Bridging the Gap Between Mindfulness and the Classroom; How can Mindfulness be used to Lessen Test Anxiety Among Grade 3 to Post-Secondary Level Students in the Greater Toronto Area?

By

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Abstract

Canadian adolescents are experiencing high levels of test anxiety (Cassady & Johnson, 2002; Huberty, 2009). In the event that this anxiety becomes a chronic concern, there are a multitude of studies that predict the manifestation of adverse effects, particularly reduced memory formation and diminished working memory capacity (McEwen & Chattarji, 2009; O’Leary, 1990; Ziedner, 1998). Attentional and cognitive imbalances associated with test anxiety can be managed through engagement in mindfulness practice. The classroom environment is a promising platform from which to engage students in regular mindfulness practice. However, a review of literature has revealed a prevailing gap in knowledge regarding how mindfulness exercises can be used in classrooms to reduce test anxiety. In response, I constructed this study to illuminate effective mindfulness-based strategies teachers can use to lessen test anxiety among their students. I approached this goal by conducting interviews and collecting observational notes from three teachers in the Greater Toronto Area. I used the following overarching question to guide my research: how can mindfulness be used to lessen test anxiety among grade 3 to post-secondary level students in the Greater Toronto Area? My findings indicate that there are four areas of development for teachers who want to design an anxiety-reducing mindfulness program for implementation in their classrooms: commitment to mindfulness practice and test anxiety reduction; continuous knowledge acquisition; regular implementation of mindfulness exercises in the classroom; and ongoing assessment of exercise effectiveness and student anxiety levels.

Key Words: test anxiety, assessment, mindfulness, emotionality, worry, meditation, mental health, and classroom interventions.
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Chapter 1: INTRODUCTION

Introduction to the Research Study

It is probable that genius tends actually to prevent a man from acquiring habits of voluntary attention, and that moderate intellectual endowments are the soil in which we may best expect, here as elsewhere, the virtues of the will, strictly so called, to thrive. But, whether the attention come by grace of genius or by dint of will, the longer one does attend to a topic the more mastery of it one has. And the faculty of voluntarily bringing back a wandering attention, over and over again, is the very root of judgment, character, and will…An education which should improve this faculty would be the education *par excellence*.

(James, 1890)

This prodigious wisdom about what constitutes true excellence written by William James in his famous publication, *The Principles of Psychology*, equates the idea of excellence with sustained focus. In modern society, standardized quantitative measures of excellence trickle into our personal lives, public institutions and educational systems. We have equated success with a monetary value or - in the educational system - with a letter or number grade. In many ways, schools can be likened to excellence-producing factories: students follow a formula or rubric for excellence and, if the specified criteria is adequately communicated, they emerge with a letter or number symbolizing mastery of specified content. This can be an anxiety-inducing process for some students. William James describes “education *par excellence*” (education for excellence) as the act of teaching students how to focus their attention. He believed mastery could be achieved through grit-driven sustained focus, even in the midst of stress or anxiety. In pursuit of applying this logic to our youth, the question remains: how can we teach students to remain focused in the face of anxiety?

In the educational realm, teachers act as educational facilitators that guide students through an array of activities, while students act as participants that adopt varying degrees of autonomy along the way. In order to attain an empowering and effective education, students
should remain attentive in the classroom (Pedretti, 2014). Ultimately, this is where the dichotomy between teacher and student originates; the separation of consciousness between teacher and student makes it difficult for teachers to gauge and encourage student attentiveness. Although gauging student engagement can be considered challenging, there are multiple techniques that teachers can use to more effectively sustain student concentration. One such approach employs mindfulness practices, such as meditation and focused observation. Although mindfulness practice has its origins in ancient literature, it has only recently (within the last few decades) been applied in North American educational systems (Brady, 2008). According to Broderick and Frank (2014), “mindfulness is an increasingly popular ‘new direction’ for youth development” (p. 1).

Mindfulness has historical origins embedded within Eastern spiritual traditions, particularly Buddhism. A large collection of literature advocates for widespread engagement in mindfulness training, associating it with development of positive qualities, such as self-discipline, compassion, and serenity. Additionally, mindfulness practices encourage adoption of novel perspectives on one’s experiences and feelings, which can lead to increased self-efficacy, confidence, and empowerment. Such metacognitive insight can also increase focus and heighten emotional intelligence (Baer, 2004).

Mindfulness practice can be helpful to individuals at any developmental stage. However, according to Broderick and Frank (2014), adolescence constitutes a particularly beneficial phase to commence engagement in mindfulness practice, as one’s teenage years are frequently filled with imposed pressure, raging hormones, and high levels of stress. Mindfulness practice can help students control these novel – and often difficult – pervading thoughts and emotions. Predominantly, test anxiety is a significant concern for adolescent youth, as it can disconnect them from school engagement and hinder academic performance. Since the 1970s, test anxiety
has been attracting the attention of many researchers because of its elevated prevalence following increased emphasis on test scores in the United States during that time (Cassady & Johnson, 2002).

There has been wide acceptance of the view that test anxiety is composed of two dimensions: emotionality and worry. Emotionality is a broad term used to represent an individual’s amplified awareness of heightened arousal surrounding evaluative situations. For example, anxious test-takers may experience self-doubt and low self-confidence before, during, and/or after writing a test due to fear of performing poorly. High levels of emotionality often manifest as physiological responses such as increased heart rate, dizziness, nausea, and panic (Cassady & Johnson, 2002). Notably, high emotionality often results in declining performance during assessments only when associated with excessive worry, the faculty of allowing one’s mind to fixate on negative thoughts. These negative thoughts typically centre on a) unrealistic expectations surrounding performance, b) comparison of perceived level of preparedness to that of peers, c) amplification of negative consequences associated with performing poorly, and d) loss of self-worth. According to Cassady (2010), chronic test anxiety may be associated with long-term effects including poor motivation, negative self-esteem, stereotype threat, and learned helplessness. Generally, emotionality, worry, and long-term factors associated with test anxiety often interact to amplify anxiety (Cassady, 2010). For example, a student may experience an episode of elevated anxiety during an assessment, receive a mark that he or she considers inadequate, and attribute this perceived subpar performance to lack of skill. Collectively, these occurrences increase the probability that this student will experience subsequent anxious episodes surrounding test writing. This study proposes an intervention strategy to reduce the negative impact of test anxiety: mindfulness practice.
Zelazo and Lyons (2012) suggest that mindfulness practice can be an excellent coping strategy for adolescents who experience test anxiety because it “strengthens executive control functions while simultaneously downregulating emotional interference” (p. 157). This neurological response is likely to help adolescents cope with elevated anxiety and lack of focus. Through the development of skills such as attending to emotions, noticing diversions in concentration, and being attentive to the present moment, students may achieve more attentional balance and anxiety relief (Briderick & Frank, 2014).

**Purpose of the Study**

In Walt Whitman High School in Bethesda, Maryland, U.S., teachers decided to implement mindfulness-based programming in their classrooms. This school is considered an institution for high achieving students, who, as a result of cultivating a commitment to achieving academic excellence, are defined as overstressed, overworked and college-obsessed. Implementation of mindfulness practice in classrooms was met with great success following its introduction into the Walt Whitman High School community in 2012. Students appreciated the mindfulness techniques because they reduced their test anxiety and increased their engagement in class activities (“Walt,” 2013). Since mindfulness intervention manifested positive results in this population, can it yield similar results among students in the Greater Toronto Area? I addressed this question by interviewing three teachers who have experience implementing mindfulness practices into their classrooms, specifically as an intervention strategy for anxious test takers. I asked them subquestions surrounding the central question: how can mindfulness-based programming be used to lessen test anxiety among grade 3 to post-secondary level students in the Greater Toronto Area? Amidst a success- and productivity-driven society, students can become
burdened with test anxiety. In an effort to counteract this, I believe mindfulness-based programming implementation is an effective approach.

Overall, the purpose of my interviews was to create a guideline or framework outlining effective strategies teachers can use to teach mindfulness in their classrooms. At this stage in the research, mindfulness-based programming constitutes meditative and contemplative practices that calm and open the mind to create a condition and, expectantly, a habit of non-judgmental awareness and focus on the present moment.

**Research Questions**

**Main question**

*Bridging the gap between mindfulness and the classroom: How can mindfulness be used to lessen test anxiety among grade 3 to post-secondary level students in the Greater Toronto Area?*

**Sub-Questions**

- *Professional Development:* How can teachers increase their knowledge regarding how to use mindfulness to lessen test anxiety? Are there effective mindfulness professional development courses or training opportunities available in the Greater Toronto Area?

- *Implementation:* Are there particular mindfulness techniques, activities, or strategies that effectively reduce test anxiety in the classroom?

- *Ongoing Evaluation:* Are there ways to assess how effective a mindfulness-based program is at reducing test anxiety?

**Background of the Researcher**

My Master of Teaching Research Project combines many facets of my identity as a teacher. It stems from my own struggles with mental health, anxiety, and perfectionism. Early on in my educational trajectory, I thought grades determined my capabilities in and out of the
classroom. As such, the grades that I received had the power to alter my mood, self-esteem, and self-efficacy. Lower grades represented personal failure and inadequacy. As such, I became a pawn in my own continuous game – where I needed to earn excellent grades in order to avoid feelings of inadequacy. School was both a place of solace and anxiety for me; I loved learning, yet detested the process of being evaluated. Because I valued my marks so much, test writing became the apex of my anxiety.

As I progressed through secondary and post-secondary education, my test anxiety intensified and became a constant source of anguish for me. However, during my final year of undergraduate studies, I completed a thesis that gave me a new perspective on anxiety. It explored the impact of autonomous priming on intrinsic motivation surrounding high-intensity exercise completion. My results indicated that individuals who are more intrinsically motivated to exercise perform better at high-intensity interval training routines (difficult exercise protocols that often result in exhaustion) and experience increased muscle recruitment throughout the workout. This showed me how powerful a positive mental state is during high-stress situations. By priming my participants to think positively throughout a workout, I was able to alter their mood and emotionality. Ultimately, my thesis showed me that I can control my mental state and that I don’t have to be helpless to test anxiety.

Following this, I began to participate in university-run mindfulness workshops, engage in regular yoga practice, and read books about meditation. Although I am still plagued by episodes of significant anxiety and stress, they are much more manageable because of mindfulness practice. Given my positive experiences with mindfulness, I wish someone had taught me mindfulness techniques while I was in elementary school – it could have saved me several years of feeling helpless in the face of anxiety. For this reason, I incorporate mindfulness practice into
the classrooms I teach. For instance, during my third practicum block, I was given the opportunity to teach a class of seven MID students, each struggling with a collection of learning difficulties. Upon integrating mindfulness practice into this classroom via the utilization of a guided meditation, some students were immediately relaxed and others were disengaged. With time and repeated use, however, students gained an appreciation for meditation and anticipated its use in the classroom. Whenever I sensed elevated anxiety in students, I would provide them with vocal prompts to calm and focus them. For example, I often would say, “close your eyes and focus on your breathing” or “take a moment to breathe.” These prompts were simple effective reminders for students to stay in the present moment. Giving students time to meditate during test writing was a great way to refocus their minds and calm their nerves. Ultimately, integration of mindfulness practice in the classroom improved my classroom management skills. Students were better able to self-regulate and judge their current emotional states. For its importance in my life and the lives of my students, I chose to centre this MTRP on how teachers can bring the benefits of mindfulness practice to their students.

Limitations

As with any form of research, there are limitations to my study. These include reduced generalizability, a limited timeframe, and potentially dishonest or biased interview responses. Since I only interviewed three teachers at three different schools in the Greater Toronto Area, the insights gained from my study may not be an accurate generalization for all grade 3 to post-secondary level students in the GTA. I also did not interview students, which means my study solely explores the perspectives of teachers. My participants may have different ideas compared to students concerning what effective mindfulness practice involves. Next, as the Masters of Teaching Program is a two-year program, a longitudinal examination of mindfulness-based
program effectiveness could not be obtained. A longitudinal research structure would have allowed me to gain insight regarding whether students, who have been exposed to an extended mindfulness program, experience any long-term decreases in test anxiety. Also, my data is based on teachers’ responses to interview questions. Correspondingly, there is a chance that teachers were dishonest when providing their answers to my questions. There is also a chance that my biased perspective may have influenced the responses of my interviewees. Generally, the limitations of my research project extend beyond my methodology and could not have been reduced given the parameters of the MTRP.

**Key Terms**

**Education par excellence:** direct translation, “education for excellence” is a term coined by American philosopher and psychologist, William James. He believed that an excellent education serves to continuously refocus the mind on the present moment (James, 1890).

**Mindfulness:** a mental state of being; attained by continuously refocusing one’s attention on the present moment, while acknowledging bodily sensations, thoughts, and feelings with calm acceptance and lack of judgement (Kabat-Zinn, 2003).

**Meditation:** a form of mindfulness practice, which involves a precise internal effort to rest, clear, relax and inwardly focus the mind. The act of engaging in meditative practice involves being fully awake and attentive to the inner facets of the mind, whilst remaining inattentive to the renderings of the external world (Rinpoche, 2004).

**Test Anxiety:** a type of performance anxiety associated with test writing. It typically has two components: emotionality and worry. Test anxiety can manifest feelings of nervousness, nausea, elevated heart rate, dizziness, and increased breathing rate (Cassady & Johnson, 2002).
Overview

Chapter 1 includes the introduction and purpose of the study, the research questions, as well as how I came to be involved in this topic and study. Chapter 2 contains a review of the literature. Chapter 3 provides the methodology and procedure used in this study including information about the sample participants and data collection instruments. Chapter 4 identifies the participants in the study and describes the data as it addresses the research question. Chapter 5 includes limitations of the study, conclusions, recommendations for practice, and further reading and study. References and a list of appendixes follow at the end.
Chapter 2: LITERATURE REVIEW

Elevated Stress Among Canadian Adolescents

As future members of our productivity-obsessed and academically inclined society, Canadian adolescents are experiencing increasingly high levels of stress. Particularly, high school students are currently reporting obstructive levels of stress in response to academic pressures and social complexities. According to Vaillancourt, Clinton, McDougall, Schmidt and Hymel (2010), Canadian youth are reporting high levels of anxiety, stress, depression and suicide – with at least 20% of adolescents reportedly being affected by a mental health issue. Amy Shapiro (2013), a PhD student in the Department of Educational and Counselling Psychology at McGill University, shares this viewpoint, emphasizing, “For the average high school student, life is full of potential stressors [which can act as risk factors for poor mental health outcomes].” She presented a study involving over 900 grade 7 Canadian students, which indicated that, among the biggest stressors in their lives, “academic difficulties” and test anxiety were reported to be the most significant. This percentage of students experiencing academic-related stress and anxiety is believed to increase as they progress through their academic careers (Shapiro, 2013). In the event that this stress becomes a chronic concern, there are a multitude of studies that predict the manifestation of adverse effects, particularly disrupted pre-frontal cognitive ability, reduced memory formation and retrieval, and suppression of immune function (Arnsten, 2009; Lupien, McEwen, Gunnar & Heim, 2009; Roozendaal, McEwen & Chattarji, 2009; O’Leary, 1990). Thus, the rising level of stress and anxiety among Canadian adolescents is a national concern that must be dealt with in order to reduce future adverse effects.
Test Anxiety: A Cause for Concern

Among the many causes of stress and anxiety for students, test anxiety is a particularly large concern in academic settings; research suggests that 25% to 40% of students experience frequent test anxiety (Cassady & Johnson, 2002; Huberty, 2009). Cognitive test anxiety is not a novel phenomenon. It has become increasingly important as the amount of testing and consequences associated with testing have amplified, particularly in the context of K to 12 education in the United States and Canada (Cizek & Burg, 2006). Unfortunately, just as the concern for test anxiety has intensified, so has the confusion about what test anxiety constitutes, what causes it, who is affected by it, and what can be done to lessen its effects. Notably, generalized anxiety disorder and test anxiety are two separate concepts; students with generalized anxiety disorder experience high levels of stress across a wide range of situations, whereas test anxiety results in symptoms of stress surrounding – before, during and/or after - test writing (Huberty, 2009; Cassady & Johnson, 2002; Cizek & Burg, 2006).

