use visualization to help create a present state of mind:

I like to instruct about being present and how the students can imagine their thought as if it was a little bit like encountering a fawn in the forest, a baby deer in the forest, there's that moment of recognition where you see the animal, the animal sees you, and the fawn stays very still. The moment you move, the fawn startles and bolts. Even the parasympathetic nervous system a little bit like that. If we stay very still, and follow our breath, we have the opportunity to take that sort of magical moment in and restore a little balance, and not really feel all of that adrenaline, cortisol and that constant multitasking that we're often either addicted to or married to.

Ms. K. discussed how she used the technique of following a breath to develop the ability to be present:

I have the student lie down and slowly allow their breath to come into their awareness. I tell them there's no need to push or clear the mind, no need to force anything else away but slowly allow the breath to sneak in to their screen of attention. Once their breath starts to sneak into the periphery of their awareness then they notice their focus being moved by their breath.

Building Consciousness. When teacher participants used the term “building consciousness,” they defined it as knowing oneself, to be able to recognize both strengths and weaknesses, recognizing different types of triggers or enablers within one’s life. Teacher participants both discussed how building consciousness was different than awareness and attention in that building consciousness was the application of what actually was, to making personal decisions.

Ms. K. discussed how building consciousness begins with students discovering strengths about themselves:

I think building consciousness starts inside and when they are pointed towards a connection to their own strengths and they are starting to feel confident and comfortable enough to share those strengths and they have to recognize the strengths in others and these strengths are all relatable and comparable they are all woven together.

Mr. W. discussed the important impact outdoor environments have on building consciousness:

Building consciousness is super important for students. Richard Louv has brought this idea forward about building this within outdoor environments. He's done tons of research and has talked about how children are disconnected from nature and also then disconnected from themselves. He has also expanded the conversation and there are whole bunch of adults that are currently not well because they are anxious, overwhelmed and disconnected from themselves and their outdoor spaces that can help bring them peace and understanding about themselves so they can better decide what they need.

Calm. Creating calm spaces that were meant to be quiet and tranquil were something both teacher participants discussed. When teacher participants used the term calm, they only connected it to the term *environment* rather than the feeling or emotion of being calm. This was different than the student participants who also discussed the emotion of feeling calm.

Mr. W. shares his ideas regarding the need for teachers to create calm environments for students and for the students to learn how to then create calm spaces for themselves outside of school:

The students really need to carve out calm spaces for themselves in this world. My Natural Science 20s are just doing a project called alter to your space and its about picking any space in their home or in their school and redesigning it with a sense of

wellness and calm and nature built in. So yeah, I have a room downstairs and I have one tiny little window but I have no plants and I would like to maybe build a shelf that has some access to that light so I can get some can get some greenery in my room, create a little bit of Zen in my house just for me. Great, you have altered your space it should make you feel better. Same with the spaces at the school they tell me that there are spaces in the building that are anything but calming, where there are four white walls and they said could we change that and I said give me a plan and what you want to change and we can do that. It is kind like if you build it the calm will come.

Ms. K. developed a calm environment through creating an environment of connecting, which she articulated as follows:

I think we need to establish a calm environment that goes beyond the space itself and definitely beyond a culture that only is about academic achievement. Whereas many other classes are designed to be efficient as possible and I try and create a calm, reflective environment. I don't go in and say, these are the strategies using to create a calm mindful environment culture I think it is about the space but it is also a culture of connecting. If we are able to connect we are able to be calm.

Compassion and Gratitude. Compassion and gratitude were terms both teacher participants used with the same frequency, and they were connected in many ways within the conversation. Being grateful and becoming compassionate were how the terms were phrased.

Ms. K. discussed how she guided students to use breath work to focus on becoming compassionate for self and others:

I tell the students if you need to go back into the cocoon to see this person, do so and wish them a little bit of kindness just as you hope for kindness and compassion for

yourself. Wish them a little bit of peace as well. I get them to expand their colors on the inhale of their breath so they can really shine the light very brightly to encompass everyone in the room, everyone in the yoga community. When they exhale, they should draw their light back towards center feeling stability of gathering and inhale to expand that light to include everyone in our school, in our city, our province, and our country as a whole. I think this is sending compassion out to both themselves and others.

Mr. W. shared how he introduced students to compassion and gratitude through the work of Louie Schwartzberg:

Well there is actually a guy that has a gratitude project on line named Louie Schwartzberg, but it is called the gratitude project. It is an amazing project that helps build compassion for our planet because it helps everyone be grateful for what we have. He runs what is called running pictures and he does time-lapse photography of nature subjects which literally, well how can I put this, if you ever watch a river and to understand a river you would have to sit there for hours to pick up on the complexity of the river.

Ms. K. discussed the impact that writing gratitude journals had on her students:

I think it helped create a sense of optimism and made the student notice things about themselves and the world around them that was magical. They told me that they didn't complain about things as much during that period of time we were working with gratitude and also how they became much more compassionate with themselves and others through the process. I definitely saw the same things and feel that is what gratitude work is really meant to do by being grateful you become compassionate.

Differences in Terminology between Natural Science and Yoga Student and Teacher

Participants

The differences resided mainly within the absence of some context-specific language. The differences in terminology between the two teacher participants mirrored the student participants. The difference within terms was within the language that was unique to the different mindfulness methods used.

Restorative, Vinyasa and Yin Yoga. Ms. K. and her student participants discussed at least three different forms of Yoga, whereas the Natural Science participants did not refer to any type of yoga—even when discussing their own personal strategies outside of school. When discussing challenge, Restorative Yoga was mentioned most frequently, followed by Vinyasa and Yin. All forms of yoga had the words *breath* and *meditation* connected to them; however, these two terms were used most when discussing Restorative Yoga. The words used most when Restorative Yoga was discussed were support, respond, comfort, and relax. Vinyasa was connected to the terms fitness, strength, difficult, and stretching. Finally, Yin was connected to the terms art, artistic, and slow. These terms were consistent with terms used by the Yoga teacher and how these particular forms of yoga were being taught and performed in class.

Mia, a Yoga 25/35 student, discussed Restorative Yoga: “In restorative, we have all of these props and we're meant to be supported. We're meant to be totally supported and comfortable so that we can entirely release.” Nadine, a Yoga 25/35 student, stated:

I like the strength training I get from Vinyasa, because I think with running and biking it puts strain on your knees even though it is really good exercise I think Vinyasa gives you really good mobility, stretching and flexibility, stuff like that.

Ella, a Yoga 25/35 student, discussed how she practiced Yin Yoga. “Okay, so Yin yoga. I really found out that doing yoga is a form of art. It's not really an exact science. It's personally

how you do it; it is really slow. That's what I found."

Non-judgmental awareness. The other specific term used only by Yoga participants was non-judgmental awareness. Over half of yoga student participants used the term frequently and provided a definition and specific examples of how they felt they were developing this particular skill. The definitions of non-judgmental awareness were also very consistent between the participants. The cultivation of this skill was something that was desired and was connected mostly to the terms meditation and focus.

Ella, a Yoga 15 student, defined and discussed non-judgmental awareness: "I think so, at the beginning I was kind of hard on myself but my teacher said its ok don't be hard on yourself if you start to wander and daydream, it is ok, you don't need to be mean to yourself. I realized I can't be defined by my bad thoughts, they are my thoughts and that is okay." Emily, a Yoga 25/35 student, stated, "I think mindfulness is seeing inside of yourself and see just what you think should be and not what other people think. Also not judging yourself and just seeing yourself where you are."

Self-actualization. The Natural Science participants discussed nature star fishing and self-actualization; however, the Yoga 15 and 25/35 participants did not bring up these terms. When discussing nature star fishing all Natural Science students defined what it was and discussed different times they used the technique in class. However, none of the student participants referred to nature star fishing when discussing different mindfulness strategies that they used outside the classroom setting. Skylar, a Natural Science 10 student, described his experience with nature star fishing:

It is super relaxing; we are meditating and just going outside in the field or even in the school yard, you just find an area to star fish, which means laying down and just feeling

what is around you and just like hone in on your breath and your emotions and be able to really experience and enjoy your outside surroundings while giving yourself a balance and check.

The term self-actualization was explicitly used by all of the Natural Science participants. The participants defined the term in their own words and discussed the need and benefit to being self-actualized. Ian, a Natural Science 30 student, stated:

I think being self-actualized is important is being in tune with your inner self and your own talents and just thinking about the internal things instead of focusing on the external and it is sort of being critical with yourself but not in a judgemental way. It is just exploring who you are, what you need work on and what you are good at when you are not pressured by the outside world.

The term self-actualization was only used by Natural Science participants. The students discussed how they had specific conversations about needs and how they could rearrange needs, which is probably due to conversations within class discussing how needs are non-linear, and that Maslow's pyramid could actually be flipped around.

UL Zone 2: Structuralism Conclusions

Structuralism is the method of investigation that aims at revealing the structure of a complex entity, abstracted from its phenomenal form and materiality. This methodology enabled my attention to be focused on the ever-present structuralist similarities and differences within the phenomena of challenge and mindfulness beyond the superficial material content. The intention was to reveal the structure of these complex phenomena, abstracted from their forms. Interviews and conversations with research participants gave rise to many similarities and differences within the two different classroom cultures. Exploration of language and terminology enabled me to

investigate what might be unique to overall mindfulness, and what was context specific within different types of mindfulness classrooms. Analyzing similarities and differences also assisted in revealing the established common language structures within the larger school environment.

As stated before, the top two shared terms used within conversations about challenge were stress and anxiety. When analyzing the conversation connected to stress and anxiety it was clear that student participants were expressing that the cause of stress was due to more acute demands rather than chronic demands. Inge Seiffge-Krenke (2000) defines acute demands as a combination of both major life events and regular daily difficulties or disturbances. Examples of acute demands are transitioning between grades, changes associated to personal life choices, or even as simple as being late for school or work. Chronic demands include larger more ongoing personal conditions that create more ongoing personal disadvantages or liabilities. Examples of chronic demands are physical disabilities, food insecurity or mental health issues.

Students regularly referred to anxiety and stress as a feeling they were experiencing. I feel the reason for the high frequency of reporting stress and anxiety with challenge is because the feelings of stress and anxiety produced some very tangible physical and emotional responses. These more pronounced symptoms caught the attention of all student participants. Students also had very clear examples of how both these feelings were present within their interaction with daily challenges.

Stress and anxiety were also held within negative statements; these negative feelings were reported to be stronger and more pronounced than the more positive feelings of calm, gratitude, compassion and focus. These positive strategies were learned throughout the term as a way to help deal with stress and anxiety, so they were not as present within interview transcripts at the beginning of the term. I noticed within my dated transcripts the terminology connected to

mindfulness strategies were more clustered within the later conversations. Since stress and anxiety were discussed throughout the entire term it is understandable why they are the most ubiquitous terms. Many of the students within the Yoga 15/25/35 classrooms stated they took this course because they were feeling high levels of stress and anxiety. None of the students within Natural Science reported lowering stress and anxiety levels as a reason for enrolment within that particular course.

Conversation analysis of interview transcripts assisted in revealing that both the Yoga and Natural Science participants linked the terms stress and anxiety to challenge and mindfulness. The shared negative feelings of stress, anxiety and ambiguity made up 52% of shared terminology. Mindfulness strategies of gratitude, compassion, focus, breath and calm made up 48% of the shared terminology, which leads to the conclusion that students were using terminology to discuss their negative emotions and learned strategies equally. On the other hand, 78% of teacher participants shared terminology associated with the mindfulness strategies of being present, breath, building consciousness, calm, gratitude and compassion, as opposed to 22% of shared terminology connected to stress. Therefore, teacher participants concentrated more on teaching strategies and the language of mindfulness than on the emotion connected to challenge. Since the students had similar terminology as the teacher participants, it demonstrates transference of the language and therefore the teachers' focus on strategies was beneficial to the development of language and understanding.