Test anxiety is one of many specific forms of anxiety; it typically results in a combination of cognitive and physical responses that are aroused in testing situations or in situations where the victim is being personally evaluated (Cizek & Burg, 2006). There are a combination of symptoms associated with test anxiety, including physiological over-arousal, tension, worry, dread, fear of failure, and catastrophizing. Typically, these symptoms act as significant barriers to academic performance, resulting in grade declines and oftentimes, negative social-emotional and developmental effects (Ziedner, 1998). Students with disabilities and students classified as gifted tend to experience high rates of test anxiety. This is deemed to be the result of frustration surrounding academia, heightened external pressure to perform well academically, and/or perfectionist tendencies (Goetz, Preckel, Zeidner & Schleyer, 2008; Sena, Lowe & Lee, 2007).
According to Hembree (1988), test anxiety exerts an enduringly stable and negative effect on academic performance measures. Specifically, in students ranging from third grade to graduate school, high levels of test anxiety negatively correlate with a) IQ; b) problem-solving ability; c) critical thinking skills; d) grades; and e) achievement in reading, mathematics, foreign language studies, natural sciences, english, psychology, and mechanical work (Hembree, 1988). Common situational factors linked to test anxiety may include low self-confidence for the specific task, perception of the exam as posing a high level of threat, or awareness of being underprepared for the exam (Schwarzer & Jerusalem, 1992). Overall, test anxiety has many physical, emotional, and mental factors connected to its manifestation. Each of these can negatively affect academic performance and emotionality.

In addition to negatively impacting student emotional development and academic performance, test anxiety can also have broader adverse effects on student success in modern society. Zeidner (1998) predicts that test scores will become increasingly important in evaluating applicants for highly competitive educational programs and demanding jobs. Considering that test anxiety generally causes decrements in performance during evaluative situations, development of therapeutic interventions for diminishing its adverse effects will become an increasingly large priority for counsellors, educators, and psychologists (Zeidner, 1998). Thus, reducing test anxiety will likely serve to increase access to educational and occupational opportunities for test-anxious individuals. The cognitive interference model suggests that individuals who experience test anxiety perform poorly during evaluative situations largely due to an inability to suppress competing thoughts, which are often negative and self-deprecatory (Sarason, 1984). The Test-Interference Theory stipulates that this excessive focus on negative thoughts and worrying about one’s level of preparedness during a test situation can occupy
cognitive processing that would otherwise be utilized for critical thinking and problem solving (Lang & Lang, 2010). Occupation of cognitive processing essentially reduces working memory capacity, the amount of information one can hold in working memory at any given time, and typically results in reduced academic performance (Weger, Hooper, Meier & Hopthrow, 2012). According to Salend (2012), educators can help students alleviate test anxiety if they are armed with information surrounding effective intervention strategies. Such strategies can be applied in the classroom, where teachers have frequent exposure to students and can introduce them to regular anxiety-reducing exercises and techniques.

**The Contemplative Life as a Remedy for Stress**

An intervention strategy that counteracts the negative consequences of test anxiety is mindfulness. Stemming from the foundational principles of contemplative science, attentional and cognitive imbalances associated with anxiety can be managed through engagement in mindfulness practice. Contemplative science, a transdisciplinary research area spanning the fields of cognitive neuroscience, developmental psychology, phenomenology, and psychiatry, introduces first-person methodologies of introspection (contemplative techniques, mental discipline, and mindfulness) to illuminate mental phenomena and allow for attainment of deeper knowledge regarding the nature of human consciousness (Wallace, 2007). Contemplative science emphasizes the role of mental discipline to counteract disparities associated with chronic stress and anxiety, such as attentional and cognitive imbalances. Attentional imbalance, characterized as an inability to focus one’s attention on an object of interest without forgetfulness or distraction, results in a withdrawn and disengaged mindset. Cognitive imbalance constitutes a failure to perceive what exists in the five fields of sensory input: sight, smell, touch, sound and taste. This type of cognitive deficit can be seen as a sensory divide between the mind and its
surrounding realities (Wallace, 2007). These imbalances are a particularly significant concern for adolescents in the educational system because they often manifest as a lack of focus in the classroom and a deficit in information retention. According to Dr. Alan Wallace, a respected Buddhist scholar and a very influential figure in the realm of contemplative science, mindfulness practice can be utilized to remedy mental imbalances and reduce anxiety (Wallace, 2007).

Śāntideva emphasized the importance of engaging in mindfulness practice to stabilize the mind: “…one should stabilize the mind in meditative concentration, since a person whose mind is distracted lives between the fangs of mental afflictions” (as cited in Wallace, 2007, p.8).

Ultimately, with levels of anxiety on the rise among Canadian adolescents, mindfulness practice may be an effective way to counteract this trend and shield adolescent minds from mental affliction. Broderick and Frank (2014) propose that mindfulness may be “…a particularly helpful asset during adolescents’ journey toward adulthood” (p.32). Adolescents are especially susceptible to mental imbalances as they develop in the context of their transforming anatomy, more complex life challenges, and heightened sensitivity to stress (Broderick & Frank, 2014). Ultimately, mindfulness is uniquely able to address the imbalances associated with adolescent development.

**The Concept of Mindfulness: A Brief Overview**

To grasp how mindfulness practice can act as a useful tool to manage test anxiety, a foundational understanding of its meaning, development, and application to daily life must be established. More than two centuries ago, the Buddha taught that lasting happiness and fulfillment could be obtained with one’s own mind, through the practice of mindfulness (Rinpoche, 2004). Mindfulness is an awareness that emerges through purposeful and non-judgmental sustained attention toward the moment-by-moment unfolding of experience. With its
roots in Buddhism, mindfulness is an antidote to delusion and is considered to be a respected state of “power” only attained by a select group of people (Rinpoche, 2004, p.32). Today, scientific researchers have transformed the idea of mindfulness into a widely attainable state of present moment awareness. Mindfulness can be practiced in either a formal or informal manner. Formal mindfulness practice involves intentionally attending to specific thoughts, feelings, emotions, body sensations and sensory experiences, with curiosity, acceptance and detachment. Informal mindfulness encompasses the incorporation of mindfulness practice into daily life such as while eating, interacting with others, bathing, walking, and reading (Meiklejohn et al., 2012). In terms of the methodology behind mindfulness practice, it is often practiced in the form of meditation. Meditation is the practice of continuously focusing one’s attention on an “anchor” (the breath, a sensation, or an object). The intent is to refocus attention on a chosen “anchor” whenever the mind starts to drift toward transient thoughts, feelings, or anxieties. Meditation is linked with feelings of deep relaxation, acceptance, stability, and security (Meiklejohn et al., 2012). Informal, formal, and meditative practices of mindfulness all stem from the Buddhist idea of the mind being at the center of fulfillment and self-regulation.

The transition of mindfulness from a primarily religious context to a more scientific realm is largely attributed to Dr. Jon Kabat-Zinn. He is a professor of Medicine Emeritus at the University of Massachusetts Medical School. Although he was introduced to mindfulness practice in a Buddhist context, he teaches mindfulness techniques from a primarily scientific perspective – bringing the focus away from religious ideologies and concepts, and toward evidence-based concepts and theories. By framing mindfulness in this way, he makes the benefits of mindfulness accessible to people outside the Buddhist faith, as he originally intended to do. In 1979, Jon Kabat-Zinn formulated the Mindfulness-Based Stress Reduction (MBSR) program to
bring the benefits of mindfulness to chronically ill patients (Lawler, 2014). Incorporating mindfulness-based programming into patient care framed mindfulness as less of a religious practice and more of a health science-oriented practice. Since then, fascination with mindfulness-based research has grown among academic communities and elsewhere. All three participants of this study completed Mindfulness-Based Stress-Reduction training in the Greater Toronto Area. A multitude of research has been conducted associating mindfulness with an array of positive effects, including reduced automatic emotional interference from stress and anxiety, better selection of problem-solving strategies, and increased emotional and regulatory skills (Briderick & Frank, 2014). Overall, expansion of mindfulness beyond the world of Buddhism has manifested widespread fascination with the resilience mindfulness provides its participants.

**The Positive Effects of Mindfulness**

With its escalating popularity, the influence of contemplative practice is greatly impacting the fields of psychology and medicine. Within the last thirty years, acceptance of and advocacy for mindfulness-based clinical care has significantly risen, representing a successful union between indigenous knowledge and modern science (Kabat-Zinn, 2005). A growing body of research (including Baer, 2003; Brown, Ryan & Creswell, 2007; Greeson, 2009; Davis & Hayes, 2011) is contributing to the increasing popularity of mindfulness-based practices among post-industrialized countries, indicating that mindfulness manifests positive outcomes in these aggregates (Poulin, 2009). Neuroscience offers insight into the intricacies surrounding why and how mindfulness manifests heightened well-being and other positive effects. Two decades of neuroscientific, physiological and medical research provides evidence that mindfulness training elicits positive physiological and psychological changes to various brain regions. Many of these specific regions are implicated in executive functioning (EF), and behavioural and emotional
regulation. Executive functions are a set of processes that command and control brain function. They constitute a set of cognitive processes that are responsible for monitoring actions, controlling working memory function, engaging in problem-solving, and providing emotional inhibition (Chan, Shum, Toulopoulou & Chen, 2008). Research indicates that improvements in executive brain function can be accomplished through regular mindfulness practice.

**The Effects of Mindfulness Training**

A plethora of evidence-based research exists indicating that mindfulness training fosters enhanced resilience and optimal brain function in adults. Davidson et al. (2003) introduced an 8-week Mindfulness-Based Stress Reduction (MBSR) training program to a healthy group of adults in their workplace environment. The goals of this program were to reduce workplace stress, enhance well-being, improve immune function, and heighten activity in brain regions associated with positive emotion. The experimental group, referred to as the “meditators,” completed this program during regular business hours, while the control group, referred to as the “non-meditators,” continued on with their work schedule. Brain electrical activity measurements indicated that, relative to the control group, meditators demonstrated a higher degree of prefrontal cortex activation, which is associated with positive mood states. Meditators also showed a larger magnitude of antibody titers to the influenza virus vaccine, indicating robustness of immune response (Dobson et al., 2003). Ultimately, this study demonstrates that a relatively short mindfulness-based training program can produce changes in brain function associated with positive mood and improved immune function.

The Psychiatric Neuroimaging Research Program of Massachusetts General Hospital is the first organization to have studied mindfulness-induced changes overtime in the brain’s grey-matter. Anatomical MRI images were obtained before and after a group of 16 healthy,
meditation-naïve participants underwent an 8-week MBSR training program (Hölzel et al., 2011). Throughout the program’s duration, participants engaged in 27 minutes of mindfulness practice daily. Neuro-imaging results indicated increases in grey-matter density in the hippocampus and corresponding decreases in grey-matter density in the amygdala. The hippocampus is a brain region that is involved in learning and memory – specifically the transition of information from short-term to long-term memory. Increased grey-matter in the hippocampus region of the brain is associated with improved cognitive function. The amygdala is a brain region involved with regulation of the human stress response. Reductions in grey-matter density in the amygdala correspond to reductions in subjective stress levels. These preliminary findings propose that mindfulness-based interventions can actively alter grey-matter density in brain regions, improving memory formation and reducing anxiety.

In an attempt to collate the overwhelming amount of research that exists with regards to how mindfulness practice affects our neuroanatomy and emotional disposition, Greeson (2009) conducted a systematic review of 52 exemplars of empirical and theoretical work exploring how mindfulness affects our brains, bodies and behaviours. His efforts revealed that a mindful lifestyle is associated with numerous positive outcomes such as a decline in emotional distress, a reduction in stress hormones, and a better quality of life. He established an inverse relationship between hours of mindfulness practice and mood disturbance. As such, rehearsing mindfulness can be compared to engaging in physical exercise – both must be practiced regularly to stimulate lasting results (Greeson, 2009). Broderick and Frank (2014) also emphasize the importance of repeated mindfulness practice with the statement, “Through repeated practice in skills of attending, noticing distractions, and shifting focus, mindfulness supports attentional balance” (p. 33). Ultimately, through the avenues of cognitive neuroscience, psychology and phenomenology,
empirical evidence has been gathered to illuminate the positive effects of regular mindfulness practice. A vast majority of this research has been conducted in health care contexts and workplace environments. However, less research exists examining how mindfulness practice can be integrated into educational settings. According to Meiklejohn et al. (2012), research on the neurobiology of mindfulness in adults indicates that it may have significant benefits for both teachers and students. Thus, the question that remains is: how can we bring the benefits of mindfulness practice to the classroom? Before we can address this question, an investigation of existing research examining mindfulness in education must be conducted.

The School as a Platform for Mindfulness Education

Education should awaken the capacity to be self-aware. Life’s pain, joy, beauty, love, and ugliness need not be understood as a whole. The highest function of education is to bring about an integrated individual who is capable of dealing with life as a whole.

-Jiddu Krishnamurti
(as cited in Burke & Hawkins, 2012, p.1)

Above, is one of the most powerful quotes that I have used to inspire my research intents and guide my goals as a future teacher. It is my intent to offer a holistic education to my students in any way that I can. To provide an education par excellence is to teach character and will, two traits William James associates with the habitual act of refocusing a wandering mind (James, 1890). This act is the root of mindfulness. To ask students to pay attention, or refocus their attention without teaching them how, is an incomplete education (Saltzman, 2010). The practice of mindfulness teaches students how to clear their minds and refocus their attention. Saltzman (2010) links this practice with enhanced social and emotional learning in the classroom. According to Molly Lawler (2014), the goals of mindfulness-based programming coincide with the goals of social-emotional learning (SEL). Social-emotional learning encompasses instruction
in five basic domains: social awareness, decision-making, self-management, self-awareness, and relationship management (Lawler, 2014). Thus, mindfulness practice can be used to encourage social and emotional well-being in the classroom. Recent empirical evidence has deemed the classroom setting to be a particularly well-suited environment for mindfulness practices because it provides an avenue for students to gain repeated exposure to mindfulness. From 2005 to 2012, 15 studies of student-targeted mindfulness-based programs were conducted. These studies demonstrate an overlap in observed benefits in response to this training, which include a range of cognitive, psychological, and social benefits, including improvements in stress levels, optimism, emotional regulation, self-esteem, mood, and working memory (Meiklejohn et al., 2012). This indicates that mindfulness in the classroom can be an effective way to practice education par excellence, as the act of being mindful can refocus a wandering mind and thus promote the development of will and character for those who practice it.

**The Opposing Viewpoint: Is Meditative Practice Religious?**

Whether or not mindfulness should be practiced in classrooms and taught to students is a subject of ongoing debate. Although there are many associated benefits to implementing mindfulness-based programming into the classroom, concerns have arisen about whether practicing mindfulness within the framework of a secular articulation, separate from its Buddhist origins, might undermine ancient Buddhist teachings (Cullen, 2011). People who share this viewpoint emphasize that there is a religious double standard in Canadian schools. If you teach a religious practice, such as mindfulness meditation, but call it secular and non-religious, it can be taught in classrooms. However, if you attach a religious connotation to the same activity, it becomes inappropriate to teach in the classroom setting (Tremonti, 2014). How can the connotation mean more than the act itself? During Ana Maria Tremonti’s podcast published on
October 14, 2014, Tina Olsen (a high school teacher in British Columbia) shared her concerns about teaching mindfulness in the classroom: “As long as you call [mindfulness] ‘brain breaks’ or ‘neuroscience’ and you don’t call it Buddhism, it seems to be allowed [in the classroom setting]…yet, if someone were to stand up and lead students through the Lord’s prayer and say it wasn’t Christianity, people would be up in arms” (Tremonti, 2014). My opinion about this matter is that a distinction should be made between the mindfulness practices taught in class and those adopted by Buddhists to avoid tainting the Buddhist belief system. Notably, even without a religious connotation, mindfulness has been empirically linked with a multitude of beneficial effects, so why would we deprive students of its teachings? In order to practice mindfulness, one does not have to be a Buddhist or adopt any other Buddhist practice. Instead, mindfulness is about focusing on the self and engaging in personal reflection. It is an experiential process unique to all who engage in it. Overall, I think mindfulness should be taught in Canadian classrooms, as it has too many associated benefits to shield from our youth.

**The Mindful Edge®: A Mindfulness Training Program**

School-based mindfulness programs are a promising platform from which to engage a community in mindfulness practice. Since the field of mindfulness education is still in its infancy stages - both in practice and research - the amount of available mindfulness-based training programs currently far exceeds the amount of research exploring each training paradigm. A particular program committed to the spread of mindfulness practice among Canadian schools and one that has a strong foundation in research, is a Toronto-based program called *The Mindful Edge® - Stress Reduction and Life Strategies for Teens* (“The Mindful Edge”). *The Mindful Edge®* is a program assembled by the charitable organization, *Mindfulness Everyday*. This organization consists of a team of professionals trained in Mindfulness-Based Stress Reduction
(MBSR), a program created by Dr. Jon Kabat-Zinn with the intention of utilizing mindfulness techniques to treat stress in medical settings (Kabat-Zinn, 2003). *Mindfulness Everyday* offers MBSR workshops; all-day retreats; mindfulness professional development workshops for educators; and additional training programs targeting parents and teachers (“The Mindful Edge”). This section focuses on the goals and benefits associated with *The Mindful Edge®*.

As a program based on the work of Dr. Jon Kabat-Zinn, *The Mindful Edge®* has a strong basis in neuroscience and positive psychology. During the 60-minute sessions that *The Mindful Edge®* typically presents to schools, students engage in an exploration of the brain science behind mindfulness, participate in mindful exercises, and learn how they can use mindfulness to enhance their well-being. Students also gain direct tips addressing how to reduce anxiety, increase focus and concentration, foster compassion, and develop emotional resilience. All of these goals are presented in the form of themed 60-minute lessons performed by professionally trained instructors (“The Mindful Edge”). Essentially, *The Mindful Edge®* provides students with a practical mindfulness experience.

R.H. King Academy, a secondary school located in the Scarborough district of Toronto, has been successfully integrating mindfulness practice into daily school life since April 1, 2010. The school offers regular *Mindfulness Everyday* workshops, such as *The Mindful Edge®* program for students and the *SMARTinEducation™* mindfulness program for parents (“The Mindful Edge”). In the spring of 2013, the school also started to offer “Mindful Minute” exercises, which provide students with a chance to engage in daily mindfulness practice. Every day at 10:30am, a guided meditation with background music and a student voice-over projects from the PA system. School-wide, students are asked to sit quietly and listen to the recording (Tremonti, 2014).

According to Peter Mitton in an interview with Ana Maria Tremonti, students seem to enjoy the
“Mindful Minute” sessions at R.H. King because they provide a break from the daily perils of school life. R.H. King also offers The Mindful Edge® Leadership classes to grade 11 students and maintains a student-run extra-curricular club called the “Stress-Less Club,” which focuses on how to live a mindful life (“The Mindful Edge”). Although there is very little formal research that exists examining the impact of mindfulness practice on schools like R. H. King Academy, there are clear benefits experienced by the students. For example, in an interview with Peter Mitton, recent graduates of R. H. King Academy explained how they grew to appreciate mindfulness with time, crediting it with decreasing their stress levels and making them more attentive throughout their daily lives (Tremonti, 2014). According to mindfulnesseveryday.org, The Mindful Edge® program enhances health and well-being by “reducing stress, supporting emotional regulation and balance, cultivating present-moment attention, raising awareness of habitual, auto-pilot-driven behaviour, and encouraging empathy” (“The Mindful Edge”). Overall, mindfulness training programs can act as effective ways to bring the benefits of mindfulness to a school community, specifically to students, teachers and parents.

**Teachers at the Center of Mindfulness Education**

Although registered mindfulness-based programming organizations can offer effective mindfulness training to school communities, for a multitude of potential reasons, a school may be unable to request the services of these organizations. In these cases, teachers may expose their students to mindfulness practice informally. Amy Burke, a secondary school teacher in Canada, believes that teachers should educate their students about how to practice mindfulness. In her TEDTalk entitled, “Mindfulness in Education, Learning from the Inside Out,” Amy states:

> Education has done well to engage our brains and sometimes our bodies, but there’s a real lack in education when it comes to teaching us how our minds work, particularly in relation to emotions. Much of education these days is fuelled by extrinsic rewards…about
competition, comparison, striving for some future accolade; what if teachers shift the focus of education? What if instead of telling students to focus on some end result, we actually help them to focus on the very pursuit itself? What if excellence in education means that a student has a better understanding of who they are and how they want to be in this world moment by moment?

(Burke, 2013)

In the above quote, Amy highlights a teacher’s responsibility to provide his or her students with a holistic education emphasizing the importance of intrinsic rewards and cognitive awareness. Further into her TEDTalk, she goes on to describe how teachers can use mindfulness practice to accomplish these goals and commence changing the educational system from the inside out. Much of adolescent life in Canada is spent in the classroom, so students are exposed to their teachers on a regular basis. As such, teachers have a unique ability to influence the lives of their students. Particularly, through repeated interaction, teachers can help students formulate constructive life habits such as habitual mindfulness. According to Poulin (2009), teachers are at the center of mindfulness proliferation; through effective mindfulness training, teachers can develop their own personal practice and, by extension, communicate mindfulness to their students. Jon Kabat-Zinn (2003) states that, in order to teach mindfulness effectively, one must regularly engage in personal practice. For this reason, teacher mindfulness training is imperative for the implementation of effective mindfulness programming in schools. In the cases where mindfulness-training organizations are unavailable to a student population, their teachers are placed at the frontier of mindfulness education. As teachers, we have the autonomy to supplement our lessons with mindfulness techniques, if we so choose.
The Design of a Mindfulness-Based Conceptual Framework

Bridging the Gap Between Mindfulness Practice and Students

Conceptual Frame

Figure 1. Conceptual framework showing how to bridge the gap between mindfulness and students.

Figure 1 (created in PowerPoint) highlights my interpretation of the key ingredients needed for successful mindfulness program implementation in schools. The above conceptual framework is based on Lawler’s key ingredients for successful program implementation in schools: professional development, high-quality implementation, and ongoing evaluation (Lawler, 2014). I used these categories of knowledge to guide my interviews, observations, and research. Professional development constitutes teacher mindfulness training. This can be accomplished through structured programs, such as Mindfulness Everyday teacher training workshops or initiative-driven personal training. I attained insight regarding effective professional development strategies from teachers who practice mindfulness in the classroom.
Next, implementation comprises effective mindfulness activities, techniques, and teaching strategies that work well for students. Insight in this area was gathered from teachers and personal observations. Evaluation comprises any form of ongoing program efficacy assessment. Knowledge in this area was collected from two sources: teachers and personal observations. My research in these areas was guided by the epistemological assumption, which states that subjective evidence from participants is considered knowledge (Creswell, 2013).

**Grounded Theory**

Ultimately, inquiry into mindfulness professional development, implementation and evaluation was informed by the grounded theory methodology. According to Creswell (2013), grounded theory is an appropriate design to utilize when insufficient research exists to explain a process, or appropriate theories exist but have been tested on populations other than those of interest. A review of current literature has revealed a prevailing gap in knowledge regarding how to form an effective mindfulness-based program for test anxiety reduction. Programs have been examined for their effects on students, but I have yet to find any source that puts effective strategies together to form a practical test anxiety reduction program. This is what my research strives to do: to make the idea of reducing test anxiety in the classroom more practical for teachers. Using Figure 1 as a framework, I divided raw data (collected from interviews and observations) into blocks representing units of meaning. Then, I utilized constant comparison analyses to note emergent subcategories within each of the categories outlined in Figure 1, and eventually created a more detailed image accentuated by these emergent subcategories. Throughout this process, I utilized a postpositivism framework to guide my research and analysis, as information collected was empirical and based on an a priori theory, specifically “the key ingredients to program implementation” theory constructed by Lawler (2014). Also, the
structure of this qualitative study was written in the form of a scientific report typical to postpositivism, with the introduction of a problem, layout of research questions, followed by data collection, presentation of results and finally, consolidation of logical conclusions. Ultimately, the problem of high stress levels and test anxiety among Canadian grade 3 to post-secondary level students was addressed by exploring implementation strategies for mindfulness education in the classroom. The overall goal of my research is to provide Canadian youth with generalized skills that will manifest during subsequent developmental stages. Teaching mindfulness is a great way to accomplish this. Overall, by bridging the gap between mindfulness and students, the foundation for an education par excellence is formed.
Chapter 3: RESEARCH METHODOLOGY

Introduction

Throughout this chapter, I describe the research methodology utilized in this study. I begin with an explanation of my research approach and related procedures, followed by a discussion regarding data collection – including instruments and techniques involved with compilation of data. Next, I explain my participant sampling procedure and selection process before presenting biographies and pertinent information applicable to each featured participant. Drawing from relevant literature, I provide a description of the data analysis processes I employed and outline the ethical concerns involved with my study. I also address methodological limitations that have arisen from the design of my study, along with several strengths associated with my approach. I conclude this section with a brief overview of the key methodological decisions I have made and provide a preview for the next chapter, exploring my research findings.

Research Approach and Procedures

This research study was conducted using a qualitative approach. According to Johnson and Waterfield (2004), qualitative research methods are able to explore “the complexity of human behaviour” (p. 7). The term “qualitative research” encompasses any type of research that produces findings not arrived at by statistical procedures or other means of quantification. It explores settings and the individuals within these settings holistically; that is, the subjects of the study - in this case the teachers engaged in mindfulness practice in school settings - are not reduced to isolated variables or hypotheses, but are viewed as parts of a whole (Bogdan & Taylor, 1975). Such a holistic approach is necessary when one is interested in gathering data surrounding persons’ lives, lived experiences, behaviours, and feelings (Strauss & Corbin, 1990).
Because mindfulness practice is a personal, subjective experience, gaining insight regarding appropriate means of application in the classroom involves collecting qualitative data illuminating the experiences of teacher and student participants. Ultimately, research that attempts to understand the human experience - as my research does regarding test anxiety and mindfulness - lends itself to getting out into the field and finding out what people are doing and thinking.

According to Stern and Shavelson (1980), qualitative methods can be employed to explore substantive areas in which little is currently known or about which much is known to gain novel perspectives, applications, and understandings. My research question can be categorized into the latter, with mindfulness practice and test anxiety being popular areas of study in which a plethora of research currently exists; yet there is a lack of knowledge concerning how mindfulness can be utilized to lessen test anxiety in the classroom. Qualitative research can be used to fill this gap because it provides a means of exploring narrowly defined issues in greater depth, building a complex picture of the issues being studied. For example, to explore mindfulness techniques that can be used to lessen test anxiety, one must investigate the needs of the participants, the goals of the practitioners, and the context of practice. In order to address these areas, qualitative data must include an analysis of the context and meaning of lived experiences. Patton (2005) emphasizes this point by explaining that qualitative researchers must engage in “naturalistic inquiry, studying real-world settings inductively to generate rich narrative descriptions and construct case studies” (p. 12). The composition of these narrative descriptions gathered from information interviews illumines the complexity of lived experiences. Essentially, the new perspectives I gained about mindfulness practice and test anxiety were obtained via application of qualitative research methods.
Strauss and Corbin (1990) identify three major components of qualitative research methods. First, there are the *data*, which can come from various sources including interviews, observations, lectures, and films. My data was compiled from semi-structured interviews with teachers. Second, there are the *procedures* that researchers employ to understand and categorize data, such as conceptualizing, reducing, and relating, often collectively referred to as *coding*. The coding procedures I used involved a complex interplay between inductive and deductive logic. From my interviews, I organized data inductively into common patterns, categories, and themes. I also utilized deductive reasoning to build themes that were constantly checked against the data (Creswell, 2013). These include the categories surrounding development of an effective mindfulness-based program for test anxiety reduction, as outlined in chapter four: teacher commitment, knowledge acquisition, implementation, and ongoing evaluation. Third, there are *written and verbal* reports, which may be presented as articles in scientific journals, in talks, or in books. The sources that I have drawn from come from a combination of these outlets. To supplement my study, I have compiled extensive background knowledge surrounding mindfulness practice from a collection of sources including podcasts, TEDTalks, conference lectures, academic journal articles, and books. The data, coding procedures, and reports I have gathered and analysed each contribute to a qualitative examination of mindfulness practice and test anxiety.