Summary

The main focus of the UL was the examination of how participants perceived challenge. The themes that emerged from this question were that challenge takes time, is necessary, and can cause stress and anxiety. Tensions appeared within the UL, especially within the student

participants. Both teacher and student participants discussed the importance of having challenge; however, they reported to be concerned with how much time it took to overcome challenge, which was cited as the biggest source of stress. This gave the impression that the importance of challenge never really moved beyond a rhetorical level, in particular with the student participants. The students within both classroom cultures had developed a similar base of language; however, the Natural Science students seemed to attach their language more to natural spaces and real world and work experiences. This is somewhat surprising since the Yoga students had much more exposure to mindfulness strategies, but they didn't seem to have a practical base to attach it to. This could be attributed to the inability of Eastern-based practices to have traction within Western-based contexts.

On the matter of the contrasts between “eastern and “western” sensibilities Nisbett (2003) has discussed how the foundation of Western thought has a more developed sense of personal agency. This sense of individualism impacts socioeconomic and cultural factors, which in turn affects cognitive habits. Specifically, such habits of thought more strongly support tendencies toward individuality and objectivity within Western contexts. Consequently, there are stronger tendencies to notice and describe objects in isolation – tendencies that Nisbett has associated with an epistemology oriented toward scientific, positivistic approaches toward observing and theorizing about objects and their properties. Studies within school-based settings have not been immune from these tendencies. In contrast, Eastern ecosystems of thought arose in and contributed to societies that enact greater emphases on interdependent networks, social relationships, and relationships between objects, which gave rise to views and philosophies that invoke holism, cycles, recursions, change and flux while embracing dualities and conflicts within thought and reason.

These contrasts between the East and West cultural sensibilities were not conscientiously attended to in either classroom and therefore implicit tensions developed. Quite notably mindfulness practices, which are embedded within Eastern Yoga practices were not readily accessible to the High School student participants who embodied Western scientific ways of knowing and being. Therefore, ushering mindfulness into High School settings isn't the simple process of combining Eastern practices into Western subject matters. Both complementary and conflicting foundations of thought and would need to be consciously examined and understood before a successful fusion of sensibilities and practices could occur.

Chapter 6: Conclusions

In this chapter the findings and themes from all four quadrants are compared and examined against each other in this chapter. The strategy of juxtaposing of the quadrants assists in surfacing tensions as it affords insight into how each quadrant influences, informs and intersects with the others. The UR (“Behavioural”) discussion focuses on how student behaviours were impacted by the two different mindfulness classroom cultures that were examined within the LL (“Cultural”) quadrant. The LR (“Systemic”) quadrant themes of the school district’s Three Year Education Plan, Provincial Reporting, and the overall view Western society has about education and mindfulness will then be discussed in reference to their impact they have on the UL (“Consciousness”), LL (“Cultural”), and UR (“Behavioural”) quadrants.

Connecting Left Interior Quadrants to Right Exterior Quadrants

Figure 17 outlines all four AQAL quadrants and the themes that emerged throughout the analysis of research conducted.

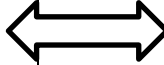
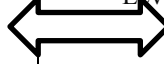
Subjectivity	Upper Left			Upper Right Individual Exterior (“Behavioural”) It How is student behaviour impacted by mindfulness? Themes: - Development of mindful language - Student retention -Level of personal comfort with challenge	Objectivity
	Individual Interior (“Consciousness”) I What perceptions do students have about the role of challenge? Interior -Necessary -Time -Stress and Anxiety	Exterior -Language development			
Intersubjectivity	Lower Left			Lower Right Collective Exterior (“Systemic”) Its How does the system influence the development of mindfulness practices within the classroom setting? Themes: - District Three Year Plan - Provincial Reporting - Western society	
	Collective Interior (“Cultural”) We How do teachers teach and create a culture of mindfulness? Interior - Slowing down -Cultivating attention - Promotion of challenge	Exterior - Outcomes based assessment -Historical background - Outdoor environment			

Figure 17. Comparison of left and right quadrant themes and questions.

UR (“Behavioural”) Quadrant Discussion

The UR quadrant explores student behaviours in an objective way. Student behaviour was observable through the exterior view of both the individual-focused UL (“Consciousness”) and collective-focused LL (“Cultural”) quadrants. The analysis of language unveiled distinctive and observable student behaviour. The students in both classes demonstrated an increase in the number of overlapping mindfulness terms such as breath, focus, and consciousness within student interviews and within the level of description connected to the terminology. Throughout the term it was evident within the interview transcripts that students were discussing how they

were transferring the mindfulness skills outside of the classroom and using them within real life.

The other observable behaviour was connected to the four different mindfulness skills of observation, description, attention, and non-judgmental awareness. Although students from both classes discussed observation, description and attention, only students within the Yoga classrooms discussed and used the term of non-judgmental awareness. Non-judgmental awareness is considered to be an essential skill within mindfulness and it has been defined as the ability to accept or allow without judgment, to allow reality to be as it is without judging, avoiding, changing, or escaping it (Kabat-Zinn, 2003). Brown and Ryan (2010) have connected non-judgmental awareness to a decrease in depression, stress, and anxiety; it is also the basis of many multifaceted therapies such as Mindfulness Based Stress Reduction (MBSR); Mindfulness Based Cognitive Therapy (MBCT); Dialectical Behaviour Therapy (DBT) and Acceptance and Commitment Therapy (ACT).

Mindful meditation has been considered an essential element within positive psychology programs, which are prevalent throughout educational contexts. The analysis of mindfulness behaviours within view of both the objective UR (“Behavioural”) and the structural UL (“Consciousness”) brings forth the conclusion that it is vital for students not only to learn about mindfulness, but to make sure they have all the different skills associated to mindfulness. It is also important to teach what non-judgmental awareness is but also to how to cultivate this very essential skill.

Both Natural Science and Yoga are part of Career and Technology Strategies, in which all students need at least 10 credits to meet graduation requirements; therefore, these courses are considered to have an equal amount of status since neither course is a core or considered to be more important than the other. Another notable behavior was the rate of student retention within

the course. All student participants in Natural Science 10 had the intention of continuing in Natural Science 20 and 30. In comparison, only a third of the Yoga participants continued with Yoga 25/35. Yoga participants indicated they mainly enrolled in Yoga to help develop strategies to deal with feeling anxious and overwhelmed. The participants who were not registering in Yoga 25/35 did report an increase in their understanding of mindfulness strategies, however they did not feel that was enough of a reason to register in the course again.

When interviewed, the Natural Science 30 students stated they chose the Natural Science course first when completing their course selection, and three different Natural Science 30 participants were going to pursue a career related to Natural Science. The students within Natural Science discussed one of the reasons they continued to be involved with Natural Science was because of the “grounding effect” it had on them. The student participants indicated they also continued with Natural Science all three years because of the connection they felt with the natural environment around them, which helped build perspective about what was important and how to manage their feelings of being overwhelmed or anxious.

LR (“Systemic”) Quadrant Discussion

The LR quadrant explores the impact of the third person plural—viewing a phenomenon through the societal lens by expanding the view to include more complex systems (Wilber, 2007). Viewing the phenomenon through the LR (“Systemic”) permitted me to observe how the system connected, impacted, interrupted, and challenged my research findings within the other three quadrants. There are many different systemic influences that could be considered within the LR (“Systemic”) quadrant; however, I chose to focus on the three main systems that have the largest impact on teaching and learning within a Calgary public classroom. These systems are: overall public views of modern day Western society, the Alberta Ministry of Education, and the school

district in which the research was conducted.

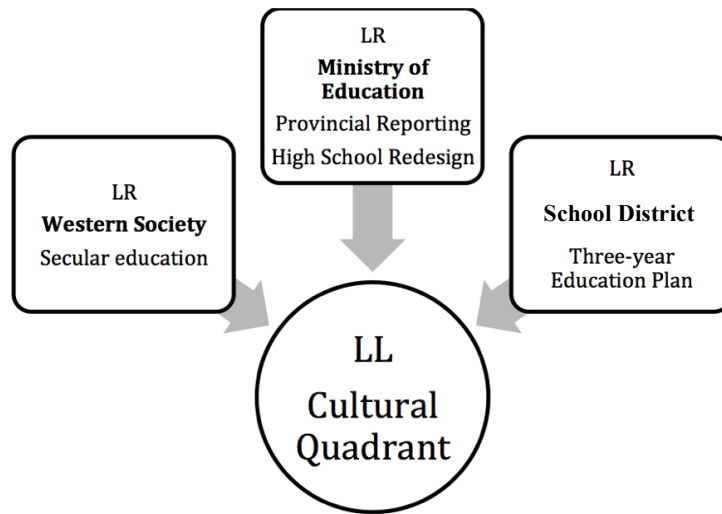


Figure 18. Impact of LR (“Systemic”) quadrant on LL (“Cultural”) quadrant

LR (“Systemic”) Impact on LL (“Cultural”) and UL (“Consciousness”) Quadrants

Secular Education. The systemic impact Western secular education has on the teaching of mindfulness within a classroom context is considerable. This large broad-spectrum Western view had an impact on all three quadrants; however, the themes within the LL (“Cultural”) cultural quadrant were significant. The view from the LR (“Systemic”) causes one to question how mindfulness is defined, how deeply connected it is to ancient religion, and how Eastern Buddhist traditions of mindfulness can be reconsidered within Western based classrooms (Schmidt, 2011). Is it possible to have transference of authentic practice and not lose the integrity of deep historical practices while honouring a school system that is secular?

To answer these questions it is important to first look at the difference between Eastern and Western definitions of mindfulness. Eastern mindfulness definitions primarily root themselves within Theravada tradition (Schmidt, 2011). Analayo (2004), a Theravadin scholar, has emphasized the importance of the term *sati* within the Eastern definition of mindfulness,

since *sati* is the combination of being present and connected to what the Buddha has taught, and to do this successfully the mind needs to be “wide awake in regard to the present moment” (p. 48). This notion of being present is further defined by Salzberg (2010) as follows:

Mindfulness is a quality of relationship to the object of awareness. Just having an experience, say hearing a sound, is not really being mindful. Knowing a sound without grasping, aversion, or delusion is being mindful. (p.31)

Simply stated, the cultivation of mindfulness within Eastern traditions is to be done in connection with the *Four Noble Truths* that arise within the *Noble Eightfold Path*. These together set the guidelines for the practice. Within the *Noble Truths* and *Eightfold Path*, reincarnation is involved, as well as a guide, translated as *right action*, which is sort of a list of commandments for living (Analyo, 2004).

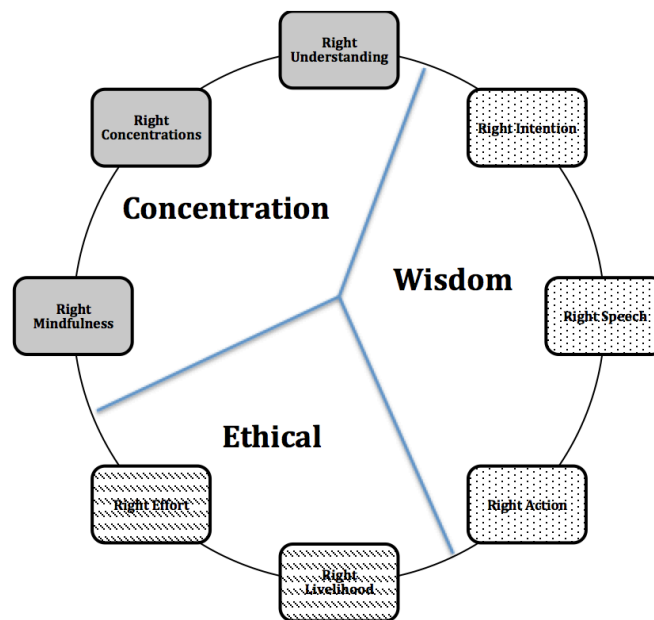


Figure 19. The Noble Eightfold Path (Adapted from Allmen, 2007)

Therefore, within Eastern mindfulness, the practice is not just a solitary meditation; it is connected to a larger spiritual path, which guides one to lead a life that would help them

actualize a goal of complete liberation (Schmidt, 2011). It is very evident within this Eastern definition that mindfulness is a deeply spiritual practice with strong connections to the Buddhist traditions and faith.