**Instruments of Data Collection**

Prior to fieldwork, I developed a semi-structured interview protocol (see Appendix B) that specified certain themes to discuss while being flexible enough to explore emerging pathways. The protocol was designed based on my research questions, literature review, and experiences. Semi-structured interviews are the most prevalent interview format among
qualitative researchers, and can be performed with an individual or in groups (DiCicco-Bloom & Crabtree, 2006). They constitute conversations in which the interviewer presents pre-planned questions and topics, and the interviewee discloses opinions and perspectives in response. The conversation is free to vary, and is likely to change among different participants (Fylan, 2005). DiCicco-Bloom and Crabtree (2006) state that semi-structured qualitative interviews provide the researcher with “knowledge of the meaning of human experience” (p.7). The primary purpose of posing open, direct, verbal questions during a semi-structured interview is to elicit detailed narratives that illustrate lived experiences – such was the goal of my interviews.

Semi-structured interviews can act as powerful tools in qualitative research because of their flexibility. According to Drever (1995), semi-structured interviewing is a very flexible technique for small-scale research because it allows researchers to delve into the opinions and experiences of participants. Although these interviews encompass pre-determined questions, they can be modified based upon the interviewer’s perceptions of what seems most appropriate and timely during the interview. For example, question wording, order, or emphasis can be changed based on the interviewee’s requests and/or dispositions (van Teijlingen, 2014). DiCicco-Bloom and Crabtree (2006) state that these alterations and associated analyses should occur concurrently with data collection, meaning that the interviewer should be continuously analyzing the appropriateness of their questions and probing statements based on reactions of the interviewee, in order to generate an emerging understanding of research questions. This informs both the sampling criteria and interview questions, allowing the interviewer to delve into certain questions that may further contribute to their research and disregard questions that may not be as useful to
their goals. Ultimately, semi-structured interviews allow the researcher to explore many aspects of lived experiences and opinions.

**Participants**

In this section, I outline the sampling criteria I utilized to guide teacher recruitment, along with the procedures I employed to target appropriate participants. I then present background information about each participant, including his or her teaching experience, and exposure to mindfulness practice and test anxiety.

**Sampling Criteria**

Teacher participants that were targeted for this study have at least 5 years of teaching experience in an elementary, high school, and/or post-secondary setting, have worked in different subject areas, and attained skill addressing a diverse set of student needs. The attainment of at least five years of teaching experience was a particularly important criterion that my participants had to have gathered because it denotes commitment to the teaching profession, and exposure to a wide set of teaching experiences. These experiences imply extensive knowledge of regulations within the teaching profession, applicability of certain practices in the classroom, and overall familiarity with the school system (i.e. what teachers, students, and parents are concerned with surrounding Ontario’s educational system). By interviewing teachers with this accumulated wisdom, I gathered information about how mindfulness can be effectively utilized to lessen test anxiety in the classroom, in ways that will appeal to students, teachers, and parents. Also, the instructors I selected teach different subject areas (humanities and social sciences) and academic levels (applied and academic). This criterion was enforced in order to avoid attaining a view of mindfulness-based programming and test anxiety applicable to a specific subject area or level of academic aptitude. Attaining information from a variety of subject areas and skill levels better
represent the diversity of the Greater Toronto Area student population, making for more relatable and generalizable findings. Overall, my teacher participants offer perspectives on the considerations that must be addressed in order to manifest mindfulness in classrooms, and particular techniques that can be employed to reduce test anxiety.

**Sampling Procedures/Recruitment**

The sampling method utilized in this study was a combination of purposeful and convenient, meaning that the participants were selected decisively in order to further my understanding of the research questions while remaining geographically close to the GTA (Creswell, 2013). Choices were made explicitly regarding the background experience of the interviewees. The typology of the sampling strategy served to highlight the “typical case” or the average Greater Toronto Area educational environment, including the teachers and students. Effort was made to avoid sampling extreme or deviant cases with the intent of not skewing the data or providing false impressions to the reader. The sample size in this study is smaller than optimal for grounded theory due to time restrictions and lack of resources. However, detailed observations were compiled from each featured individual.

As a teacher candidate at the Ontario Institute for Studies in Education, I am immersed in a network of mentor teachers and teacher colleagues, many of whom are very involved with the educational field in the GTA and internationally. For this reason, I relied on existing networks to guide my recruitment efforts. Specifically, during the participant recruitment process, I read articles and watched lectures from *Mindfulness: Foundation for Teaching and Learning – Eighth Annual Conference* (from June 26 to 28, 2015) and attended the *Modern Mindfulness Webinar* training session (on August 19, 2015), as well as consulted various faculty members at OISE for participant recommendations and related insight. Next, I contacted various school boards and
principals in the GTA, providing them with an outline of my study and participant criteria. I then asked that these individuals and organizations forward my information to any potential interview candidates. In order to ensure that my interviewees were not inconvenienced or obliged to participate, I provided them with the choice of three different interview modalities (email, telephone, or in-person) and gave my participants the option to review my interview questions before partaking. Because my research questions are primarily informational in nature and do not explicitly ask about the emotions or feelings of the participants, impersonal interviews, in which I remained blind to body language and tone fluctuations, were acceptable.

**Participant Bios**

Ensuring a wide variance in data, I interviewed three participants with diverse teaching experiences. To preserve anonymity, I will refer to participants using pseudonyms. My first participant, Joanna, has 36 years of teaching experience at both the post-secondary (teacher education) and elementary levels. She has worked for two school boards in the Greater Toronto Area, York Region District School Board and York Catholic District School Board. My second participant, Katie, has 6 years of experience teaching students from grades 7 to 12 in an independent school in Toronto. She also acts as a Guidance Counsellor in this setting. My last participant, Mary, has five years of teaching experience at solely the post-secondary level (teacher and undergraduate education). I chose two participants who instruct teacher candidates because they have experience tailoring their instructional strategies to teacher audiences and this study is largely directed at teachers. In addition, interviewing a Guidance Counsellor/Teacher was an important perspective for me to attain because I consider the one-on-one interactions Guidance Counsellors typically have with their students to be unique. I think they are often at the frontlines of test anxiety intervention and play an imperative role in the school community for
student mental health. To find a Guidance Counsellor in the GTA that utilizes mindfulness regularly was a huge feat for me.

Selecting research participants was a difficult task. I joined multiple mindfulness- and anxiety-themed Listservs; scavenged through Twitter, Facebook, and LinkedIn; and acquired contact information from a network of teachers. The three participants I decided to interview all foster a passion for both mindfulness practice and test anxiety reduction. Although their appreciations for mindfulness practice were built in different ways, they each pursued similar mindfulness training and utilize it regularly for test anxiety reduction. Joanna offers a largely elementary-focused approach to mindfulness practice, citing multiple instances where she has seen mindfulness yield formidable results in the elementary classroom. Katie uses mindfulness in the classroom and during her one-on-one sessions with students. And Mary approaches mindfulness practice and test anxiety from a research-based perspective, emphasizing research linking mindfulness practice with anxiety reduction.

Data Analysis

Following data collection, a data analysis spiral was conducted (Creswell, 2013). First, data was managed and organized into computer files and then further refined into meaningful units – consisting of words, sentences, and anecdotes. Next, interview transcripts were read carefully, in conjunction with composition of marginal notes and extraction of common categories across each interview (Agar, 1980). During this process, a significant effort was made to extract overall impressions and messages of each interviewee. The following step was coding, which consisted of forming a combination of “prefigured” categories (from literature review) and “emergent” categories (from collected data) (Crabtree & Miller, 1992). The emergent categories and themes were formulated based on conceptually interesting data that
surfaced during the study, relations to the literature, and relevance to my research questions. These categories were then classified into themes through a continuous “winnowing” process, whereby the initial larger number of themes was reduced into an increasingly small, more manageable set of themes. Throughout this process, I focused my themes around step-by-step processes by which participants integrated mindfulness into their classrooms and interactions they facilitated surrounding this. From these themes, I organized larger concepts and interpretations based on my own impressions and explanations expressed in my research literature. I also examined null data, which constitutes information that my participants did not speak to. The final step of my data analysis procedure was meaning making. This involved synthesis of themes, extraction of meaning based on how teachers spoke about these areas, and why each of these is important to my research questions. Through the completion of a data analysis cycle, as outlined by Creswell (2013), I extracted meaning from my interviews and gained insight into my research questions.

**Ethical Review Procedures**

Several ethical considerations were addressed in the design of this study. Prior to conducting the study, local permission was sought via email in regards to the conductance of interviews at educational settings in the GTA. The interviews each had lengths of approximately 45 to 60 minutes and were audio recorded. The teachers that volunteered to participate in my study were provided with letters of consent, clearly disclosing the purpose of my research, information about confidentiality, ethical implications, and expectations for participants (see Appendix A). Consent letters were signed before interviews commenced. In order to preserve participants’ anonymity, all participant identities, including names and individual-specific information, were masked with the creation of pseudonyms and composite profiles. It was also
very important for me to establish rapport with my participants and take all necessary steps to make them feel comfortable throughout each stage of the interview process. For example, the setting (time and place) of the interviews was agreed upon by the participant and I. Participants were also informed about the voluntary nature of the interviews and their right to withdraw from this study at any phase of the research process. By addressing these ethical issues, the values that are essential to collaborative work were upheld, promoting the aims of my research (truth, avoidance of error, and knowledge).

There were no known risks involved with participation in this study. However, there was the potentiality that an interview question could trigger an emotional response from the interviewee, thus making them feel vulnerable and exposed. This risk was minimized by maintenance of transparency - allowing participants to review their interview transcripts after the interview. Participants were able to edit, withdraw, and refine their answers to interview questions after the interview. All data collected throughout the duration of this study – including interview transcripts and participant biographies – were saved on a password-protected laptop for a maximum of five years before being destroyed. By taking steps to reduce the risk involved with participation in this study, my aim was to maintain the comfort of my participants and establish their trust.

**Methodological Limitations and Strengths**

There are several limitations associated with the methodology and design of this study. Since I was only able to interview three participants due to time restrictions, my sample size was very small. Although this decreases the generalizability of my findings, it accomplishes the task of providing me with valuable insight to inform my practice as a beginning teacher. In the same way, the scope of my research was limited by the skewed set of participants I gathered. MTRP
ethical guidelines limit interviews to feature solely teachers, which means I was restricted from collecting classroom observations, exploring parents’ perspectives, administering surveys, and interviewing students. As such, my data includes a very limited set of perspectives. Ultimately, due to the small sample size and scope of practice utilized in this study, the generalizability of my findings was reduced.

Along with limitations, there are also several strengths associated with my research design. My method of data collection (interpersonal interviews) allows for in-depth and rich observations. This adds a more realistic and practical view of the application of mindfulness in the classroom because it is based on lived experiences. Interviews provide teachers with the opportunity to reflect on their lived experiences and extract meaning from them. They also provide the interviewer with the flexibility to direct the line of questioning to extract more or less detail about certain aspects of the research topic. The primary advantage I link with collecting interviews is that they are a means of bridging the gap between theory and practice in the classroom. Specifically, I have harnesses a fascination with mindfulness practice for many years and, as a result, have familiarized myself with much of the theory that surrounds this domain of research. However, due to my own inexperience, my breadth of knowledge does not include how to effectively manifest mindfulness practice in the classroom to reduce test anxiety. Interviews offer insight into the real world application of theory, methods of bringing theory into practice. Thus, the experiences of my interviewees acted as a bridge for me between mindfulness and students.
Conclusion

Overall, chapter 3 outlines methodological decisions made throughout the duration of this study. In order to examine mindfulness practice in Greater Toronto Area classrooms, the qualitative research approach was employed to guide data collection, coding procedures, and analyses. Data was collected from three purposefully chosen participants via semi-structured interviews, which served to illuminate their experiences with mindfulness practice. These participants each have at least 5 years of teaching experience in an elementary school, high school, and/or post-secondary context and have skill working with a diverse set of subject areas and student needs. Throughout the data analysis process, a data analysis cycle was completed in order to extract common themes and meanings communicated by each participant in these interviews. This process served to offer insight into my research questions.

Before the commencement of data collection, consent forms summarizing the purpose of this study and explaining the voluntary nature of participation, were administered. Interviews were conducted only after consent was received. The main methodological limitation associated with my data collection procedure is the small sample size attained; three interviews with three teaching professionals portray a limited perspective on mindfulness practice and test anxiety in classrooms. However, semi-structured interviews are advantageous in that they present real world applications of theory and illuminate the lived experiences of participants. Ultimately, the research methodology utilized in this study has its limitations and strengths, but it accomplishes the main goal of my study: to gain insight into my research questions and inform my future practice as a teacher.

Next, in chapter 4, I report my research findings.
Chapter 4: FINDINGS

Introductory Overview

In response to research that links mindfulness practice with test anxiety reduction, this study explores how mindfulness programming can be implemented in classrooms. Researchers and the media have made mindfulness exercises widely accessible on various platforms (public articles, technological applications, social media, training courses, etc.), making it a practice that can be conveniently accessed in an array of settings and contexts. Following recent research deeming the classroom to be a well-suited environment for mindfulness-based programming, Meiklejohn et al. (2012) examined 15 studies exploring the effects of regular mindfulness practice in K to 12 classrooms. From this data, they consolidated a collection of benefits experienced by students, including enhanced emotional regulation, increased self-esteem, and decreased stress.

With such noteworthy benefits linked to mindfulness practice, I designed this study to examine the facets of effective mindfulness implementation in Grade 3 to post-secondary classrooms in Ontario. Despite the fact that there are many registered mindfulness coaching organizations that currently offer excellent mindfulness training (i.e. Mindfulness Everyday, Mindfulness Without Borders, and many more), oftentimes a school community may be unable to attain this training. In these cases, student exposure to mindfulness in the classroom may be dependent on their teacher’s willingness to introduce it and encourage engagement in it during class time. According to Poulin (2009), teachers are in a position to encourage habitual mindfulness practice among students because they are required to attend class regularly and thus will be regularly exposed to exercises introduced in this setting.
In order to illuminate the realities associated with bringing mindfulness into the classroom, data was collected from three teacher participants with unique educational and experiential backgrounds. With her accumulated experience teaching elementary school students and teacher candidates, Joanna provides valuable insight regarding mindfulness-based program design for these diverse audiences. As a Guidance Counsellor, Katie offers her opinions surrounding the utilization of mindfulness exercises during one-on-one sessions with students and within her classrooms. Finally, Mary approaches mindfulness from a research perspective, combining her own findings involving mindfulness with accrued experience teaching in the university setting. Ultimately, all three interviewees provide triangulated data on what it means to be a mindfulness instructor. With their diverse backgrounds, these individuals symbolize the potentiality for creativity and individuality involved with administration of mindfulness in the classroom.