The Western definition of mindfulness that was used in the observed Yoga class was informed by Kabat-Zinn (2005), who stated that mindfulness is “moment-to-moment, non-judgmental awareness, cultivated by paying attention in a specific way, that is in the present moment, and as non-reactively, or non judgmentally and openheartedly as possible,” (p. 108). Western mindfulness has been adopted for its ability to help build coping strategies for stress reduction. Western mindfulness has been more connected to meditation, focusing on the techniques of mindfulness rather than religious self-actualization. Jon Kabat-Zinn (2009) stated the following regarding the connection of religion to Western mindfulness practices.

The habit of ignoring our present moments in favour of others yet to come leads directly to a pervasive lack of awareness of the web of life in which we are embedded. This includes a lack of awareness and understanding of our own mind and how it influences our perception and our actions. It severely limits our perspective on what it means to be a person and how we are connected to each other and the world around us. Religion has traditionally been the domain of such fundamental inquiries within a spiritual framework, but mindfulness has little to do with religion, except in the most fundamental meaning of the word, as an attempt to appreciate the deep mystery of being alive and to acknowledge being vitally connected to all that exists. (p.86)

It is easy to understand that modern Western mindfulness was the type of mindfulness used within the Yoga class, since it would be very difficult to work with Eastern practices within a secularized school system. This was evident within the Yoga class, in which certain forms of

yoga were not explored because of their connection to religious practices. Mantras were also not used because they are spiritual in their origin. There were times while I was observing, participating, and documenting where I felt that conversations or topics were interrupted due to the systemic secular impact. When discussing these observations with the Yoga teacher, she concurred that she would like to explore these topics further, yet had to be very careful with what she could explore.

Wallace and Shapiro (2006) found that once someone has started a practice of mindfulness there is a desire to develop a deeper understanding of the practice and seek out a more religious orientation to mindfulness. If these results were to be taken into consideration, for people to fully master mindfulness they must swing back into a more religious Eastern practice, and therefore a Western school system would only be able to offer a partial entry into the practice. Figure 20 discusses the differences between the traditional East and modern West mindfulness perspectives.

Context	Traditional East	Modern West
Intention	Transformation, liberation, compassion for all things	Stress reduction, self-regulation, self exploration, interest in Eastern psychology or philosophy
Religion	Constitutive	Subordinated
Placement in society	Collective system	Individualized, privatized

Figure 20. Comparison of the embedding of mindfulness in traditional Eastern and modern Western context. Adapted from Schmidt (2011).

Ms. K. was very skilled and knowledgeable of both the curricular outcomes and provincial guidelines within the School Act. She also had a well-developed understanding of the spiritual history behind yoga, so she was able to navigate these sensitive waters masterfully.

Section 50.1 of the School Act states, “a board shall provide notice to a parent of a student where courses of study, educational programs or instructional materials, or instruction or exercises, include subject-matter that deals primarily and explicitly with religion or human sexuality” (p. 23). To be able to walk the razor-thin line between Eastern spirituality and section 50.1 rests firmly within the capacity of a teacher, since it requires someone who is confident and knowledgeable of the content and classroom cultural limitations due to systemic regulations. Therefore, it becomes evident while viewing the findings within the left two quadrants from the LR quadrant that building teacher capacity is essential to ensure mindfulness strategies can be taught with both discretion and rigour within a secular school system.

Provincial Reporting. Alberta provincial results are congregated within The Provincial Accountability Pillar Report. Within this report, schools are graded on their safe and caring environments, available learning opportunities for students, student learning achievement, preparation for lifelong learning, opportunity for parental involvement, and on whether there has been continuous improvement within the school (Provincial Accountability Pillar Report, 2015). The combined data story is meant to provide a picture of how an individual school and the school authority is performing, and is to assist in future goal setting. Schools are then required to report the results back to the larger local community.

Schools create specific school development plans connected to the combined data story. Schools within the district need to be connected to one of the four different learning strategies outlined within the Education Plan. These strategies are currently the Indigenous Education Strategy, High School Success Strategy, the Literacy Strategy, and the Fostering Positive Workplace Environment Strategy. Each school chooses one of the four strategies to guide the each school’s yearly development plan. The school development plan is then to be read and

understood in correlation with the school's Annual Results Report. Both documents focus on continuous improvement in student learning through planned and intentional responses to evidence of achievement and data about the learning conditions that support student success.

However, the results that receive the most attention by the general public are the student learning achievement results, specifically the diploma and achievement test marks. This is due to the fact that schools are ranked by their results on standardized tests, and these ranking are published within the Fraser Report and the Calgary Herald. The impact this type of reporting has on mindfulness strategies and the perception of challenge was most evident in left quadrant hermeneutic and phenomenological interview themes. Within the LL, students discussed how much they enjoyed the different cultural atmosphere in the mindfully-based classroom. Slowing down, cultivating attention and discussing and learning through mistakes were the different elements of both classrooms that students discussed in a positive light. However, when teachers discussed whether they would bring these same cultural components into their other classroom settings, both teachers stated they attempted to infuse mindfulness into their core classrooms but felt it often had the opposite effect within the core classroom climate. Ms. K. stated that when she attempted to slow down or bring in mindfulness strategies into her English 10, 20 or 30 course, the students felt it took too much time to complete course work expectations, especially within a 30-level course. Mr. W. reported the same findings and commented on how he could have the same student in Natural Science and in Biology 30 and they would respond very differently within the two different contexts.

Students confirmed this when discussing their perception of challenge within the UL and its connection to time. The unit of time was so important to student participants that they reported that personal stress would increase if they felt time was being wasted in a regular core

academic classroom. UL interview transcripts also revealed that students were comparing how their school did within the provincial school rankings since they had an opportunity to attend a school in very close proximity to their school that ranked as one of the top schools within the city.

Students within the two different Yoga classes stated within their interviews that they really loved their Yoga course, but only two students planned to complete the course to the 35 level. Since students only require ten credits within CTS or complimentary courses, they often drop optional courses to provide an extra work period to prepare for 30-level courses and their associated exams. Even though the Accountability Pillar Report has many different measures of student success within it, the publication of school results overshadows the indicators related to student wellness discussed within this report. This causes the standardized test data to continue to drive school development plans, system strategies, and professional development funding, and, therefore, the overall tone within the high school. Unfortunately, priorities within a mindful classroom are not often emphasized within the larger school setting, due to the way student success is provincially reported.

Outcomes-based assessment. The district this research was conducted in is the largest school board in Alberta, currently educating more than 119 000 students in over 235 schools and employing over 13 000 employees. Since the district is a large urban school board it relies on a clearly-formed, explicit Three-Year Education Plan to create a clear line between systemic missions and classroom practices. The overall goal of the Three Year Plan is personalized learning. Personalized learning is defined as students realizing their full potential by learning in ways that acknowledge their individuality and honour each student's gifts and talents (Annual Education Results Report, 2016). To actualize the goal of personalization, the district has focused on creating an instructional design that fosters leadership and builds student agency and

intellectual engagement. Creating active and effortful tasks, supported through the use of assessment that informs both teaching and learning, will ultimately assist in developing metacognitive skills within the learner (Three Year Education Plan, 2016).

Formative assessment is essential and can make a significant impact on teaching and learning when used purposefully, and, over time, it is the key to personalized learning. Dabbling within assessment here and there does not produce significant gains in student learning or teacher performance (Keeley and Tobey, 2011). Dylan Wiliam and Leahy (2015) discuss how formative assessment principles are created through clarifying and sharing learning intentions and building a criteria for success that would assist students in understanding what their learning experience will be and how their achievement will be measured. The purpose of assessment is for teachers, students, and families to have an accurate understanding of what a student knows and can do in relation to Alberta Programs of Study in order to determine appropriate next steps in learning, and to communicate individual student achievement in relation to the expectations to the Program of Study at a specific point in time.

The LR perspective helps reveal the importance of identifying mindfulness within the Program of Studies, since all systemic assessment practices within the district triangulate between the Program of Studies, the report card indicator, and the body of evidence the student creates connected to the outcome. If mindfulness is just a strategy to use within the classroom to help students develop a better perspective of challenge and reduce stress and anxiety, it sits outside the assessment structure that helps create consistency and rigour within learning.

This difficulty was evident when comparing student responses within both Yoga and Natural Science classrooms. The Yoga 15/25/35 outcomes included all aspects of mindfulness, and therefore formative assessment practices supported students to be assessed on meditative

mindfulness, attention, observation and attention. Students developed different evidence of learning to demonstrate their understanding of the different outcomes. Growth within the learners was visible, and therefore Ms. K. planned different tasks that helped personalize their learning within the Yoga classroom.

There was a distinct difference between Yoga and Natural Science student participants. Even though both Natural Science and Yoga students shared common mindfulness language and discussed the same themes within their perception of challenge, Yoga students could discuss the process of developing different mindfulness strategies. Natural Science students discussed the importance of being mindful and described different mindfulness strategies, but did not articulate any type of process in learning mindfulness strategies. There were also noted differences within teacher interview responses. Ms. K. consistently discussed her planning and assessment of mindfulness and the different projects that helped create student evidences of learning. In contrast, Mr. W. discussed the importance of being mindful but said that he didn't assess his students on any type of mindfulness strategy shared in class because it wasn't a specific outcome within Natural Science. The conclusion that can be made by connecting the LR ("Systemic") quadrant to the LL ("Cultural") quadrant is that mindfulness should become part of the Program of Study, especially within a large school system that has a guiding education plan that centers on personalized learning.

Conclusion

The dialogue between the left quadrant findings and the LR ("Systemic") influences gave rise to many new insights into my findings. In my naivety I thought I was inviting the systemic view from the LR ("Systemic") into the end of my research, but, after examining these findings, I realize that the system had been extremely present from the beginning. You can liken a

systemic influence to an odourless, colourless gas; even though you can't really see or touch it, it can have a massive impact. Structuring my interview sessions around the students and teachers' schedules should have been the first hint of the deeply entrenched systemic influences. Students and teachers had different cycles of when they were extremely busy or stressed, and these periods were dependent on deadlines and reporting measures. Their responses and demeanour changed within these different times, and, therefore, the system was present.

My UL ("Consciousness") and LL ("Cultural") exterior view findings revealed similarity within the language of mindfulness but a difference in the true understanding of mindfulness strategies. The LR ("Systemic") enabled me to understand that this is probably partially due to the absence of outcomes-based assessment. Without using the power of purposeful task design and formative assessment practices, the learning can be restricted. This is not to say learning is only possible if the subject is held within a program of study. But it is important to be deliberate with task design and assess what the students know and what they will need next to move forward in their understanding.

UL ("Consciousness") interior findings of student perception of challenge revealed that there were tensions within the three themes. The LR ("Systemic") view of the influence of provincial reporting brought forth that the reporting practices and the publication of results has created some push and pull between the common ideology of students and the external expectations society places on them. Students knew they needed to embrace challenge but were stressed and anxious if it took too much time or if it would affect their marks.

The LL ("Cultural") findings uncovered mindfulness culture within the classroom. The culture created within both classrooms was deliberate and well received by both teacher and student participants. Accountabilities from the LR ("Systemic") did impact this culture. There

were parameters within which the teaching of Eastern meditation and Yoga practice needed to sit. Within a secular system, the teaching *of* religion is permitted; however, actually teaching religious practices is not. This meant that discussions of the historic roots of Yoga and meditation practices were very guarded and redirected when needed.

When I first started this research I was a class-based teacher. Therefore, the tangibility of student perceptions, behaviours, and classroom culture was a natural place to start this research, as I had experienced these intricacies so often within my own professional experience. Even though my research didn't produce data within the LR ("Systemic"), my analysis would have been quite incomplete without bringing it into the systemic view.

Implications for Further Research

The purpose of this study was to examine student perception of challenge and how teachers can effectively create a culture of mindfulness. Educational contexts are multi-faceted and dynamic and require a comprehensive research framework to be able to allow for a holistic understanding of the phenomenon being explored. Bringing together the left interior subjective/intersubjective and right exterior objective quadrants enabled me to see how systemic and behavioural influences impact individual perceptions of challenge and mindful classroom environments. Integral Methodological Pluralism enabled me to see the mutuality of the quadrants (Esbjorn-Hargens, 2008), and the analysis of findings within each quadrant impacted my understanding of the findings within the other quadrants. These findings present different implications.

Figure 21 summarizes the answers to the different research questions posed within each of the quadrants.

Answers Situated Within the Four Quadrants	
<p>What perceptions do students have about the role of challenge within their learning process?</p> <ul style="list-style-type: none"> • Students reported their experience with challenge was necessary and that academic challenge took time and caused stress and anxiety. • Students connected mindfulness strategies to a positive change in perception challenge • Students increased their amount of mindfulness terminology 	<p>How is student behaviour impacted by mindfulness?</p> <ul style="list-style-type: none"> • Students increase mindfulness vocabulary • Students learned different mindfulness techniques • Students in a classroom that used outcomes based assessment developed more mindfulness strategies
<p>How do teachers teach and create a culture of mindfulness?</p> <ul style="list-style-type: none"> • Use of gratitude journals • Mindfulness meditation • Developing a Yoga practice • Learning about the historical background of Yoga and mediation • Discussing the importance of challenge • Use of outdoor environment • Use of breath work • Cultivating attention • Create a slower paced classroom • Assess four mindfulness skills 	<p>How does the system influence the development of mindfulness practices within the classroom setting?</p> <ul style="list-style-type: none"> • Western secular culture restricted some historical Eastern mindfulness practices from being used • Traditional provincial assessment reporting practices caused program Yoga program attrition • Outcomes based assessment practices developed more mindfulness skills

Figure 21. Situating research answers within Integral quadrants.

Implications from the UL (“Consciousness”) quadrant: Play-Based Challenge and Assessment

The research question I posed within the UL (“Consciousness”) quadrant connected the perception of challenge to the structures present within the mindfulness classroom. The research findings indicated that both teachers and students needed to experience challenge to be able to build understanding and work towards mastery in all aspects of the educational process. However, participants expressed an awareness of time and conflicting ideas of necessity and linear time constraints. Stress and anxiety were also emotions involved with the experience of challenge. These findings reveal that students acknowledge the need for challenge, effort, and

mistakes; however, students often feel that challenging tasks should take only a limited amount of time, as they cause stress and anxiety. Challenge, then, is deemed necessary, yet undesirable. This leads me to next question: if we need to build up a tolerance for challenge, how can we improve the way challenge is experienced?

Serious play is movement coming from the innovator and maker communities. It is a way of using play to create solutions according to a design challenge. While engaged in the challenge, participants use the “how might we” question to guide their work and help increase communication, problem-solving, and innovative solutions. Bringing together mindfulness and a play-oriented approach to challenge could provide possibilities for developing more comfort with challenge through exposure to environments that promote risk taking in low-risk environments. The design process centres on a challenge and begins discovery/empathy, and moves into interpretation, ideation, experimentation and then evolution (Garret, 1991). Students are meant to move back and forth between the stages to allow for actionable feedback to naturally guide the process. Adding mindfulness to the process could enable students to become more able to participate and progress through this process in a more engaged way. I feel that looking for logical conduits for mindfulness within the challenge-centred design process is an extension from my conclusions within the interior UL.

Structural analysis of the UL exterior brought forth the differences and similarities within the terminology students used when discussing challenge and mindfulness. Again, stress and anxiety were the most ubiquitous terms used; however, students also used many different words connected to mindfulness strategies. It was noted that some of the fundamental language of mindfulness, such as non-judgmental awareness, was missing from the classroom that did not teach mindfulness explicitly. The students demonstrated that they knew some mindfulness

terminology but did not possess the understanding of how to use mindfulness strategies to increase mindfulness practice. Students had their own interpretation of the strategy but reported that they were not taught the strategy within a scaffolded manner. This then drives another question of how to create more rigor within the delivery of mindfulness to avoid mindfulness situating only within the rhetorical rather than practical context. Moving beyond merely having the right words requires the involvement of what Elmore, Fiarmon and Teitel (2009) call the *instructional core*, which is composed of the student and the teacher in the presence of content. School improvement is grounded within the interactions between the three components and is upheld by meaningful learning tasks that are guided by formative assessment. School improvement is developed through the internal capacity for teachers and students to hold each other accountable for learning (Elmore, 2003). Investigating how mindfulness can be upheld within the instructional core, rather than just taught on the side of the curricular desk, would enable a better understanding of how to improve mindfulness skill sets.

Implication from the LL (“Cultural”) quadrant: Curriculum Re-Design and Curricular Delivery Models

Within the LL, I posed the question of how teachers teach and create a culture of mindfulness. The teachers used many of the same methods, such as gratitude journals, cultivating attention by focusing on smaller more granular objects within the body, the classroom, or within nature, and using grounding activities within the outdoor environment. However, there were also some differences within teaching methods. The Yoga students engaged in different forms of yoga, whereas the Natural Science students did not. The four different mindfulness skills were taught and assessed within the Yoga class. The Natural Science students discussed mindfulness skills in larger class discussions and applied some of the strategies in class, but were not

purposefully taught how to develop these strategies in a progressive way. This brings forth the awareness that there needs to be more consistency in teaching mindfulness.

Currently, in high school the only curriculum that has outcomes that promote mindfulness strategies are Yoga and the CALM curriculum. Mindfulness is not currently within the CALM curriculum, but self-regulation, stress management, and self-awareness currently reside within the personal wellness resources section of this particular curriculum, and mindfulness is essential to developing these skills. The issue is that there are not enough students enrolled in Yoga to have a large impact on the entire school population. However, every Alberta student needs to acquire three credits in CALM to receive their high school diploma. This is a positive factor in promoting mindfulness within an actual program of study; unfortunately, most of the student population takes CALM online over a two-week period without any opportunity to discuss what they are learning or engage in any hands-on learning opportunities. When taught face-to-face, CALM is often not considered to have as much priority as other subjects and is often taught from prescribed lesson plans that have not been currently revised, personalized, or informed by current assessment strategies.

Alberta is re-designing all curriculum, which is an excellent opportunity to ensure mindfulness is introduced at an early age. Currently, mindfulness is being written into the wellness curriculum from Kindergarten to Grade 12. The issue of how to change the perception of importance of the wellness curriculum still remains. Often schools will silo health curriculum into one-off presentations or into a single period at the end of the week. A few questions arise from this dilemma. Is it most important to first change the attitude towards the importance of teaching wellness curriculum, or should we change the delivery model? What I mean by this is that literacy and numeracy and the competencies are becoming part of the front matter within all

curricular subjects. The goal of this focus is to ensure that all subjects are teaching disciplinary literacy and numeracy to enable recursion and increase student achievement within these subject areas. Personal growth and well-being is one of the competencies, which provides an opportunity for all subjects to teach this particular competency through their specific lens. However, it is not yet known how the competencies will be assessed within report card data, and thus it might not be something teachers will pick up within the front matter. Investigating the best delivery model for wellness—whether it be a cross-curricular approach or a separate subject that is considered as important as the core curriculums—should be considered an important task. Looking at the impact of extending a wellness curriculum through to Grade Twelve would be something important to investigate. Finally, another robust question concerns how students can better cultivate a practice of mindfulness if it is written within the new wellness curriculum from Kindergarten to Grade Twelve.

Conclusion

My research originally started at looking at what creates a resilient student. This was a question I had because I was a teacher within an inquiry-based classroom. I had planned many tasks that were evidence-informed and supported with resident experts and consisted of many hands-on and minds-on opportunities. The problem was, I had many students who were not emotionally durable enough to take the natural learning risks the task required. I set out on my journey to understand the teachable components of resiliency. Along my journey I met the work of Angela Duckworth, Carol Dweck, Stuart Shanker and Daniel Goleman. The turning point for me was when I read the work of Richard Davidson and affective neuroscience. This work opened up the idea of neuroplasticity and Barbara Arrowsmith-Young, Daniel Siegel and Jon Kabat-Zinn.

Once I started to read and understand modern Western mindfulness and the components and teachable skills of mindfulness I started to form my research questions. Once my questions were formulated and situated within the quadrants, I set out to collect data. After placing my findings and analysis of my finding into the quadrants I discovered that students' perceptions of challenge have different themes and cause tensions. These tensions can be minimized within a culture of mindfulness. Explicitly teaching the skills of mindfulness helps to create a better understanding of the practice, and assessment is a necessary component within a mindfulness classroom. Students enjoy a culture of attention and slowing down within their day, and the discussion of the importance of challenge helps students better understand what challenge is and how to best approach it. I have thoroughly enjoyed my journey and all the twists and turns involved in doctoral research. I finish with one of my favourite quotes regarding what mindfulness is:

Our suffering stems from ignorance. We react because we do not know what we are doing, because we do not know the reality of ourselves. The mind spends most of the time lost in fantasies and illusions, reliving pleasant or unpleasant experiences and anticipating the future with eagerness or fear. While lost in such cravings or aversions, we are unaware of what is happening now, what we are doing now. Yet surely this moment, now, is the most important for us. We cannot live in the past; it is gone. Nor can we live in the future; it is forever beyond our grasp. We can live only in the present. If we are unaware of our present actions, we are condemned to repeating the mistakes of the past and can never succeed in attaining our dreams for the future. But if we can develop the ability to be aware of the present moment, we can use the past as a guide for ordering our actions in the future, so that we may attain our goals. (S. N. Goenka, 2003, p. 152)

References

- Provincial Accountability Pillar Report. (2015). Retrieved from <https://education.alberta.ca/accountability-pillar/provincial-results/?searchMode=3>
- Alberta Legislative Assembly. (2013). *Ministerial Order on Student Learning* (#001/2013). Retrieved from http://education.alberta.ca/media/6951645/skmbt_c36413050707450.pdf
- Albrecht, N. J., Albrecht, P. M., & Cohen, M. (2012). Mindfully teaching in the classroom: A literature review. *Australian Journal of Teacher Education*, 37(12), 1-14.
doi:10.1080/14639947.2011.564811
- Allison, M., & Duncan, M. (1988). Women, work, and flow. In M. Csikszentmihalyi & I. Csikszentmihalyi (Eds.), *Optimal experience* (pp. 118–137). Cambridge: Cambridge University Press.
- Analayo, B. (2004). *Sattipatthana: The direct path to realization*. Cambridge, UK: Windhorse Publications.
- Aronson, J., Fried, C. B., & Good, C. (2002). Reducing the effects of stereotype threat on African American college students by shaping theories of intelligence. *Journal of Experimental Social Psychology*, 38(2), 113-125. Retrieved from http://www.foothill.edu/attach/1474/views_of_intelligence.pdf
- Baer, R. A., Smith, G. T., & Allen, K. B. (2004). Assessment of mindfulness by self-report: The Kentucky Inventory of Mindfulness Skills. *Assessment*, 11(3), 191-206.
- Barber, W., & King, S. (2016). Invisible pedagogy: Developing learners' self-responsibility in digital environments through problem-based learning. *International Conference on e-Learning*. Academic Conferences International Limited.
- Barry, W. (2012). Is modern American education promoting a sane society? *International*

- Journal of Science*, 2(1), 69-81. Retrieved from http://issuu.com/ijosc.net/docs/international_journal_of_science__second_issue
- Belland, B. R., Glazewski, K. D., & Richardson, J. C. (2011). Problem-based learning and argumentation: Testing a scaffolding framework to support middle school students' creation of evidence-based arguments. *Instructional Science*, 39(5), 667-694.
doi:10.1007/s11423-013-9313-6
- Birnbaum, D., Deeb, I., Segall, G., Ben-Eliyahu, A., & Diesendruck, G. (2010). The development of social essentialism: The case of Israeli children's inferences about Jews and Arabs. *Child Development*, 81(3), 757-777.
- Blackwell, L. S., Trzesniewski, K. H., & Dweck, C. S. (2007). Implicit theories of intelligence predict achievement across an adolescent transition: A longitudinal study and an intervention. *Child development*, 78(1), 246-263.
doi:10.1111/j.1467-8624.2007.00995
- Bodrova, E., & Leong, D. J. (2007). *Tools of the mind: The Vygotskian approach to early childhood education*. New York, NY: Pearson.
- Bodhi, B. (2000). *A comprehensive manual of Abhidhamma*. Seattle, WA: Buddhist Publication Society.
- Branch, J., & Oberg, D. (2004). Focus on inquiry. *Alberta: Alberta Learning*.
- Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology*, 84(4), 822-848.
doi: 10.1037/0022-3514.84.4.822
- Broderick, P. C., & Metz, S. (2009). Learning to BREATHE: A pilot trial of a mindfulness curriculum for adolescents. *Advances in School Mental Health Promotion*, 2, 35-46.