Throughout this research study, the following question was used as an overarching guide: *How can mindfulness-based programming be used to lessen test anxiety among grade 3 to post-secondary level students in Ontario?* I was interested in examining techniques that Joanna, Katie, and Mary use to bring mindfulness into their classrooms. After compiling interview data, I arranged my interview contents into themes that outline facets of effective mindfulness integration, concentrating on the common chronological steps and considerations teachers should be cognizant of. Using a post positivism framework, I combined interview data with Lawler’s key ingredients for successful program implementation in schools (2014) to compile four components of effective mindfulness-based programming in Ontario classrooms: teacher commitment, knowledge acquisition, implementation, and ongoing assessment. Analysis of this
data was informed by the grounded theory methodology, as there is insufficient research that exists to explain mindfulness integration into Ontario grade 3 to post-secondary classrooms.

Keeping the overarching research question, conceptual framework, and theoretical framework in mind, various subthemes emerged after interviewing the three participants. These include:

Teacher Commitment

1. Exposure to mindfulness and its benefits
2. Commitment to reduce student test anxiety
3. Establishment of a personal mindfulness practice
4. Knowledge about the stress-reducing power of mindfulness practice, specifically for test anxiety reduction
5. Personal experience with test anxiety

Knowledge Acquisition

1. Recognition of anxious test-takers
2. Exposure to the benefits of mindfulness practice
3. Exploration of mindfulness resources
4. Experience with mindfulness professional development

Implementation

1. Overcome negative stigma surrounding mental health
2. Recognize that students may respond differently to mindfulness practice
3. Engage in regular meditative practice with students
4. Employ mindfulness techniques in association with test taking
5. Engage students in regular mindfulness activities to solidify their practice

Ongoing Assessment

1. Address student difficulties associated with mindfulness practice
2. Regularly observe student stress levels
3. Collect qualitative and quantitative feedback from students

Research Findings

Teacher Commitment

The primary and, considerably, most important prerequisite for effective mindfulness integration in classrooms is teacher commitment to mindfulness practice. All three participants emphasized how important it is for teachers to research, practice, and form an appreciation for the stress-reducing effects of mindfulness practice. During the three interviews, several common aspects of teacher commitment arose.

Exposure to mindfulness and its benefits

Exposure to mindfulness, whether in a teacher’s personal life and/or in a school context, can serve as a powerful fuel to encourage regular implementation of mindfulness programming in the classroom. Each participant initially became exposed to mindfulness in different ways, citing specific instances where mindfulness sparked their interest. For example, Joanna found mindfulness initially out of curiosity and need; she states, “I was kind of searching around for something along those lines to help me deal with a health-related issue.” She describes her journey towards mindfulness as one that was initiated by a great deal of frustration and stress. Rather than happening upon it randomly, Joanna actively sought a means of dealing with her chronic stress through various health practitioners and was eventually lead toward mindfulness
practice. These experiences inspired her to bring mindfulness into her classrooms and to encourage students to engage in it regularly.

Joanna says her own personal commitment to mindfulness is further strengthened by exposure to students’ positive responses to it. She recalled a time when she was a Faculty Advisor observing one of her teacher candidates in an inner city junior/senior kindergarten classroom. A young female student was particularly fussy, throwing her backpack at the wall and isolating herself from her peers. As the teacher candidate began leading students in a mindfulness activity, this little girl became curious and eventually joined in the activity with her classmates. Joanna says that, throughout the mindfulness exercise and for the remainder of the school day, the girl’s “demeanour completely changed and she was suddenly quite calm and relaxed.” Joanna states that moments like these - where she can observe how a mindful activity can improve students’ moods and concentration levels - strengthen her commitment to mindfulness practice and inspire her to utilize it in her own classrooms.

Similarly, in response to her struggle with stress and anxiety, Katie has been integrating mindfulness exercises into her lifestyle from a young age. She has been practicing yoga for many years and first became exposed to meditative exercises in that context. This exposure elevated her curiosity toward mindfulness. As a result, upon later being asked to attend a mindfulness conference with her Vice Principal, Katie eagerly accepted and thereafter became compelled to teach her students how to integrate mindfulness into their lives.

In contrast to Katie and Joanna, Mary was first exposed to mindfulness in a research context and later developed an interest in it. She says, “I was interested in it from a research capacity because, when I was doing my masters, I looked at TDSB and one of the ways to address arousal was using mindfulness techniques, so that’s how I became interested in it. Then,
in my post-doctoral work, I wanted to look at a mindfulness-based practice in the context of test anxiety specifically.” As this statement suggests, rather than experiencing the stress-reducing effects associated with mindfulness practice in her own life, Mary developed a significant interest in it from a research perspective, gaining much of her positive opinions of it from external sources. Thus, whether exposure to mindfulness is achieved via primary or secondary experience, a commitment to bringing mindfulness practices into classrooms can be built, as it was for these three participants.

Commitment to reduce student test anxiety

As Amy Shapiro (2013) indicates, “academic difficulty” constitutes the most significant source of anxiety among Canadian adolescents, with the intensity of this anxiety increasing as they progress through subsequent educational years. To prevent stress and anxiety from becoming chronic concerns, habitual mindfulness practice may be an effective anxiety-reduction tool appropriate for every stage of development. All three participants share this mentality and maintain a strong commitment toward reducing stress and anxiety among students. Joanna spoke about being attentive toward the temperament of her students as a prerequisite for effectively reducing their test anxiety. Having dealt with significant stress in her own life – much of which stemming from a chronic health issue – she has sympathy towards students who are feeling stressed. She spoke about her elevated concern for students who are “not thinking straight, highly emotional, getting sick, and tired all the time.” Based on her experience, such observations indicate elevated stress and compel her to intervene with mindfulness exercises. “Sometimes it’s a particular student that I observe is stressed and other times it’s a group of them. In both cases, I will recommend mindfulness as a way to calm them down.” In this way, with her lack of
hesitation to recommend mindfulness practice to her students during stressful situations, Joanna shows her continued commitment to mindfulness practice.

As a Guidance Counsellor at a highly academic school, Katie also encounters students who are prone to anxiety. Like Joanna, she is exposed to these students in the classroom, but in addition, she also interacts with many students individually in her guidance office. She speaks about how students in her institution are enduring large amounts of internal and external pressure to perform well academically. Stemming from this, students tend to experience high levels of test anxiety and periodic panic attacks, in which there have been certain instances where student safety has been threatened. Such instances have built up Katie’s hypersensitivity to student test anxiety and fuelled her desire to reduce this anxiety in any way she can. Mindfulness is one intervention that she employs for students who are experiencing high levels of episodic anxiety. Katie has noticed that her students are over worked and exhausted. They foster a competitive attitude towards everything including: “academics, extra-curricular activities, and being involved in a thousand things.” She thinks it is particularly important for these students to seek a balanced lifestyle and find ways to relax. Mindfulness is a great way to do that. “If a student is feeling really anxious, I don’t let them leave my office until they feel better. I always feel like I can do something and I want to be there for them to help them calm down completely.” She describes herself as being “very aware of physical stress and mental stress when kids go through them.” Below is a description of her exposure to student anxiety and her commitment to reduce it.

As a Guidance Counsellor, for the first year I was with grades 9 to 12 and I can’t tell you how many kids we have come in who have serious test anxiety; whether it be just a low level stress or panic attacks, they have to actually write [tests] in my office or down here as opposed to in the classroom. [Test anxiety] really adversely affects them, so as Counsellors we see that regularly. We’ve been really trying to brainstorm for what we
can add in support wise - whether it be group work or working with the teachers to help lessen student anxiety. Then this year, we brought mindfulness into the school support model. It’s definitely a big pillar of [her institution] right now and we’re building on it.

Katie’s words show her commitment to test anxiety reduction and implementing mindfulness as an intervention strategy for anxious test-takers. Her exposure to an array of students with test anxiety has fuelled her desire to teach them mindfulness as a strategy that provides resilience during stressful situations.

As an undergraduate and graduate professor, Mary recognizes that much of student test anxiety arises from obsession with grades. In response to this, she consciously makes an effort to de-emphasize the importance of grade outcomes for her students.

Grades are not the end of the world because I think that’s where a lot of student anxiety comes from. They’re afraid of doing poorly and what that does to their identity. So, a grade does not define who you are. A grade does not mean that you’re going to never amount to anything. Tests are just a way of helping the teacher assess how well he or she is doing. I think that’s a really important point that most teachers don’t say. The ownness is sort of put on the student to either fail and be a loser or get an A and be the smartest person. That’s sort of the way that I think a lot of middle schoolers and high schoolers look at things…the smart ones are the ones who get A pluses and the dumb ones are the ones who get D’s and F’s, but obviously that’s inaccurate.

In the above quotation, Mary describes how the impact of grades can be exaggerated in students’ minds, leading to increased anxiety surrounding assessment. Ultimately, this grows from a link between one’s identity and one’s academic mark assignment. Because Mary believes that this mentality is associated with increased anxiety, she actively searches to take the ownness off of students when it comes to grade assignment by explaining her perspective on the function of assessment. Teachers assess students, not to assign them a grade, but to gauge how effective one’s teaching methods are. Such a concern for student anxiety levels is essential for bringing positive change into the classroom.
Establishment of a personal mindfulness practice

Today, mindfulness is no longer a state of mind that can be attained by a select group of people; instead, mindfulness techniques and exercises are becoming more widely accessible. This increased availability has made the prospect of developing a personal mindfulness practice more realistic. According to Poulin (2009), it is important for teachers to establish their own mindfulness practice before bringing it into their classrooms, as teachers are mindfulness role models for their students. Jon Kabat-Zinn (2003) emphasizes this point by stating that regular engagement in mindfulness practice is imperative preparation for teaching it to others. Two perspectives on the necessity for teachers to establish their own personal mindfulness practice before bringing it into the classroom are explored in this study. Katie and Joanna both maintain their own personal mindfulness practice, but Mary does not engage in mindfulness practice personally. In contrast to research, the data presented here shows that it is possible to teach mindfulness in the classroom with or without a personal practice. However, the quality of teaching in both cases is not explored in this study.

To begin with, Joanna has a strong mindfulness practice that she has been nurturing for 15 years. “I meditate daily, probably a couple times a day,” she says. Overcoming challenges during her personal mindfulness practice has allowed her to strengthen her ability to live more mindfully and provide advice for students struggling to maintain their own practice. Joanna says that engaging in mindfulness exercises can sometimes manifest difficult thoughts and emotions, but this should not deter students from committing to the practice: “It’s just the way of mindfulness to have emotional experiences while doing it, but regular practice is going to help that.” Joanna is trained as a mindfulness-based stress reduction (MBSR) facilitator. She also attends at least one silent retreat per year and is devoted to her daily mindfulness practice. Ultimately, Joanna
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considers her established mindfulness practice as an advantageous tool for teaching mindfulness. She states: “My immersion in mindful living helps me teach mindfulness more effectively and positively impacts the way I interact with students.” Thus, according to Joanna, students who want to learn about mindfulness benefit from interacting with a teacher who has his or her own personal practice.

Like Joanna, Katie has been practicing mindfulness for many years. Also similar to Joanna, she initially established a mindfulness practice to help her deal with a difficult time in her life. “[Mindfulness] coincided and really helped with what I was going through,” she recalls. She attributes the further development of her personal mindfulness practice to positive responses she receives from students. “Seeing the way kids love mindfulness inspires me to take a leap of faith…particularly, to make mindfulness a part of my daily life. I think it’s once you see the benefits for yourself, that’s when you have the buy in and you do it for the kids.” Katie was inspired to make mindfulness a more regular practice for herself based on positive student responses. She considers it a necessity for teachers to engage in their own mindfulness practice because it builds a more authentic experience for students. “In order to embed it into what you’re doing with kids, you need to practice it yourself. It’s not just reading a book and delivering a lesson that someone else has done. If you don’t really believe in the theory you’re talking about, [students] will see through that and won’t be invested.” Ultimately, Katie uses her own positive experiences with mindfulness to increase her respect for the practice and willingness to involve her students in it.

In contrast to Joanna and Katie, Mary does not have her own personal mindfulness practice. In the following quotation, she describes how her scientific view of mindfulness can prevent her from experiencing its benefits:
For me, I was approaching mindfulness more from a research standpoint. I think going in looking at it from that lens was problematic. If I had looked at it from the lens of ‘this is a very stressful period in my life and I’d like to get help from mindfulness,’ I think that would have been different and it would have helped sustain the practice versus going into it from a researcher’s point of view. When you have those goggles on, it makes it difficult to see beyond ‘now I’m slowing down my brain, my prefrontal cortex is quieting.’

The fact that Mary views her lack of personal experience with mindfulness as a detriment is interesting. She regards her perspective on mindfulness to be somewhat one-sided; she fixates on the neurological basis of mindfulness exercises, focusing on what areas of the brain are activated during different activities and does not allot very much attention to how the exercises make her feel. This fixation can deter from deep involvement in the practice. Thus, approaching mindfulness from solely a research perspective can be limiting for one’s own mindfulness practice.

Stress-reducing power of mindfulness practice, specifically for test anxiety reduction

According to Salend (2012), test anxiety is the most prevalent form of student stress that instructors are exposed to in the classroom. With an increased emphasis on academic performance, test anxiety can be a particularly debilitating experience – one that reduces the authenticity of assessment and negatively affects social-emotional development. All three participants agree that mindfulness exercises can effectively lower test anxiety. With ongoing practice, mindfulness training may allow an individual to reduce the frequency of negative pervading thoughts. This decreases test anxiety, which is associated with excessive worrying and negative thinking (Sarason, 1984).