doi: 10.1080/ 15427609.2013.818488

- Brown, R. P., & Gerbarg, P. L. (2009). Yoga breathing, meditation, and longevity. *Annals of the New York Academy of Sciences*, 1172(1), 54-62. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/19735239>
- Burke, C. A. (2010). Mindfulness-based approaches with children and adolescents: A preliminary review of current research in an emergent field. *Journal of Child and Family Studies*, 19(2), 133-144. doi:10.1007/s10826-009-9282
- Bryant, E. A. (2009). The history of yoga. *The Yoga Sūtras of Patañjali*. New York, NY: North Point Press.
- Byrne, M. M. (1998). *Hermeneutics 101*. Retrieved from <http://files.eric.ed.gov/fulltext/ED427988.pdf>
- Calgary Board of Education. (2016). *Calgary Board of Education Three-Year Education Plan*. Retrieved from <http://www.cbe.ab.ca/FormsManuals/Three-Year-Education-Plan.pdf>
- Calgary Board of Education. (2016). *Annual Education Results Report*. Retrieved from <http://www.cbe.ab.ca/about-us/provincial-tests-and-reports/Pages/default.aspx>
- Case, J., & Gunstone, R. (2003). Going deeper than deep and surface approaches: A study of students' perceptions of time. *Teaching in Higher Education*, 8(1), 55-69.
- Charmaz, K. (2011). A constructivist grounded theory analysis of losing and regaining a valued self. *Five Ways of Doing Qualitative Analysis: Phenomenological Psychology, Grounded Theory, Discourse Analysis, Narrative Research, and Intuitive Inquiry*, 165-204.
- Chawla, L. (2002). Insight, creativity and thoughts on the environment: Integrating children and youth into human settlement development. *Environment and Urbanization*, 14(2), 11-22.
- Creswell, J. W., Plano Clark, V. L., Gutmann, M. L., & Hanson, W. E. (2003). *Handbook of*

- mixed methods in social and behavioral research*. Thousand Oaks, CA: Sage.
- Creswell, J. W., & Plano Clark, V. L. (2007). Choosing a mixed methods design. *Designing and Conducting Mixed Methods Research*, 58-88. doi:10.1111/j.1753-6405.2007.00097
- Creswell, J. W., Klassen, A. C., Plano Clark, V. L., & Smith, K. C. (2011). *Best practices for mixed methods research in the health sciences*. Bethesda (Maryland): National Institutes of Health.
- Creswell, J. W. (2012). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research*. New York, NY: Pearson.
- City of Calgary Census Report (2016) Retrieved from <http://www.calgary.ca/CA/city-clerks/Pages/Election-and-information-services/Civic-Census/2016-Results.aspx>
- Coghlan, D., & Brannick, T. (2014). *Doing action research in your own organization*. Thousand Oaks, CA: Sage.
- Cooper, B. (2011). *Empathy in education: Engagement, values and achievement*. London, UK: Bloomsbury Publishing.
- Coulon, A. (1995). *Ethnomethodology*. Thousand Oaks, CA: Sage.
- Crist, J. D., & Tanner, C. A. (2003). Interpretation/analysis methods in hermeneutic interpretive phenomenology. *Nursing Research*, 52(3), 202-205.
doi:10.1097/00006199-200305000-00011
- Csikszentmihalyi, M. (1997). *Finding flow: The psychology of engagement with everyday life*. Basic Books.
- Currie, J. (2004). Motherhood, stress and the exercise experience: Freedom or constraint? *Leisure Studies*, 23(3), 225-242.
- Davis, B., Sumara, D., & Luce-Kapler, R. (2015). *Engaging minds: Cultures of education and*

practices of teaching. Routledge.

- Davidson, R. J. (2010). Empirical explorations of mindfulness: conceptual and methodological conundrums. *Emotion, 10*(1), 8-11. doi: 10.1037/a0018480
- Davidson, C. (2012). Ethnomethodology and literacy research: A methodological “road less travelled”. *English Teaching: Practice and Critique, 11*(1), 26-42. Retrieved from <http://files.eric.ed.gov/fulltext/EJ970219.pdf>
- Davidson, R. J., Dunne, J., Eccles, J. S., Engle, A., Greenberg, M., Jennings, P., Jha, A., Jinpa, T., Lantieri, L., Meyer, D., Roeser, R. W., & Vago, D. (2012). Contemplative practices and mental training: Prospects for American education. *Child Development Perspectives, 6*(2), 146-153. Retrieved from <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3420012/>
- Debesay, J., Naden, D., & Slettebo, A. (2008). How do we close the hermeneutic circle? A Gadamerian approach to justification in interpretation in qualitative studies. *Nursing Inquiry, 15*(1), 57-66. doi: org/10.1111/j.1440- 1800.2008.00390
- Dowling, M. (2004). Hermeneutics: An exploration. *Nurse Researcher, 11*(4), 30-39. Retrieved from <http://journals.rcni.com/doi/abs/10.7748/nr2004.07.11.4.30.c6213?mobileUi=0>
- Dreyfus, H. L., & Rabinow, P. (2014). *Michel Foucault: Beyond structuralism and hermeneutics*. Chicago, IL: University of Chicago Press.
- Droit-Volet, S., & Wearden, J. (2016). Passage of time judgments are not duration judgments: Evidence from a study using experience sampling methodology. *Frontiers in Psychology, 7*(1), 14-25.
- Duckworth, A. L. (2009). Over and beyond high-stakes testing. *American Psychologist, 64*(4), 279-280. Retrieved from <http://dx.doi.org/10.1126/science>

- Duckworth, A. L., Grant, H., Loew, B., Oettingen, G., & Gollwitzer, P. M. (2011). Self-regulation strategies improve self-discipline in adolescents: Benefits of mental contrasting and implementation intentions. *Educational Psychology, 31*(1), 17-26.
Retrieved from http://www.sas.upenn.edu/~duckwort/images/publications/DuckworthGrantLoewOettingenGollwitzer_2011_Self-regulationStrategiesImproveSelf-DisciplineinAdolescents.pdf
- Duncheon, J. C., & Tierney, W. G. (2013). Changing conceptions of time: Implications for educational research and practice. *Review of Educational Research, 83*(2), 236-272.
- Dweck, C. S. (1986). Motivational processes affecting learning. *American Psychologist, 41*(10), 10-40. Retrieved from <http://psycnet.apa.org/index.cfm>
- Dweck, C.S. (2006). *Mindset: The new psychology of success*. Boston, MA: Random House.
- Dweck, C. S. (2007). Boosting achievement with messages that motivate. *Education Canada, 47*(2), 6-10. doi: 10.3102/0034654311405999
- Dweck, C. S. (2010). Even geniuses work hard. *Educational Leadership, 68*(1), 16-20.
Retrieved from http://msan.wceruw.org/documents/resources_foreducators/Relationships/Even%20Geniuses%20Work%20Hard.pdf
- Egbert, J. (2004). A study of flow theory in the foreign language classroom. *Canadian Modern Language Review, 60*(5), 549-586.
- Elmore, R. (2003). Accountability and capacity. *The New Accountability: High Schools and High-Stakes testing, 2*(1), 195-209.
- Elmore, R. F., Fiarman, S. E., & Teitel, L. (2009). *Instructional rounds in education: A network approach to improving teaching and learning*. Cambridge, MA: Harvard Education

Press.

Emmons, R. A. (2003). Personal goals, life meaning, and virtue: Wellsprings of a positive life.

Flourishing: Positive Psychology and the Life Well-Lived, 12(1), 105-128.

Emmons, R. A., & McCullough, M. E. (2003). Counting blessings versus burdens: An experimental investigation of gratitude and subjective well-being in daily life. *Journal of Personality and Social Psychology*, 84(2), 377.

Englander, M. (2012). The interview: Data collection in descriptive phenomenological human scientific research. *Journal of Phenomenological Psychology*, 43(1), 13-35. Retrieved from <http://phenomenologyblog.com/wp-content/uploads/2012/04/Englander-2012-The-Interview-Data-Collection-in-Descriptive-Phenomenological-Human-Scientific-Research.pdf>

Esbjörn-Hargens, S. (2008). Integral ecological research: Using IMP to examine animals and sustainability. *AQAL: Journal of Integral Theory and Practice*, 31(1), 15-60.

Esbjörn-Hargens, S. (2010). An ontology of climate change. *Journal of Integral Theory and Practice*, 5(1), 143-174. Retrieved from https://foundation.metaintegral.org/sites/default/files/Esbjorn-Hargens_Ontology.pdf

Esbjörn-Hargens, S. (2010). *Integral education: New directions for higher learning*. Albany, NY: SUNY Press.

Flook, L., Goldberg, S. B., Pringer, L., Bonus, K., & Davidson, R. J. (2013). Mindfulness for teachers: A pilot study to assess effects on stress, burnout, and teaching efficacy. *Mind, Brain, and Education*, 7(3), 182-195. doi: 10.1111/mbe.12026

Flook, L., Smalley, S.L., Kitil, M.J., Galla, B.M., Kaiser-Greenland, S., Locke, J., Ishijima, E., & Kasari, C. (2010). Effects of mindful awareness practices on executive functions in

- elementary school children. *Journal of Applied School Psychology*, 26, 70–95.
doi:10.1080/15377900903379125
- Folkman, S. (2013). Stress: appraisal and coping. In M. D. Gellman & J. R. Turner (Eds.), *Encyclopedia of behavioral medicine* (pp. 1913-1915). New York: Springer.
- Friesen, S. (2009). What did you do in school today? Toronto, Canada: *Canadian Education Association*. Retrieved from
http://ccl-cca.ca/pdfs/otherreports/WDYDIST_National_Report_EN.pdf
- Froh, J. J., Bono, G., & Emmons, R. (2010). Being grateful is beyond good manners: Gratitude and motivation to contribute to society among early adolescents. *Motivation and Emotion*, 34(2), 144-157.
- Fuchs, C., Hofkirchner, W. (2009) Autopoiesis and critical social systems theory autopoiesis and critical social systems theory. doi: 10.1108/S1877-6361(2009)0000006007
- Gadamer, H. G. (1990). The universality of the hermeneutical problem. *The Hermeneutic Tradition: From Ast to Ricoeur*, 33(2), 147-58.
- Gadamer, H.G. (2008). *Philosophical hermeneutics*. Berkeley, CA: University of California Press.
- Gafoor, K. A., & Kottalil, N. K. (2011). *Cultivating the spirit through resilience: Vision of effective schools and mission of caring teachers*. Retrieved from
https://www.imsa.edu/sites/default/files/2015-iagc-journal_1.pdf
- Garfinkel, H. (Ed.). (2005). *Ethnomethodological studies of work*. London, ENG: Routledge.
- Garrett, N. (1991). Technology in the service of language learning: Trends and issues. *The Modern Language Journal*, 75(1), 74-101.
- Geanellos, R. (2000). Exploring Ricoeur's hermeneutic theory of interpretation as a method of