Joanna considers being mindful a remedy for test anxiety. When she taught grade three during the time when EQAO was first introduced, she was overwhelmed with student stress and uncertainty surrounding the administration of this large standardized test. As Cizek & Burg
(2006) and Huberty (2009) indicate, uncertainty surrounding test administration is one of the main causes of test anxiety. In order to help her students deal with test anxiety, Joanna vocalized mindfulness cues like “breathe” and “take frequent breaths.” Although she admits that she knew nothing about mindfulness at the time, she said “I think we were doing it naturally with the kids.” She was surprised at how effective these verbal cues were in reducing test anxiety and increasing focus. She states: “Students seemed to crave these moments where we would take a break and breathe, like people crave a glass of water. It soothed them.” As her teaching experience accumulated and she became more familiar with mindfulness, Joanna realized that students needed mindfulness training in order to deal with test anxiety. “It’s not about saying ‘calm down’ or ‘it’ll be okay.’ It’s about giving [students] a strategy, giving them tools to be able to cope with the stress involved with test writing. Mindfulness does that.” Joanna went on to explain how mindfulness reduces anxiety by allowing participants to tap into their parasympathetic nervous systems and reduce activation in their sympathetic nervous systems, the system activated during instances of elevated stress. “Mindfulness allows you to tap into your parasympathetic nervous system so that you’re not in that fight or flight kind of mentality, which is one of the biggest reasons people struggle with tests.” Thus, Joanna combines her experience teaching anxious students with her understanding of stress responses in the body to inform how she utilizes mindfulness to address test anxiety.

Katie strongly believes that mindfulness practice is an effective tool to reduce test anxiety. “Anxiety becomes about something in our past. So, in the future, if [students] are going to write a test they are anxious about, all we need to do is use mindfulness exercises to ground them and get them hooked back to their breath. Even if I can lower the physical sensations connected to test anxiety, then they get a bit more comfortable.” Katie thinks that mindfulness
practice can aid in this grounding process, allowing students to better control their stress levels and providing them with a tool kit to help reduce anxiety during difficult situations. Katie recalled a specific instance where a student who suffered from frequent episodes of test anxiety was brought into her office. Although the student was initially reluctant to integrate mindfulness into her life, she eventually gained an appreciation for its ability to reduce the severity of her test anxiety. The case study is outlined below.

There is one girl I worked with last year who suffers from test anxiety for a specific subject. To help her, I started with instructing her to do some breathing at night, in her bed. When I asked her, ‘how is that going?’ she said, ‘I hate it, I can’t do it.’ Even trying to get her to breathe while she was in my office… her shoulders would just kind of rise a little bit, and she was just so uncomfortable about it. Now, I see her regularly and she uses a few mindfulness-based techniques to help her deal with test anxiety. I kept saying ‘we’re going to try this again’ and ‘let’s try some visualization’… Now, she’s definitely someone who is keen on [mindfulness practice]. She often comes in and says, ‘can we do this [mindfulness exercise] for five minutes?’ and I’ll turn out the lights and we’ll do it.”

Katie has received a multitude of positive responses like the one above. Because of this, she thinks that schools should take every opportunity to teach their staff to use mindfulness and that it should be at the forefront of education.

Mary regards mindfulness practice to be one of the most effective intervention strategies for students experiencing test anxiety. She encourages students who experience frequent episodes of test anxiety to engage in it. For example, she describes recommending mindfulness exercises and resources to a student plagued by severe anxiety. This student experienced great relief as a result of living a more mindful life. She recalls, “I had one student who suffered from really intense anxiety. She also had panic attacks, PTSD, and a cocktail of other mental illnesses. But, she was the one who found that [the mindfulness exercises] helped her the most. She came up to me after class and said, ‘I really want to learn more about this. Can you point me in the right
direction? So, I gave her the information that hopefully would have satisfied her needs.” Taking a research-based approach to test anxiety, Mary precedes her utilization of mindfulness-based interventions with an explanation of the research behind it. She believes that, by revealing the research-based benefits associated with mindfulness practice, students will be more likely to participate in it and embrace it in their lives. She often provides students with research papers outlining the benefits associated with mindfulness practice. Note that this was in a university-level classroom, so students are likely more research-inclined.

Overall, all three participants consider mindfulness to be an effective practice to reduce test anxiety. They each emphasize its powerful ability to bring students back to the present moment. According to Cizek and Burg (2006), relaxation-training techniques (like mindfulness) that steer the mind away from negative thoughts and toward the present moment reduce test anxiety.

*Personal experience with test anxiety*

By asking participants about their personal encounters with test anxiety, my goal was to explore the potential impact an instructor’s experiences might have on their approaches to anxious test-takers in the classroom. Would their own experience or lack of experience with test anxiety affect their ability to reduce student anxiety during test situations? Given participants’ diverse experiences with test taking and the fact that, according to their testimonials, they all manage to reduce test anxiety among their students, the answer to this question is no; one’s personal experiences with test anxiety do not affect their capacity to reduce student anxiety.

Joanna and Katie are hypersensitive to signs of anxiety before, during, and after test writing. They both attribute this elevated awareness to intuition stemming from their own experiences with test anxiety. Joanna describes herself as “an anxious test-taker.” From a young
age, she experienced frequent episodes of anxiety during assessment completion. Admittedly, these episodes have persisted into adulthood and influence her professional career. As a teacher, she has a complete aversion to test administration during class time and refuses to assign timed in-class assessments to her students. In instances where test administration is unavoidable, she can empathise with anxious test-takers because of her accumulated experience with anxiety. Similarly, Katie was affected by test anxiety while growing up. Although it is something she eventually overcame, she recognizes behavioural and mental signs of student anxiety on an almost intuitive level based on her own experiences with test anxiety. Ultimately, she considers this a facet of her identity and a basis for being a great Guidance Counsellor.

In contrast, Mary has no personal experience with test anxiety. She always had an ability to accurately gauge whether or not she would perform well on a test or exam. She associates test anxiety with uncertainty regarding the outcome of one’s performance during a test. Such uncertainty is not something she has direct experience with. Ultimately, whether or not a teacher has personal experience with test anxiety, they can still harness a passion to reduce it among their students. Mary is an example of a teacher who, despite having limited personal experience with test anxiety, is avid about giving students strategies to overcome it. She, like Joanna and Katie, is committed to using mindfulness techniques whenever she senses elevated anxiety surrounding assessment dispensation.

**Education and Professional Development**

According to Lawler’s key ingredients for successful program implementation in schools, professional development constitutes teacher training. In this study, teacher training has multiple forms, ranging from gaining knowledge about test anxiety recognition strategies to completing formal training courses/programs. The following areas of professional development combine
research compiled in chapter two with suggestions offered by interviewees. In many ways, they can act as a prerequisite for mindfulness exercise implementation in classrooms.

Recognition of anxious test-takers

Since the 1970’s, two dimensions have defined test anxiety: emotionality and worry (Cassady & Johnson, 2002). High levels of emotionality are indicated by a certain set of physiological responses experienced during evaluative situations, including increased heart rate, dizziness, nausea, panic, and increased galvanic skin response. Worry is linked to reduced self-confidence regarding test performance and level of comfort with test material. According to all three participants, both the worry and emotionality components of test anxiety can be monitored in the classroom if teachers remain observant and know which signs to look for. As a teacher, it can often be difficult to decipher or predict which students are anxious test-takers. Joanna, Katie, and Mary describe how they recognize test anxiety among their students.

Katie says that the onset of anxiety surrounding a test differs for each student, with some experiencing anxiety the moment they put pen to paper and others weeks or days preceding the test date. There have been several instances in which Katie has been able to predict which students may experience test anxiety by how many questions they ask about the test administration process and concepts being evaluated, and by how much pressure the student feels to perform well academically. Joanna mirrors Katie’s ideas about the direct relationship between academic pressure and test anxiety. She also adds that it is often the students who compulsively prepare for a test – in many cases over-prepare – that experience the most debilitating test anxiety. This point is supported by research conducted by Salend (2012), which states that perfectionist tendencies, over-preparation, and unrealistic expectations are primary triggers for test anxiety. Joanna, Katie, and Mary agree that there are no typical behavioural changes or
thoughts that every student who experiences test anxiety goes through – every student expresses anxiety in different ways. Some of the less subtle indicators of test anxiety shared in the three interviews include increased heart rate, heavy breathing, shaking, panicked expressions, empty gazes, eyes shifting around the room, slouching forward in one’s seat, and compulsive tapping or fidgeting. Essentially, all three participants emphasized the importance of being an observant teacher. Recognizing test anxiety requires knowledge of one’s students and awareness of the typical behavioural signs associated with test anxiety.

*Exposure to the benefits of mindfulness practice*

A powerful means of increasing one’s motivation to engage in an activity is via knowledge acquisition. Ultimately, instructors are more likely to bring a practice they are familiar with and have a knowledge basis around into their classrooms. All three participants strengthened their commitment to mindfulness use by becoming exposed to the benefits of mindfulness.

Joanna, Katie, and Mary have experienced benefits associated with mindfulness in their own lives and the lives of their students. Throughout the interviews, participants emphasized that the most influential fuel for teaching mindfulness in their classrooms is the advantages it provides for their students. Joanna shared an anecdote of a teacher that she observed using mindfulness practice in the classroom to alter classroom dynamics. This instructor, who was a mindfulness practitioner, was assigned to teach a particularly rowdy group of students. Within two to three days of introducing meditation to these students, she had the whole class turned around. They became very quiet and calm, which was a large contrast to their previous disruptive and rowdy disposition. When Joanna thinks about the positive impact mindfulness can have on student demeanours, this story surfaces in her mind. Such anecdotes inspire her to continuously integrate mindfulness into her class lessons.
Katie speaks about the plethora of positive feedback she has received from students. With regular implementation of mindfulness activities in the classroom, students tend to crave it. On days when she does not lead them through a mindfulness activity, there is a “marked difference in students’ demeanours.” Without beginning class with a mindfulness exercise, Katie estimates that students may focus for a maximum of ten minutes. However, after using mindfulness to commence a class, she may have at least thirty minutes of focus with the students. Thus, there is a substantial difference in focus time based on whether or not Katie integrates mindfulness exercises into her classes. She says that students deeply enjoy mindfulness activities and yearn for them. “The fact that students come in [the classroom] and see me hold up bells, and immediately smile, shuffle to their desks, and put their feet down, shows that they are eager to participate in meditative exercises. I would say, from my observations, [mindfulness] is not a struggle and it’s welcome. I look forward to bringing it to every class because students seem to be receptive towards it.” As Katie describes, students’ receptiveness toward mindfulness is a motivating factor for its integration into her classrooms.

Mary focuses on quantitative data to gauge how helpful mindfulness practice is for her students. She carefully monitors average test scores in her post-secondary classrooms in order to gauge student understanding of course content and their ability to control anxiety. Mary describes one incident in which she believes that mindfulness had a significant positive influence on student test scores. Prior to the commencement of a test, she led students through a guided meditation exercise and explained the benefits associated with mindfulness practice. Mary believes that, as a result of this exercise, the class average increased. “The class average was an A+. I think the lowest grade was a B+ and it wasn’t an easy test. It was all about research methods and statistics, so they did well. I can’t attribute their performance to mindfulness fully,
but I have students who came up to me afterward and said, ‘[that mindfulness exercise] was really helpful and it calmed my nerves.’” Instances like these solidify Mary’s belief that mindfulness is a beneficial practice for students and can result in elevated academic performance. In addition to gaining exposure to the positive effects of mindfulness via student observations, Mary also gains exposure to the benefits of mindfulness practice through research. “I really care about evidence-based instruction and so, when I read about the research (illuminating the benefits of mindfulness practice) and say, ‘okay I can apply this directly to a math class’ and it’ll work for my students, that’s when I start to bring it into my classrooms.” With less accumulated teaching experience in comparison to Joanna and Katie, Mary may have less contact with students in a classroom setting and thus, may have limited knowledge surrounding the advantages mindfulness may bring to students. Because of this, her knowledge about the advantages experienced by students upon engagement in regular mindfulness practice may be limited. Ultimately, this can act as inspiration for new teachers who want to implement mindfulness in their classrooms.

Using Mary as an exemplar, motivation and appreciation for a practice can be built from research.

*Explanation of mindfulness resources*

Gaining knowledge about mindfulness involves immersing oneself in information surrounding implementation strategies, useful techniques, and research-based theory. I included the resources that participants mentioned during their interviews into a comprehensive list.


   Joanna considers this book to be a helpful resource to read in an elementary level classroom. It teaches kids about meditation, helps them develop the skill of calming themselves down, and allows them to understand the importance of taking time to regain
focus and relax. Concepts in this book can function as anchors in the classroom for kids who are first being introduced to mindfulness. Continuously referring back to an idea, symbol or image like being a peaceful piggy, can act as a helpful teaching tool.


Joanna praises this book for its comprehensive look at how to use mindfulness techniques to soothe and heal the body and mind. It contains both a scientific and spiritual look at mindfulness. Because it is content-heavy, she does not recommend this book for younger students.

3. Applications (apps) that feature nature sounds and relaxing music.

Although no participants made direct recommendations regarding which applications to use in order to acquire nature sounds and relaxing music, they each agree that it may be helpful – with students’ permission – to play relaxing music and sounds during work periods.

4. The University of Massachusetts Center for Mindfulness

(http://www.umassmed.edu/cfm/)

Joanna and Mary recommend this website as a source of current research, articles, videos, and professional development opportunities in the area of mindfulness. Joanna said that this is a great resource for instructors who want to learn more about mindfulness and bring new exercises into the classroom.

5. Discover Mindfulness – Connecting Mindfulness and Schools

(http://discovermindfulness.ca)

Joanna, Katie, and Mary mentioned this website as a source of helpful tips for bringing
mindfulness into classrooms. It features professional development opportunities, current mindfulness research, and information about upcoming events.

6. Mindfulness Without Borders (http://mindfulnesswithoutborders.org)

Joanna and Katie recommend *Mindfulness Without Borders* for its information about certification training and volunteer opportunities. It has less of a focus on mindfulness integration in classrooms, but it features interesting information about current mindfulness research.

7. MindUP – The Hawn Foundation (http://thehawnfoundation.org/mindup/)

This website brings together the work of cognitive psychologists, neuroscientists, and educators to provide a mindfulness-based curriculum for teachers, parents, and students. The website houses mindfulness research, videos, news, and learning communities. Joanna mentioned this website in her interview, referring to it as “a great place to begin learning about the ‘why’ behind bringing mindfulness into the classroom.”

8. Mindfulness Everyday (http://www.mindfulnesseveryday.org)

This website was recommended by Katie as a resource for new teachers who want to implement mindfulness in their classrooms. It contains information about mindfulness for educators and features differentiated exercises for students of various ages.

*Experience with mindfulness professional development*

Exposing teacher candidates and current teachers to professional development around mindfulness is an effective way to inspire them to utilize mindfulness in their own classrooms. Professional development constitutes courses, experiences, and events that instructors can participate in to attain a better understanding of what mindfulness is and how to implement it in their personal and professional lives. Each participant speaks about participation in mindfulness
courses and mindfulness-themed events, claiming that each experience was fruitful and useful. Below is a list of mindfulness professional development opportunities that may strengthen teachers’ comfort levels with bringing mindfulness into their classrooms.