- analysing research texts. *Nursing Inquiry*, 7(2), 112-119.
doi: 10.1046/j.1440-1800.2000.00062
- Goenka, S. N. (2003). *For the benefit of many*. Igatpuri, IN: Vipassana Research Institute.
- Gobble, M. M. (2014). Design thinking. *Research-Technology Management*, 57(3), 59-62.
- Good, C., Aronson, J., & Inzlicht, M. (2003). Improving adolescents' standardized test performance: An intervention to reduce the effects of stereotype threat. *Journal of Applied Developmental Psychology*, 24(6), 645-662. Retrieved from <http://users.nber.org/~sewp/events/2005.01.14/Bios+Links/Good-rec1>
- Grant, H. & Dweck, C.S. (2003). Clarifying achievement goals and their impact. *Journal of Personality and Social Psychology*, 85(1), 541-553. doi: 10.1037/0022-3514.85.3.541
- Greene, J. C. (2007). *Mixed methods in social inquiry (Vol. 9)*. San Francisco, CA: John Wiley & Sons.
- Hakkarainen, P., & Bredikyte, M. (2008). The zone of proximal development in play and learning. *Cultural-Historical Psychology*, 4(4), 2-11. Retrieved from http://psyjournals.ru/en/kip/2008/n4/Hakkarainen_full.shtml
- Hampel, P., & Petermann, F. (2005). Age and gender effects on coping in children and adolescents. *Journal of Youth and Adolescence*, 34(2), 73-83.
- Harland, T. (2003). Vygotsky's zone of proximal development and problem-based learning: Linking a theoretical concept with practice through action research. *Teaching in higher education*, 8(2), 263-272. Retrieved from http://www.researchgate.net/publication/233309078_Vygotsky's_Zone_of_Proximal_Development_and_Problem-based_Learning_Linking_a_theoretical_concept_with_practice_through_action_research
- Hattie, J., Biggs, J., & Purdie, N. (1996). Effects of learning skills interventions on student

- learning: A meta-analysis. *Review of Educational Research*, 66(2), 99-136.
- Hattie, J., & Timperley, H. (2007). The power of feedback. *Review of Educational Research*, 77(1), 81-112.
- Hattie, J. (2012). *Visible learning for teachers: Maximizing impact on learning*. London, ENG: Routledge.
- Hawkes, T. (2003). *Structuralism and semiotics*. London, ENG: Routledge.
- Heritage, J. (2013). *Garfinkel and ethnomethodology*. San Francisco, CA: John Wiley & Sons.
- Heidegger, M. (1985). *History of the concept of time*. Bloomington, IN: Indiana University Press.
- Heidegger, M. (2013). *Existence and being*. Redditch, Worcestershire: Read Books Ltd.
- Heron, J., & Reason, P. (2006). The practice of co-operative inquiry: Research 'with' rather than 'on' people. *Handbook of Action Research*, 3(1), 144-154. Retrieved from http://www.peterreason.eu/Papers/CI_SpecialIssue/Editorial.pdf
- Hein, S. F., & Austin, W. J. (2001). Empirical and hermeneutic approaches to phenomenological research in psychology: A comparison. *Psychological Methods*, 6(1), 3-17.
doi: 10.1037/1082-989X.6.1.3
- Hertel, P. T. (1998). Relation between rumination and impaired memory in dysphoric moods. *Journal of Abnormal Psychology*, 107(1), 166.
- Hmelo-Silver, C. E., Duncan, R. G., & Chinn, C. A. (2007). Scaffolding and achievement in problem-based and inquiry learning: A response to Kirschner, Sweller, and Clark. *Educational Psychologist*, 42(2), 99-107. Retrieved from http://www.cogtech.usc.edu/publications/hmelo_ep07.pdf
- Holland, D. (2004). Integrating mindfulness meditation and somatic awareness into a public educational setting. *Journal of Humanistic Psychology*, 44(4), 468-484.

doi: 10.1177/0022167804266100

Honoré, C. (2004). *In praise of slowness: How a worldwide movement is challenging the cult of speed*. New York, NY: Harper Collins.

Hycner, R. H. (1985). Some guidelines for the phenomenological analysis of interview data. *Human Studies*, 8(3), 279-303. doi: 1007/BF00142995

Ingram, R. E., & Luxton, D. D. (2005). Vulnerability-stress models. *Development of Psychopathology: A Vulnerability-Stress Perspective*, 32-46.

Isenberg, D. J. (2010). How to start an entrepreneurial revolution. *Harvard Business Review*, 88(6), 40-50.

Jennings, P. A., Snowberg, K. E., Coccia, M. A., & Greenberg, M. T. (2011). Improving classroom learning environments by cultivating awareness and resilience in education (CARE): Results of two pilot studies. *Journal of Classroom Interaction*, 46(1), 37-48. Retrieved from <http://prevention.psu.edu/improving-classroom-learning-environments-cultivating-awareness-and-resilience-education-care>

Johnson, M. E. (2000). Heidegger and meaning: Implications for phenomenological research. *Nursing Philosophy*, 1(2), 134-146.

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

doi:10.3102/0013189X033007014

Johnson, R. B., Onwuegbuzie, A. J., & Turner, L. A. (2007). Toward a definition of mixed methods research. *Journal of Mixed Methods Research*, 1(2), 112-133.

doi: 10.1177/1558689806298224

- Jonas, M. E. (2010). When teachers must let education hurt: Rousseau and Nietzsche on compassion and the educational value of suffering. *Journal of Philosophy of Education*, 44(1), 45-60. doi: 10.1111/j.1467-9752.2010.00740
- Kabat-Zinn, J. (1994). *Wherever you go, There You Are: Mindfulness Meditation in Everyday Life*. London, UK: Hachette UK.
- Kabat-Zinn, J. (2003). Mindfulness-based interventions in context: past, present, and future. *Clinical Psychology: Science and Practice*, 10(2), 144-156. doi: 10.1093/clipsy/bpg016
- Kabat-Zinn, J. (2005). *Coming to our senses: Healing ourselves and the world through mindfulness*. London, UK: Hachette UK.
- Kabat-Zinn, J. (2009). *Wherever you go, there you are: Mindfulness meditation in everyday life*. Hachette UK.
- Kabat-Zinn, J. (2011). Some reflections on the origins of MBSR, skillful means, and the trouble with maps. *Contemporary Buddhism*, 12(01), 281-306.
- Keeley, P., & Tobey, C. R. (2011). *Mathematics formative assessment*. Thousand Oaks, CA: Corwin.
- Keng, S. L., Smoski, M. J., & Robins, C. J. (2011). Effects of mindfulness on psychological health: A review of empirical studies. *Clinical Psychology Review*, 31(6), 1041-1056.
- Kirschner, P. A., Sweller, J., & Clark, R. E. (2006). Why minimal guidance during instruction does not work: An analysis of the failure of constructivist, discovery, problem-based, experiential, and inquiry-based teaching. *Educational Psychologist*, 41(2), 75-86.
- Kraag, G., Van Breukelen, G. J., Kok, G., & Hosman, C. (2009). 'Learn Young, Learn Fair: A stress management program for fifth and sixth graders: Longitudinal results from an experimental study. *Journal of Child Psychology and Psychiatry*, 50(9), 1185-1195.

- Langdon, S., Jones, F. W., Hutton, J., & Holttum, S. (2011). A grounded-theory study of mindfulness practice following mindfulness-based cognitive therapy. *Mindfulness*, 2(4), 270-281. doi: 10.1007/s12671-011-0070-5
- Langer, E. J. (1989). *Mindfulness*. Boston, MA: Addison-Wesley.
- Leiviska, A. (2013). Finitude, Fallibilism and Education towards Non-Dogmatism: Gadamer's Hermeneutics in Science Education. *Educational Philosophy and Theory*, 45(5), 516-530. doi: 10.1080/00131857.2012.732012
- Levykh, M. G. (2008). The affective establishment and maintenance of Vygotsky's zone of proximal development. *Educational Theory*, 58(1), 83-101. doi:10.1111/j.1741-5446.2007.00277
- Liu, K. R. (2009). *Cooperative communications and networking*. Cambridge, MA: Cambridge University Press.
- Louv, Richard. (2008). *Last child in the woods: Saving our children from nature-deficit disorder*. Chapel Hill, NC: Algonquin Books.
- Luisi, P. L. (2003). Autopoiesis: A review and a reappraisal. *Naturwissenschaften*, 90(2), 49-59. doi: 10.1007/s00114-002-0389-9
- Lutz, A., Slagter, H. A., Dunne, J. D., & Davidson, R. J. (2008). Attention regulation and monitoring in meditation. *Trends in Cognitive Sciences*, 12(4), 163-169. doi: 10.1016/j.tics.2008.01.005
- Lyubomirsky, S. (2008). *The how of happiness: A scientific approach to getting the life you want*. London, UL: Penguin.
- Marlatt, G. A., & Kristeller, J. L. (1999). *Mindfulness and meditation*. *Motivation and Emotion* (31)4. 123-131.

- Martin, J. A. (2008). Integral research as a practical mixed-methods framework. *Journal of Integral Theory and Practice*, (3)2, 155-164. Retrieved from http://www.sunypress.edu/pdf/JITP_Index_Vol1_Vol6.pdf
- Maxwell, J. C. (2000). *Failing forward: How to make the most of your mistakes*. Nashville, TN: Thomas-Nelson.
- Maturana, H., Varela, R., Francisco, J. (1987). *The Tree of Knowledge*. Boston: Shambhala.
- McNeill, M., Gosper, M., & Xu, J. (2012). Assessment choices to target higher order learning outcomes: The power of academic empowerment. *Research in Learning Technology*, 20(3), 75-95.
- McReynolds, P. (1997). *Slowing down*. London, ON: American Psychological Association.
- Meiklejohn, J., Phillips, C., Freedman, M. L., Griffin, M. L., Biegel, G., Roach, A., & Isberg, R. (2012). Integrating mindfulness training into K-12 education: Fostering the resilience of teachers and students. *Mindfulness*, 3(4), 291-307.
- Mercer, S., & Ryan, S. (2009). A mindset for EFL: Learners' beliefs about the role of natural talent. *ELT Journal*, 64(4), 436-444. doi: 10.1093/elt/ccp083
- Merleau-Ponty, M. (1996). *Phenomenology of perception*. Delhi, India: Motilal Banarsidass.
- Miller, J. J., Fletcher, K., & Kabat-Zinn, J. (1995). Three-year follow-up and clinical implications of a mindfulness meditation-based stress reduction intervention in the treatment of anxiety disorders. *General Hospital Psychiatry*, 17(3), 192-200. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/7649463>
- Mintz, A. (2008). *The labor of learning: A study of the role of pain in education* (Doctoral dissertation). Available from ProQuest Dissertations and Theses Full Text database. (UMI No. 3317653)

- Morse, J. M. (2003). Principles of mixed methods and multimethod research design. *Handbook of Mixed Methods in Social and Behavioral Research, 1*, 189-208.
- Mottern, R. (2013). Teacher-student relationships in court-mandated adult education: A phenomenological study. *The Qualitative Report, 18*(7), 1.
- Moules, N. J. (2008). Hermeneutic inquiry: Paying heed to history and Hermes an ancestral, substantive, and methodological tale. *International Journal of Qualitative Methods, 1*(3), 1-21. doi: 10.1080/08858199009528030
- Mueller, C. M., & Dweck, C. S. (1998). Praise for intelligence can undermine children's motivation and performance. *Journal of personality and social psychology, 75*(1), 33-52. doi: 10.1037/0022-3514.75.1.33
- Monroe, E. E., & Pendergrass, M. R. (1997). Effects of mathematical vocabulary instruction on fourth grade students. Available from Eric Full Text database. (UMI No. 414182)
- Nisbett, R. E. (2003). *The geography of thought*. London, UK: Nicholas Brealey.
- Napoli, M., Krech, P. R., & Holley, L. C. (2005). Mindfulness training for elementary school students: The attention academy. *Journal of Applied School Psychology, 21*(1), 99-125. Retrieved from <http://mindfulnessinschools.org/wp-content/uploads/2013/03/children-and-mindfulness-journal-of-childrens-services-weare.pdf>
- Piaget, J. (2008). Developmental psychology: Incorporating Piaget's and Vygotsky's theories in classrooms. *Journal of Cross-Disciplinary Perspectives in Education, 1*(1), 59 – 67. Retrieved from <http://jcpe.wmwikis.net/file/view/blake.pdf>
- Perkins, D. (2014). *Future-wise: Educating our children for a changing world*. San Francisco, CA: Jossey-Bass.

- Pink, S. (2008). Sense and sustainability: The case of the Slow City movement. *Local Environment, 13*(2), 95-106.
- Plant, E. A., Ericsson, K. A., Hill, L., & Asberg, K. (2005). Why study time does not predict grade point average across college students: Implications of deliberate practice for academic performance. *Contemporary Educational Psychology, 30*(1), 96-116.
- Posner, M. I., & Petersen, S. E. (1990). The attention system of the human brain. *Annual review of Neuroscience, 13*(1), 25-42.
- Olbrich, E. (1990). Coping and development. In H. Bosma & S. Johnson (Eds.), *Coping and self-concept in adolescence* (pp. 35-47). Springer, Berlin, Heidelberg.
- Radford, G. P. (1991). Hermeneutics: An intellectual tradition for communication studies. *Occasional Papers in Communication, Information, and Library Studies, 1*, 6-27.
Retrieved from <http://www.theprofessors.net/hermen.html>
- Raes, A., Schellens, T., De Wever, B., & Vanderhoven, E. (2012). Scaffolding information problem solving in web-based collaborative inquiry learning. *Computers & Education, 59*(1), 82-94. doi: 10.1016/j.compedu.2011.11.010
- Rentschler, M. (2006). AQAL glossary. *AQAL: Journal of Integral Theory and Practice, 1*(3), 1-39.
- Ricard, M., Lutz, A., & Davidson, R. J. (2014). Mind of the meditator. *Scientific American, 311*(5), 38-45. Retrieved from <http://www.investigatinghealthyminds.org/cihmScientificPub.html>
- Richardson, J. C., & Newby, T. (2006). The role of students' cognitive engagement in online learning. *The American Journal of Distance Education, 20*(1), 23-37.
- Robinson, K. (2009). Creativity in the classroom, innovation in the workplace. *Interview with Sir*

- Ken Robinson. Retrieved from
<http://www.Principalvoices.com/voices/ken-robinson-white-paper.html>.
- Roeser, R. W., Skinner, E., Beers, J., & Jennings, P. A. (2012). Mindfulness training and teachers' professional development: An emerging area of research and practice. *Child Development Perspectives*, 6(2), 167-173. doi: 10.1111/j.1750-8606.2012
- Rotgans, J. I., & Schmidt, H. G. (2011). Cognitive engagement in the problem-based learning classroom. *Advances in Health Sciences Education*, 16(4), 465-479.
doi: 10.1007/s10459-011-9272-9
- Rutter, M., Kim-Cohen, J., & Maughan, B. (2006). Continuities and discontinuities in psychopathology between childhood and adult life. *Journal of Child Psychology and Psychiatry*, 47(3-4), 276-295.
- Rybak, C. (2013). Nurturing positive mental health: Mindfulness for wellbeing in counselling. *International Journal for the Advancement of Counselling*, 35(2), 110-119.
doi: 10.1007/s10447-012-9171-7
- Saldaña, J. (2015). *The coding manual for qualitative researchers*. Thousand Oaks, CA: Sage.
- Salzberg, S. (2010). *Real happiness: The power of meditation: A 28-day program*. Chapel Hill, NC: Workman Publishing.
- Savery, J. R., & Duffy, T. M. (1995). Problem based learning: An instructional model and its constructivist framework. *Educational Technology*, 35(5), 31-38.
- Schmidt, S. (2011). Mindfulness in east and west—Is it the same? In H. Walach, S. Schmidt, W. B. Jonas (Eds.), *Neuroscience, consciousness and spirituality* (pp. 23-38). Netherlands: Springer.
- Schmidt, H. G., Rotgans, J. I., & Yew, E. H. (2011). The process of problem-based learning:

What works and why. *Medical Education*, 45(8), 792-806.

doi: 10.1111/j.1365-2923.2011.04035

Schroder, H. S., Moran, T. P., Donnellan, M. B., & Moser, J. S. (2014). Mindset induction effects on cognitive control: A neurobehavioral investigation. *Biological Psychology*, 103, 27-37. doi: 10.1016/j.biopsycho.2014.08.004

Schwandt, T. A., Lincoln, Y. S., & Guba, E. G. (2007). Judging interpretations: But is it rigorous? Trustworthiness and authenticity in naturalistic evaluation. *New Directions for Evaluation*, 2007(114), 11-25.

Segal, Z. V., Teasdale, J. D., Williams, J. M., & Gemar, M. C. (2002). The mindfulness-based cognitive therapy adherence scale: Inter-rater reliability, adherence to protocol and treatment distinctiveness. *Clinical Psychology & Psychotherapy*, 9(2), 131-138.

Seiffge-Krenke, I. (2000). Causal links between stressful events, coping style, and adolescent symptomatology. *Journal of Adolescence*, 23(6), 675-691.

Shapiro, S. L., Astin, J. A., Bishop, S. R., & Cordova, M. (2005). Mindfulness-based stress reduction for health care professionals: results from a randomized trial. *International Journal of Stress Management*, 12(2), 164.

Shapiro, S. L., Brown, K. W., & Biegel, G. M. (2007). Teaching self-care to caregivers: effects of mindfulness-based stress reduction on the mental health of therapists in training. *Training and Education in Professional Psychology*, 1(2), 105.

Shechtman, N., DeBarger, A., Dornsife, C., Rosier, S., & Yarnall, L. (2013). Promoting grit, tenacity and perseverance: critical factors for success in the 21st century. Retrieved from <http://www.ed.gov/edblogs/technology/files/2013/02/OET-Draft-Grit-Report-2-17-13.pdf>

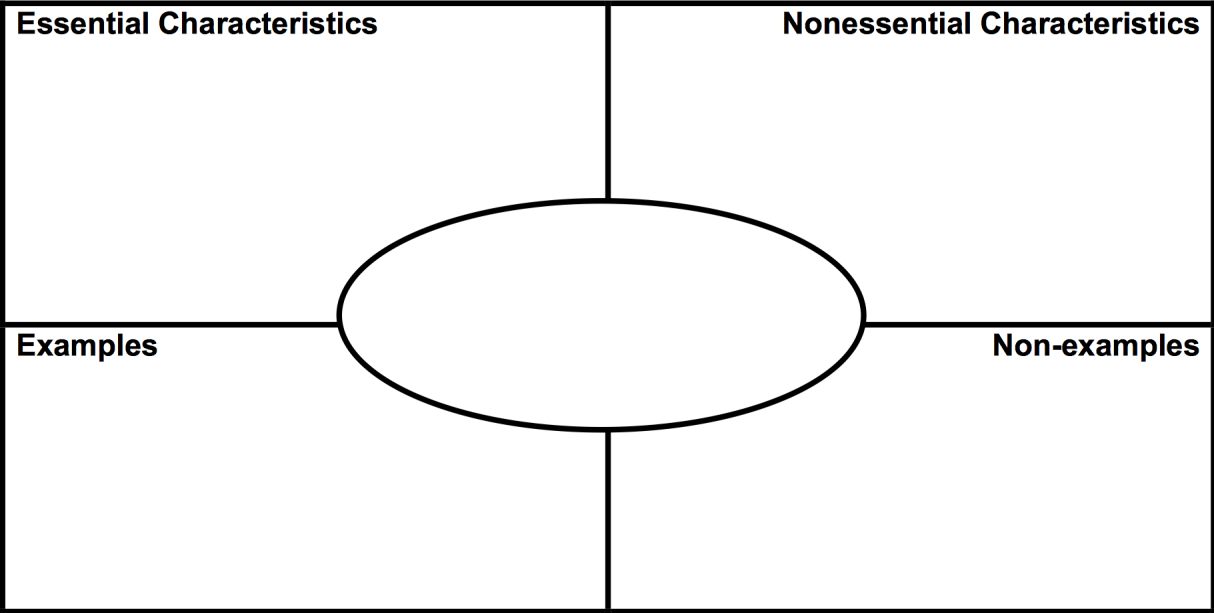
Smith, J. M., & Alloy, L. B. (2009). A roadmap to rumination: A review of the definition,

- assessment, and conceptualization of this multifaceted construct. *Clinical Psychology Review*, 29(2), 116-128.
- Snyder, B., & Tardy, C. (2001). That's why I do it: Flow and teachers' values, beliefs, and practices. *ELT journal*, 58(2), 118-128.
- Sovik, R. (1999). The science of breathing: The yogic view. *Progress in brain research*, 122(1), 491-505. doi:10.3389/fnhum.2014.00770
- Starr, L. J. (2014). Informing education research and the praxis of leadership through the use of autoethnography and phenomenology. *CJNSE/RCJCE*, 5(3), 2-19. Retrieved from http://dspace.library.uvic.ca/bitstream/handle/1828/5677/Starr_Lisa_PhD_2014.pdf?sequence=1&isAllowed=y
- Stiggins, R. (2004). New assessment beliefs for a new school mission. *Phi Delta Kappan*, 86(1), 22-27.
- Tenenbaum, G. (1986). The effect of quality of instruction on higher and lower mental processes and on the prediction of summative achievement. *The Journal of Educational Research*, 80(2), 105-113.
- Tangney, J. P., Stuewig, J., & Mashek, D. J. (2007). Moral emotions and moral behavior. *Annual Review of Psychology*, 58, 345-372. doi:10.1146/annurev.psych.56.091103.070145
- Thomas, S. P., & Pollio, H. R. (2002). *Listening to patients: A phenomenological approach to nursing research and practice*. New York, NY: Springer.
- Von Bertalanffy, L. (1969). General systems theory and psychiatry: an overview. *General Systems Theory and Psychiatry*, 33-46. Retrieved from <http://psychiatryonline.org/doi/ref/10.1176/appi.books.9781585623648.gg18>
- Walach, H., Buchheld, N., Buttenmüller, V., Kleinknecht, N., & Schmidt, S. (2006). Measuring


- mindfulness: the Freiburg mindfulness inventory (FMI). *Personality and Individual Differences*, 40(8),1543-1555. doi: 10.1016/j.paid.2005.11.025
- Walker, C. O., Greene, B. A., & Mansell, R. A. (2006). Identification with academics, intrinsic/extrinsic motivation, and self-efficacy as predictors of cognitive engagement. *Learning and Individual Differences*, 16(1), 1-12.
- Wallace, B. A., & Shapiro, S. L. (2006). Mental balance and well-being: Building bridges between Buddhism and Western psychology. *American Psychologist*, 61(7), 690.
- Wallace, B. A. (2011). *Minding closely: The four applications of mindfulness*. Boston, MA: Snow Lion Publications.
- Warnick, B. (1979). Structuralism vs. phenomenology: Implications for rhetorical criticism. *Quarterly Journal of Speech*, 65(3), 250-261. Retrieved from <http://files.eric.ed.gov/fulltext/ED203414.pdf>
- Weick, K. E., & Putnam, T. (2006). Organizing for mindfulness Eastern wisdom and Western knowledge. *Journal of Management Inquiry*, 15(3), 275-287. doi:10.1177/1056492606291202
- Wenzel, L., Glanz, K., & Lerman, C. (2002). Stress, coping, and health behavior. *Health behavior and health education*, 3, 210-239.
- Wilber, K. (2007). *Integral spirituality*. Boulder, CO: Shambhala Publications.
- Wilber, K. (2012). In defense of integral theory. *Journal of Integral Theory and Practice*, 7(4), 43-52. Retrieved from [https://foundation.metaintegral.org/sites/default/files/JITP_7\(4\)_Wilber.pdf](https://foundation.metaintegral.org/sites/default/files/JITP_7(4)_Wilber.pdf)
- William, D., & Leahy, S. (2015). *Embedding formative assessment: Practical techniques for K-12 classrooms*. West Palm Beach, FL: Learning Sciences International.