1. Silent Retreats.

   Silent Retreats vary in length, but they all consist of separating oneself from the daily routine of life and seeking deeper meaning through participation in days of silent reflection. They’re all different, but the one Joanna attends is centered on Vipassana meditation, which is insight meditation that is focused on the breath, mindful movement, walking meditations, yoga, and body scans. During these retreats, the days are very structured, consisting of sitting, walking, engaging in exercises, and eating meals communally. Joanna deeply enjoys Silent Retreats because they allow her to grow in her own mindfulness practice.

2. The Mindfulness Everyday Conference through the University of Southern California, San Diego.

   According to Katie, who attended this event in 2014, this Mindfulness Everyday Conference is directed toward educators. There are sessions on mindfulness in general, developing your own practice, and working with kids. Katie recalls that, throughout the conference, she participated in conversations around test anxiety, general anxiety, working with parents, and working with students as a Guidance Counsellor.

3. Mindfulness-Based Stress Reduction Training.

   Although Joanna, Katie, and Mary completed mindfulness training at different organizations, each training program was at least 6 weeks long and modeled after Jon Kabat-Zinn’s Mindfulness-Based Stress Reduction (MBSR) paradigm. After Katie
attended the Mindfulness Everyday conference, she was inspired to take a 12-week mindfulness course. In the following quote, she describes this experience as illuminating but very rapidly paced and academically rigorous: “I essentially kind of immersed myself in [mindfulness training] and now I practice it regularly. I deliver it to my grade 8’s, 9’s, and 10’s.” She works with these students one-on-one in her guidance office and in a larger class setting. It wasn’t until Katie experienced mindfulness training that she truly understood the utility of mindfulness during her encounters with students.

Overall, for instructors who want to implement mindfulness practice in their classrooms, Mary recommends that they first take a mindfulness course and understand mindfulness from a practical standpoint. Following this, teachers should regularly seek current mindfulness research and attend events in order to remain up-to-date with developments in the field. New research can further inform mindfulness integration into class settings. In addition, she also emphasizes the importance of gaining knowledge around anxiety and stress. This knowledge will aid teachers in understanding what triggers and behavioural changes are typically associated with elevated anxiety, helping to illuminate instances in the classroom where mindfulness may be utilized. Generally, mindfulness information acquisition is an act of professional development as it furthers an instructor’s ability to bring mindfulness into their classrooms. Above, there are examples of professional development opportunities presented, but there are many more mindfulness learning opportunities available.

**Implementation**

Implementation is a category that explores the process of bringing mindfulness practice into classrooms. It examines questions like: what are the common considerations that inform mindfulness integration, and what approaches work well with students? The following subthemes
include steps, activities, techniques, and teaching strategies that align with effective use of
mindfulness with students. Throughout the data collection process, interviewees were encouraged
to provide practical advice for future teachers. The following analysis attempts to present this
data in a comprehensive and structured manner.

*Overcome fear and negative stigma surrounding mental health*

As Clinton, McDougall, Schmidt and Hymel (2010) state, mental health issues affect 20%
of Canadian adolescents; among these issues, test anxiety is the most popular form of anxiety
reported in academic settings. Thus, it is important for instructors to reduce the negative stigma
surrounding mental health – specifically test anxiety – in order to commence effectively reducing
it. As research indicates, mindfulness exercises can be utilized in the classroom to address test
anxiety, but some instructors may be reluctant to use them. Joanna states that one of the main
reasons why teachers do not bring mindfulness practice into their classrooms is because of fear
and misconceptions. “It’s all about fear, some people are afraid to go inside themselves and to
connect with people, as mindfulness allows them to do.” To counteract this mentality, Joanna
recommends that teachers focus on research illuminating the benefits associated with regular
mindfulness practice. However, despite presenting research and talking about the benefits of
mindfulness, there will always be individuals who remain unreceptive to mindfulness, thinking it
is “a waste of time and that they could never do.”

Joanna mentions that another barrier associated with mindfulness implementation is doubt
regarding the validity of test anxiety and other mental health issues. “There are a whole lot of
teachers who do not believe in test anxiety. They think students should ‘suck it up, write the test,
and just get on with it,’ but they don’t understand the impact that test anxiety can actually have
on someone.” This doubt often stems from the culture of a school community and makes it
difficult to begin implementing change in the classroom to address test anxiety. Katie speaks about the advantages of working in a very collaborative, supportive school community that embraces mental health and doesn’t question the validity of test anxiety. She thinks that teachers have the ability to build a more accepting school culture by being aware of the stress levels of their students and seeking help from the guidance office and other colleagues when they suspect there may be an anxiety issue present. “It really comes from the teachers,” she says. “Teachers are observant of student stress levels and let us [the guidance office] know if they think something is going on with a student. This helps our school create a culture of being proactive with test anxiety.” Thus, teachers can help reduce negative stigma associated with mental health by taking test anxiety seriously.

Katie adds that another effective way to diminish negative stigma surrounding mental health is to engage in open conversation about it. She says that a large part of her school’s accepting attitude toward anxiety stems from the conversations students have about it. “A lot of kids who are leaders here and role models either have anxiety or talk openly about it or both. Our captain this year has anxiety disorder and talked about that from the moment she presented her speech to be elected and another captain from last year was creating a mental health awareness program. So we take those issues seriously here.” Having said that, Katie says that there are still students who harness a lot of shame surrounding test anxiety. It is Katie’s observation that, among parents who are very adamant about their children being doctors or lawyers and excelling in math and science, many of them do not understand anxiety. They are often the ones who hold a negative stigma toward test anxiety and downplay its relevance to their child’s success. Oftentimes, this creates a vicious cycle where the student experiences test anxiety due to excessive parental pressure to perform well academically, which leads to parental disappointment.
and more pressure to both excel academically and overcome test anxiety. In response to this, an accepting school community that does not project adverse attitudes towards mental health issues is a particularly effective tool to counteract negative stigma.

*Recognize that students may respond differently to mindfulness practice*

Before incorporating mindfulness into one’s teaching repertoire, it is helpful to understand that students may respond to it in different ways. Throughout the interviews, participants shared some responses they have received from students upon manifesting mindfulness techniques in their classrooms. These responses differ based on student stage of development, personal preference, and level of uncertainty.

Primarily, Katie thinks that younger students in an earlier stage of development may respond more positively toward mindfulness, as they are more likely to be open-minded. Older students may have already formed an impression – either positive or negative – about mindfulness and oftentimes this is difficult to alter or reverse. She states: “grade 12 students may have already established what works for them in the midst of stress-inducing situations, so the ones who love mindfulness, embrace it and probably have their own form of practice, whereas the ones who don’t are like ‘go away.’” The younger students (grade 7 in Katie’s case) may be more open to learning about mindfulness and experimenting with it, making them more malleable. She states: “The grade 7’s are a little more open to [mindfulness] because it’s new to them. They haven’t quite figured out yet if it’s right for them or not, so it’s exciting to work with them because you’re hoping that they hook into it.” Mary shares the opinion that younger students may be more receptive to adopting a mindfulness practice. In fact, she estimates the optimal age in which to introduce mindfulness to be slightly younger than grade 7: “It is probably best to introduce mindfulness practice prior to adolescence, when students are children and still
very open to seeing things. As a result, they’re not necessarily as biased towards certain practices. I think that would be around age 11 maybe or 12. So I think when they’re younger, that probably would be best.” Mary and Katie both agree that there are advantages associated with introducing mindfulness to younger students, as they are generally more unbiased.

When introducing mindfulness to a group of older students (university level students in Mary’s case), it may be helpful to provide them with research supporting the positive effects associated with the practice beforehand. For older students, Mary states that regular engagement in mindfulness practice during class may not be the right approach because they are more likely to be self-directed learners who take ownership of the content they are learning in their higher-level courses. If they did not pay for and/or enrol in a class about mindfulness, they may be less open to learning about it and engaging in it regularly during class time. Mary states: “realistically, at least in a university setting, you’re paying to learn specific skills and you elect to take courses because of the skills that you think you’re learning out of them. For this reason, I don’t think it’s fair to engage a university classroom in regular mindfulness practice. Introducing mindfulness exercises and resources is fine because the students who are interested in it will seek out the information, but forcing the whole class to do it is unfair.” Thus, instructors looking to incorporate mindfulness practice into their classrooms should consider the ages of their students and approach them accordingly.

Within each class and stage of development, there may be students who don’t respond positively towards mindfulness because they might house uncertainty regarding its effectiveness and relevance. Katie says that there are some students who reject mindfulness completely. In these cases, it is important to avoid forcefully approaching these students. Katie says that there
are some students that come into her office feeling anxious or stressed that she would not introduce mindfulness to. “It takes some time to gauge whether or not a student will respond well to mindfulness. For some students, it has got to be a thought conversation - very structured, science-based - with discussions about anxiety and the psychology behind it. If that’s what it needs to be, then that’s fine too. I wouldn’t do this with every kid.” In this quotation, Katie says that she approaches students differently based on their level of openness toward mindfulness. Although this takes time to gauge, she immediately engages students who may have hesitation surrounding mindfulness in science-based conversation.

*Engage in regular meditative practice with students*

Combining the work of Greeson (2009) and Broderick & Frank (2014), regular mindfulness practice leads to lasting positive results, which include reduced emotional distress and decreased stress hormone production. Greeson compares becoming more mindful with building muscle; both require sustained focus and regular practice (Greeson, 2009). Because of these and other benefits associated with mindful living, Joanna, Katie, and Mary encourage students to establish their own regular mindfulness practice. For teachers, Joanna and Katie emphasize the importance of bringing mindfulness into classrooms as often as possible. Katie states, “my goal is to bring mindfulness into every class I teach.” Summarizing information shared during the interviews, habitual mindfulness exercise engagement increases mastery and promotes sustained focus.

Joanna explains that regular mindfulness practice is a necessary prerequisite for eventual mastery. “You can’t just sit in meditation on Mindful Tuesdays and expect to be a lifelong meditator,” she says. “You’d have to come on Tuesdays and then practice it for a little bit each day and see how that’s feeling and then increase that, so there’s definitely a dedication
involved…” Upon increasing one’s level of mindfulness mastery, its teachings become more inherent for the participant. During episodes of test anxiety, for example, engagement in mindfulness exercises may become a more instinctual response after one has achieved mastery.

Generally, Katie says that regular structured implementation of mindfulness in the classroom is an effective way to encourage focus and serenity. “In my careers class, I start with bells and end with bells, and sometimes I let [students] choose what [mindfulness exercises] we are going to do.” When asked about the duration of a given mindfulness exercise she may employ on a typical day in the classroom, Katie says that she stays away from doing an exercise for longer than 5 minutes. “Five minutes seems to be a manageable time for most students, but if some kids are not into it, they might get into it for a minute then just sit there quietly.” Although Joanna did not comment on the typical duration of the mindfulness exercises she utilizes in class, she highlights the importance of incorporating mindfulness into her classes as often as she can. When asked about what she would have taught her past students in grade 3 leading up to EQAO administration, Joanna said, “Oh if I was able to go back to that time, I would have full on taught [students] meditation. I would have done meditation with them every day and throughout the day.” Overall, when students experience regular exposure to mindfulness, it provides them with structure and increases their proficiency with the practice.

*Employ mindfulness techniques in association with test taking*

Research indicates that, amidst episodes of test anxiety, mindfulness meditation can aid in the process of focusing one’s mind on a chosen anchor, effectively redirecting attention away from sources of anxiety (Meiklejohn et al., 2012). Throughout the interviews, participants shared helpful mindfulness techniques that they have successfully used to lessen test anxiety in their classrooms. These techniques can be categorized into four general approaches to test anxiety:
providing frequent breaks during test writing, delivering verbal and written mindfulness cues, engaging students in guided meditation sessions, and encouraging expressive disclosure.

1. Frequent Breaks

   Joanna introduces frequent breaks during assessment writing in order to focus students’ thoughts and lessen test anxiety. Although she is opposed to incorporating tests into her teaching style, in cases where tests are unavoidable, she will break test writing time into chunks. In between these chunks, she may lead students through a mindfulness exercise or sit in silence with them. The intent behind chunking test writing into segments is that students get some time to refresh and breathe. Joanna describes her test chunking process in the following quote: “Right before a test, I will sit with [students] for a few minutes, stop them halfway through, and then sit with them for another few minutes. I would be very intentional about giving them those breaks.” According to Joanna’s observations, these grounding moments reduce test anxiety and give students more focus.

2. Verbal and Written Mindfulness Cues

   During test writing, Joanna speaks about how many students can experience anxiety because of emotional high jacking, where thoughts wander, emotions surge, and the body enters into fight-or-flight mode. Her response to this sequence of events is to guide students back to the present moment by saying: “stop and drop into your breath.” This statement reminds students that they have control over what thoughts they focus on. By redirecting their attention to the breath, which is stable and constant, students can gain better control over anxious thoughts. Katie also likes to deliver verbal mindfulness cues while students are test writing and while students are experiencing anxiety in her office. Some of her favourite verbal cues include: for the classroom, “give yourself permission to breathe” and for her office, “you are allowed five minutes to heal
now. This is a safe place for you. What are you going to do in these five minutes to heal
yourself?” Mary does not like to administer verbal mindfulness cues, but she often embeds
written mindfulness cues on her test pages. For example, she writes phrases like “just breathe” or
“relax” on student test pages to remind them to be mindful while writing.

3. Guided Meditation

To bring students back to the present moment during a panic attack or anxious episode,
Katie typically engages them in guided meditations. During these meditations, she may give
students exercises like listening to all the sounds in a room for two minutes or make them
complete a task that directs attention away from anxious thoughts. “Meditations are really good
for redirecting thoughts. Usually, once [students] get out of that hyper focus on their anxious
thinking that is continuing their anxious physical sensations, anxiety lessens a little bit. Then,
when things lessen a little bit, they typically get a little bit more confidence and strength that they
can manage.” Thus, guided meditations can be used in testing scenarios to help anxious students
regain composure.

4. Expressive Disclosure

Expressive disclosure is when individuals express their thoughts, feelings, and/or
emotions in an uninhibited manner. Mary finds that students benefit from having blank pieces of
paper while test writing in order to record pervading thoughts. “I encourage students before each
test to express their feelings on blank pieces of paper. I reassure them that I won’t collect them
and they can choose not to use the paper. It’s really up to them.” Mary says that some university-
level students will completely fill these blank pages with random thoughts, worries, and lists.
Various students have expressed gratitude for Mary’s distribution of these blank pages during a
test. Mary states: “sometimes people have invading thoughts that they need to extract from their
minds. Expressive disclosure can be an outlet for this.” Thus, expressive disclosure may be an effective tool for clearing one’s mind during a test, which is a strategy for lessening test anxiety.