- Wilson, E. O., Wilson (2006). *Nature revealed: Selected writings, 1949-2006*. Baltimore, ML: Johns Hopkins University Press.
- Wilson, H. S., & Hutchinson, S. A. (1991). Triangulation of qualitative methods: Heideggerian hermeneutics and grounded theory. *Qualitative Health Research, 1*(2), 263-276.
doi:10.1177/104973239100100206
- Willms, J. D., Friesen, S., & Milton, P. (2009). *What did you do in school today? Transforming classrooms through social, academic, and intellectual engagement*. Retrieved from <http://www.cea-ace.ca/sites/default/files/cea-2009-wdydist.pdf>
- Wirkala, C., & Kuhn, D. (2011). Problem-based learning in K–12 education: Is it effective and how does it achieve its effects? *American Educational Research Journal, 48*(5), 1157-1186. doi: 10.3102/0002831211419491
- van Manen, M. (2007). Phenomenology of practice. *Phenomenology & Practice, 1*(1), 11-30. Retrieved from <http://www.maxvanmanen.com/files/2011/04/2007-Phenomenology-of-Practice.pdf>
- van Maanen, J. (2011). *Tales of the field: On writing ethnography*. Chicago, IL: University of Chicago Press.
- Yeager, D. S., & Dweck, C. S. (2012). Mindsets that promote resilience: When students believe that personal characteristics can be developed. *Educational Psychologist, 47*(4), 302-314. doi: 10.1080/00461520.2012.722805
- Yeager, D. S., & Walton, G. (2011). Social-psychological interventions in education: They're not magic. *Review of Educational Research, 81*(2), 267–301.
doi: 10.3102/0034654311405999

Appendix A: Frayer Model



Appendix B: TCPS 2: Core Certificate of Completion

PANEL ON RESEARCH ETHICS	TCPS 2: CORE
<i>Navigating the ethics of human research</i>	
<h1><i>Certificate of Completion</i></h1>	
<p><i>This document certifies that</i></p>	
<p>Anne Daniel</p>	
<p><i>has completed the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans Course on Research Ethics (TCPS 2: CORE)</i></p>	
<p>Date of Issue:</p>	<p>3 February, 2016</p>

Appendix C: Request for Informed Consent



Name of Researcher, Faculty, Department, Telephone & Email:

Anne Daniel- Doctoral Candidate

Supervisor:

Dr. Brent Davis

Title of Project:

An Integral View of the Perception of Challenge and Mindfulness Practices Within a Classroom Based Setting

This consent form, a copy of which has been given to you, is only part of the process of informed consent. If you want more details about something mentioned here, or information not included here, you should feel free to ask. Please take the time to read this carefully and to understand any accompanying information.

The University of Calgary Conjoint Faculties Research Ethics Board has approved this research study.

Purpose of the Study

- The purposes of this study is to explore how students perceive challenge and to examine effects of mindfulness practices might have on developing comfort with challenge.
- This study would benefit teachers to better understand what types of mindfulness strategies would best develop and support comfort with challenge within the learner.
- This study is being conducted through the University of Calgary doctoral candidate who is also a teacher with the Calgary Board of Education.
- The participants I am looking for have experienced challenge within an academic setting. The participants are located within schools within the Calgary Board of Education who are enrolled in schools that employ practices of maker movement, inquiry, problem-based learning and employs design-based thinking which would necessitate comfort with challenge and discomfort within learning situations.

What Will I Be Asked To Do?

- The student participants will be required to fill out a form that asks them to provide a personal definition of challenge, list the essential characteristics of challenge, and provide examples and non-examples of challenge. A smaller group of students, teachers and educational assistants will then be personally interviewed about their individual experiences with challenge.
- Each interview will take approximately twenty minutes and each participant will be interviewed three separate times for a total of sixty minutes. Questions will be similar to the following:
 - Explain learning situation where you felt challenged.
 - What are some strategies you use if you are feeling unable to complete a learning task?
 - What do you think your brain does when you feel challenged?
- I will be following up with all of the small group participants after their initial interview to check for accuracy and ensure there is nothing else that needs to be added into the data. This follow up is consistent with the type of research methods I will be using.
- Participants will be video and audiotaped to enable all verbal and non-verbal feedback to be examined multiple times to analyse both verbal and non-verbal feedback.

Participation in the research is voluntary and a participant can discontinue their participation at any point throughout the research study. If a participant decides to withdraw from the study the information provided by them will be eliminated from the study and will be secured and electronically deleted and any hard copies will be shredded.

What Type of Personal Information Will Be Collected?

If you choose to participate, you will be asked to provide your gender, age and current grade you are enrolled in.

The video and audio recordings will only be accessible to the principle researcher and the direct supervisor of the study. The recordings will not be shared publically.

There are some options for you to consider if you decide to take part in this research study. You can choose all or none of them. Please review and select either Yes or No to each statement provided.

I grant permission to be audio taped: Yes: ___ No: ___

I grant permission to be videotaped: Yes: ___ No: ___

I wish to remain anonymous: Yes: ___ No: ___

I wish to remain anonymous, but you may refer to me by a pseudonym: Yes: ___ No: ___

The pseudonym I choose for myself is: _____

You may quote me and use my name:

Yes: ___ No: ___

Are there Risks or Benefits if I Participate?

There is a possible risk of a student participant missing a small amount of instructional time. The time the student participant misses in class will be discussed with their teachers and extra support will be offered to catch up only any work missed. The researcher will discuss the best possible timing as to reduce any inconvenience and disruption in the participant's day. There is no cost to the individual and no payment for involvement within the research study.

What Happens to the Information I Provide?

Participation is completely voluntary and confidential. Participants are free to discontinue participation at any time during the study. No one except the researcher and my supervisor will be allowed to see or hear any of the answers to the questionnaire or the interview tape. There are no names on the Frayer model or interview transcripts. Only group information will be summarized for any presentation or publication of results. The data will be encrypted on my computer and any print data will be locked away for protection. Student identity will be coded and kept confidential. Data will be kept on a password protected and encrypted computer. Any electronic transmissions will not use specific names but rather the code for each participant. Any paper copies will be kept in a locked file cabinet. The confidential data will be stored for one year on a computer hard drive, at which time it will be permanently erased.

Signatures

Your signature on this form indicates that 1) you understand to your satisfaction the information provided to you about your participation in this research project, and 2) you agree to participate in the research project.

In no way does this waive your legal rights nor release the investigators, sponsors, or involved institutions from their legal and professional responsibilities. You are free to withdraw from this research project at any time. You should feel free to ask for clarification or new information throughout your participation.

Participant's Name: (please print) _____

Participant's Signature: _____ Date: _____

Researcher's Name: (please print) _____

Researcher's Signature: _____ Date: _____

Questions/Concerns

If you have any further questions or want clarification regarding this research and/or your participation, please contact:

Anne Daniel Department/Faculty of Educational Research

403-669-3177, amdaniel@cbe.ab.ca

Dr. Brent Davis, abdavi@ucalgary.ca

If you have any concerns about the way you've been treated as a participant, please contact the Research Ethics Analyst, Research Services Office, University of Calgary at (403) 210-9863; email cfreb@ucalgary.ca.

A copy of this consent form has been given to you to keep for your records and reference. The investigator has kept a copy of the consent form.

Appendix D: Letter To Research Ethics Board



Conjoint Faculties Research Ethics Board
Research Services Office
3rd Floor MacKimmie Library Tower (MLT 300)
2500 University Drive, NW
Calgary AB T2N 1N4
Telephone: (403) 220-4283
cfreb@ucalgary.ca

March 3, 2016

Ethics ID: REB15-3198

Andrew Davis

Dear [Andrew Davis](#) :

RE: An Integral View of the Perception of Challenges and Mindfulness Practices Within a Class Based Setting

The above named research protocol has been granted ethical approval by the Conjoint Faculties Research Ethics Board for the University of Calgary. Please make a note of the conditions stated on the Certification. In the event the research is funded, you should notify the sponsor of the research and provide them with a copy for their records. The Conjoint Faculties Research Ethics Board will retain a copy of the clearance on your file.

Please note, a renewal or final report must be filed with the CFREB within 30 days prior to the expiry date on your certification. You can complete your renewal or closure request in IRISS.

In closing, let me take this opportunity to wish you the best of luck in your research endeavor.

Sincerely,

[Christopher R. Sears, PhD, Chair](#) , CFREB

Appendix E: Letter of Recruitment



January 5th, 2016

Dear prospective research participants,

My name is Anne Daniel and I am currently a teacher with the Calgary Board of Education and an Educational Doctoral candidate at the University of Calgary. I am researching how mindfulness strategies impact students' perceptions of challenge and their development of growth mindset.

I am looking to recruit six to eight student participants who are currently enrolled in the yoga and meditation option in grades ten, eleven and twelve and one educational assistant and two teachers to participate in my research study. I will be discussing my research study with each class and handing out recruitment letters to any interested individuals.

My research approach will require me to visit the school three times a week over a period of twelve weeks. During the week I will be collecting information in the classroom through observation and note taking and then conducting one to one interviews that will be video and audio recorded. I will need to video record the interviews to help document all verbal and non-verbal responses.

The research will involve six to eight student participants, two teachers and one educational assistant.

The Calgary Board of Education and the University of Calgary Conjoint Faculties Research Ethics Board have approved this research study. I will be complying with all Calgary Board of Education consent requirements before conducting any research.

Thank you for your consideration in allowing this research to be conducted within your school. My contact information is listed below.

Best regards,

Anne Daniel
Learning Leader
Educational Doctoral Candidate

403-669-3177 or 403-777-8370
amdaniel@cbe.ab.ca

Appendix F: U of C Assent Form



Project Title: An Integral View of the Perception of Challenge and Mindfulness Practices Within a Classroom Based Setting

Principal Investigator: Anne Daniel – Doctoral Candidate – Faculty of Educational Research – University of Calgary

What is a research study?

A research study is a way to find out new information about something. Student participants do not need to participate in a research study if they don't want to participate.

Why are you being asked to be part of this research study?

You are being asked to take part in this research study because we are trying to learn more about how mindfulness strategies effect our personal perception of challenge. We are asking you to be in the study because you have been involved in an option classroom that teaches mindfulness and you have experienced academic challenge. About eight students will be in this study.

If you join the study what will happen to you?

We want to tell you about some things that will happen to you if you are in this study.

- You will be in the study for 12 weeks.
- You will be asked to fill out a form that asks you to provide a personal definition of challenge, list the essential characteristics of challenge, and provide examples and non-examples of challenge.
- You can choose to not answer any or all questions asked in the interviews if you are unsure or do not feel comfortable providing an answer.
- You will then be asked some one on one interview questions. Each interview will take approximately twenty minutes and you will be interviewed three separate times for a total of sixty minutes. Questions will be similar to the following:
 - Explain learning situation where you felt challenged.
 - What are some strategies you use if you are feeling unable to complete a learning task?
 - What do you think your brain does when you feel challenged?

- I will be following up with all participants after their initial interview to check for accuracy and ensure there is nothing else that needs to be added into the data.
- Only the interviews will be audio and video recorded. I will also be taking some notes while you participate in your yoga/meditation class. I will not be audio or video recording you in your classroom.

Will any part of the study hurt? There is no physical discomfort with the study. However, you will be asked some questions about how you feel about challenge, and your own worries and thoughts about challenge.

Will the study help you?

The potential benefits for you are that teachers and school administrators can develop a better understanding of how students feel about the different challenges they experience and which strategies might help to work through challenges. This information might inform decisions made by teachers and school administrators in connection to how they can better support students when they are working through personal and academic challenges.

Do your parents know about this study?

We have talked to your parents about your participation in this study as well. You can talk this over with them before you decide.

Who will see the information collected about you?

The information collected about you during this study will be kept safely locked up. Nobody will know it except the people doing the research. The study information about you will not be given to your parents or teachers. The researchers will not tell your friends or anyone else.

Do you have to be in the study?

You do not have to be in the study. Your grades or relationship with the teacher or school will not be affected by choosing to participate in this study. No one will be upset if you don't want to do this study. If you don't want to be in this study, you just have to tell us. It's up to you. You can also take more time to think about being in the study. Any information you have shared will be destroyed and not shared if you choose to quit the study.

What if you have any questions?

You can ask any questions that you may have about the study. If you have a question later that you didn't think of now, either you can call or have your parents call Anne Daniel 403-669-3177 or email at amdaniel@cbe.ab.ca You can also take more time to think about being in the study and also talk some more with your parents about being in the study.

Other information about the study.