Overall, organizing frequent breaks, delivering verbal and written mindfulness cues, leading guided meditations, and providing outlets for expressive disclosure are actions that instructors can take to lessen test anxiety. Most importantly, all three participants emphasized that teachers should approach students who are experiencing test anxiety with patience, experimenting with different mindfulness-based approaches and seeing which ones students respond most positively toward.

*Engage students in regular mindfulness activities to solidify their practice*

For teachers who are new to bringing mindfulness into their classrooms, building a repertoire of exercises and techniques is a great way to build confidence as a mindfulness instructor and give students strategies to cope with stress. Students can take these strategies outside the classroom and into their own lives, which is a powerful step toward positive mental health. From each of the interviews, I have compiled ten mindfulness activities and ideas to employ in the classroom.

1. Colouring

   When introducing mindfulness-based exercises to a group of students, Joanna often starts with a simple activity like instructing students to colour. Throughout her years as a teacher, Joanna has encountered a multitude of students who experience difficulty remaining focused during mindfulness activities. As a result, she often begins with a mindfulness activity that people are less likely to get intimidated by: colouring. She provides students with a black and white simple image and instructs them to colour in any way they choose. Sometimes she will instruct students to colour in silence and other times, she will play soft relaxing background music. She
has experienced formidable success with this activity and recommends it for all teachers, especially for when anxiety levels become observably high in the classroom.

2. Metaphors

   Joanna often utilizes metaphors to guide mindfulness activities; they anchor students’ focus onto a target concept or image. For example, she uses a jar of water or glycerine with sediment (or little sparkles) contained in it. The solution represents the mind and the sediment particles represent thoughts. “I have this jar of water and, if you do this (shakes it vigorously), the sediment rises and mixes with the water particles. What I would do with the kids is teach them that that’s what your brain looks like when you’re anxious or worried. The more you sit, the more still that water becomes and then eventually it clears.” Joanna hopes that by comparing students’ thoughts to sediment settling in a jar of water, students can gain a deeper understanding of how to quiet their minds.

   Katie uses the visual metaphor of thoughts being corks in a river to help students visualize how thoughts flow in and out of consciousness. Students picture themselves sitting on the banks of a river watching their thoughts float by as corks in the water. She thinks this metaphor is an effective tool to communicate that it’s okay to have thoughts flow into our minds, but we can also let them go. With this visual metaphor, Katie’s goal is for students to recognize that they do not have to dwell on whatever thoughts come into their minds. Katie states: “[the cork in the river metaphor] gets [students] to practice being okay with their thoughts as opposed to hanging onto them.” This metaphor can be an effective tool to utilize when students are overwhelmed with anxiety and negative thoughts.

3. Touchstones
Touchstones are objects that represent a physical or intellectual concept. The idea behind a touchstone is that, whenever an individual perceives a certain object, they are reminded of a concept. Joanna talks about having a touchstone on student desks during test writing. This might be “a nice picture of a lake or mountain, something like that.” The goal of providing students with a touchstone is to give them a visual reminder to stop, take a breath, and refocus when they are feeling anxious. Such a visual reminder is an effective tool to encourage mindfulness breaks.

4. Smiling

Joanna says that simply encouraging students to smile is an effective way to release tension. “When you get caught up with this frown and you feel all that jaw tension and everything, flipping that around so that you are consciously smiling is a mindful activity.” Joanna says that she will tell students to smile regularly, especially when they appear stressed. Lifting your muscles into a smile releases endorphins and immediately improves mood (Lyubomirsly, King & Diener, 2005).

5. Body Scans

Joanna considers body scans to be invaluable mindfulness exercises. However, she recommends against engaging students in a lengthy body scan during test writing. Instead, Joanna suggests that teachers instruct students to “stop and drop’ into the area that [they’re] feeling tension.” This brings focus to areas of tension and offers a rapid mode of relaxation.

6. Mindful Walking

Mindful walking is a great activity to refocus attention, lessen anxiety, and get fresh air. Joanna states that taking a mindful walk in nature (weather permitting) is “different from what we’re usually doing racing around. It’s actually literally watching our feet touch the floor, raise from the floor, touch the floor…” This activity is great because it is easy for students to
7. Symbol Bells

Katie uses symbol bells at the beginning and end of her classes in order to increase focus and create silence. “I ring the bells and get [students] to listen to the sound of the bells until the sound fades out and they can’t hear it anymore,” she describes. By repeatedly using the bells to symbolize silence and mindfulness, Katie is effectively conditioning students to quiet themselves down when they hear them. Thus, in addition to being a mindfulness tool, bells can also be used as a classroom management tool.

8. Guided Visualizations

According to Katie, visualizations can act as powerful tools to reduce anxiety, focus attention, and increase relaxation. Katie describes how she leads students through visualizations in the following quotation: “I’ll lead [students] through a visualization and I’ll ask them to choose a place that’s calming and then I’ll give prompts like ‘imagine a lake or a mountain.’ Then, I’ll ask them questions like ‘what’s the weather like?’ and I’ll basically get them to be very specific because it forces them out of their mind and helps them tell a story.”

9. Breathing Exercises

Katie employs breathing exercises quite often in her classroom and guidance office. She may initiate a breathing exercise when students are rowdy, anxious, or overly excited. Guided breathing exercises increase oxygen circulation and promote wakefulness and focus. Katie led me through a brief breathing exercise that she often uses with her students. Here is a segment of her script: “As your breath comes in, imagine all the air going to your toes and you’re breathing in all positive energy. Imagine that this breath is a warm colour. What colour is it? Now, exhale all
your negative energy.” Following this, Katie led me through counted breathing, inhaling for seven…holding for seven…exhaling for seven…etc…. After participating in this simple and brief breathing exercise, I noticed that I had a much calmer demeanour for the rest of the day.

10. Listening to Surrounding Noise

This exercise involves listening to all the sounds that students can hear in their surroundings. “I find that kids really like this one,” Katie says. “It’s one of my favourites. First you hear the big sounds – like a bus – but then after, it’s amazing how the kids say, ‘oh I heard like a pin drop over there.’” Katie says that this exercise gets students out of their thoughts, which works well for reducing stress.

Ongoing Assessment

Ongoing Assessment constitutes frequent evaluation of mindfulness program and activity effectiveness. Effectiveness is assessed by student reactions and feedback; they are the central informants of practice. Like any successful teaching practice, design of classroom activities is a dynamic and ever-changing process. As students transition through stages of development and deal with changing daily stresses, class lesson design changes as well. In the same way, mindfulness will manifest differently for each group of students and must remain in flux throughout the year, as students’ needs fluctuate. Throughout the interviews, three areas of advice emerged regarding how to regularly assess the efficacy of mindfulness interventions in the classroom. Overall, ongoing assessment involves addressing student difficulties, observing fluctuations in student anxiety, and noting student responses during and after participation in mindfulness exercises.

Address student difficulties associated with mindfulness practice
A significant facet of assessing how effective a practice is in the classroom is being aware of the common difficulties students may experience and accumulating operational strategies for addressing these difficulties. Joanna, Katie, and Mary identify three areas of frustration that students experience while learning mindfulness. These frustration-inducing aspects of mindfulness engagement include initial resistance to the practice, difficulty dealing with resurfacing emotions, and lack of sufficient time for regular practice.

Joanna encounters many students who initially express resistance towards mindfulness training. She states, “some groups of students just don’t respond well to mindfulness, but others immediately embrace it. You just have to be able to gauge students’ reactions and approach them accordingly.” As an instructor, it may be difficult to understand what students need and what concepts and practices to expose them to. Joanna responds to this difficulty by utilizing trial and error. She states, “oftentimes it takes a lot of experimentation to realize what approaches work for certain students.” Thus, implementing an array of activities and investigating which ones elicit the most positive responses is an important aspect of being a competent mindfulness instructor.

During participation in mindfulness exercises, there is also the possibility that students may confront difficult emotions and/or experiences. In such circumstances, the teacher can refocus them on the breath and instruct them to let their emotions go. Along with this immediate reaction to student difficulties with mindfulness, Joanna also recommends preventative measures; for example, when she introduces the concept of mindfulness to her students, Joanna talks to them about how “all emotions are natural and healthy – they are part of who we are. Although we certainly have to learn to temper [our emotions] in socially appropriate ways, I think that when students accept that part of the human condition, they are more able to handle it.” In this way, Joanna is bringing normalcy to these challenging emotions, reducing stigma and opening up
communication lines with students. Additionally, Joanna recommends that mindfulness
instructors watch (or better yet allow their students to watch) *Inside Out*, an animated film about
human emotions. This film conveys the powerful message that experiencing difficult emotions is
a part of a healthy life. This teaches students to let go of shame and fear toward these grim
emotions throughout their lives and, by extension, during their mindfulness practice.

   Katie often hears that students find it challenging to schedule time for mindfulness every
day. In response to this, she reminds them that all it takes is five minutes to be mindful and
become more centered. If students continue to complain about lack of time, Katie makes more
time for mindfulness exercises during class. By bringing regularity to a practice, she believes that
students will be more inclined to repeatedly engage in it independently.

*Regularly observe student stress levels*

   As Broderick and Frank (2014) indicate, instructors who want to utilize mindfulness in
their classrooms should habitually observe student stress levels. When students appear to be more
stressed and anxious, mindfulness exercises should be manifested more often. Joanna says she
gauges the timing and effectiveness of her mindfulness-based exercise utilization in the
classroom by the stress levels of students. She is more likely to lead the class in a mindfulness
session if stress levels are high among students. In the same way, if she notices that an individual
student appears particularly stressed, she recommends mindfulness activities and resources to that
student. Thus, high student stress indicates a need for mindfulness.

   Katie speaks about observing and gauging student stress as a Guidance Counsellor,
deeming there to be behavioural signs of stress to look out for and certain times of the year when
stress levels may be higher than others. There are observations that may illuminate a student who
is experiencing higher than usual levels of stress and anxiety. According to Katie, “physical signs
of anxiety include shortness of breath, flushed skin, dizziness, sweaty hands, and fatigue or lack of energy. Mental signs might be more emotional signs like not talking as much or speaking in a nervous manner. Usually there are outward signs that they’re feeling light headed or their breathing is off or they feel nauseous.” These behavioural and mental symptoms are often associated with test anxiety and may be signs that teachers should be hypersensitive toward.

Along with observing signs of anxiety in students, it may be helpful to question students directly about their mental states. Katie states that, as a Guidance Counsellor, she often engages students in questioning if she suspects that they may experience test anxiety. She explains, “if [a student] is comfortable with it, I start to question them in order to slowly paint a picture of what’s going on; it’s me saying ‘I heard you’re struggling with this, can you tell me about that?’ or ‘can you tell me about your body sensations right before a test? Does it happen right before? A week before?’” These questions aid Katie in understanding when anxiety happens, how it is built up, and what the thought processes surrounding it are. From there, Katie may start to involve a student in scaling exercises if it seems like test anxiety may be an issue for him or her. These include asking students about their feelings and giving them cues like: “are you higher on the stress scale today? If so, what do you need to do to move lower?” She describes this process as figuring out when students feel a particular way, what happens to their bodies, and what their minds do to cope. Following this, she builds in more specific questioning and administers mindfulness exercises when appropriate. This questioning and scaling process is meant to illuminate anxiety levels surrounding test writing and should be administered to students individually.

Katie says that she is very observant around crunch periods for students, times during the year that students have a lot going on academically. For Katie, these periods indicate an elevated
need for mindfulness integration in the classroom. She states: “usually if I’m in the process of doing a guidance class and there’s an assessment, I might take a little bit longer to do a mindfulness exercise or if it’s exam period, I might take more than five minutes to do a meditation, for example.” Additionally, during exam periods, Katie tries to fit in a half-hour long meditation exercise in careers class. During this time, she turns out the lights and guides students through a guided meditation. Overall, in order to regularly monitor student stress levels, it is helpful to become familiar with the common behavioural signs of stress, engage some students in questioning and scaling exercises, and know the crunch periods for students.

Mary adds that teachers should remain cognizant that there is often co-morbidity associated with test anxiety. In the following quotation, she says that students who suffer from other mental illnesses are more likely to experience test anxiety and should be monitored carefully: “students who have come to me prior in the term, for example, to say, ‘you know what I’m suffering from bipolar disorder,’ are ones I monitor closely for signs of test anxiety.” These students are also, interestingly enough, more prepared for tests. They over-prepare as an attempt to compensate for their anxiety. For these students, Mary is especially careful with her words during test writing. She’ll share calming phrases like, “you’ve studied this so you know the material” and “don’t worry, read the questions first and then reflect and then go back on the first page and answer the questions” to increase focus and decrease anxiety. Generally, monitoring students who suffer from mental illness for test anxiety may be a helpful tool to be proactive about reducing test anxiety in the classroom.

Collect qualitative and quantitative feedback from students

The mindfulness program at R. H. King Academy is a dynamic program that undergoes constant transformation and augmentation in response to student feedback (Tremonti, 2014).
According to Peter Mitton, students at R. H. King appreciate *Mindful Edge* ® Leadership classes and “Mindful Minute” sessions because they are designed for application in many facets of life. Teachers and administrative staff at R. H. King Academy make a conscious effort to teach toward the student, designing mindfulness exercises that address student needs and incorporate student feedback. Joanna, Katie, and Mary offer strategies to collect student feedback surrounding mindfulness interventions so that an effective mindfulness program – like that of R. H. King Academy – can be delivered in the classroom. Mary stresses the importance of student feedback for assessment purposes. She has compiled positive and negative feedback from students and uses that to inform how she integrates mindfulness practice into the classroom. It is imperative for mindfulness instructors to examine peer pressure trends among students, obtain many observations of students during mindfulness exercises, and collect quantitative data.

According to Joanna, two factors influence receptiveness to mindfulness practice: willingness to explore mindfulness and peer pressure. Primarily, there must be open-mindedness among students in regards to mindfulness. They have to be willing to explore how it works and its benefits. Second, the reactions of peers – oftentimes among older students – influences students’ reactions to mindfulness; Joanna explains, “If students look around and their peers are buying into it, they’ll be more likely to buy into it too.” Joanna also speaks about class size being a predictor of receptiveness toward mindfulness practice. With a larger group, students are less likely to respond positively toward mindfulness – there seems to be too much of a divide among students. The negative reactions of a couple students have the potentiality to negatively influence the experience of other students.

In addition to examining peer pressure, Joanna also recommends that mindfulness instructors conduct qualitative research surrounding students’ behavioural changes after regular
participation in mindfulness exercises. She claims: “what are you observing over time? How are you observing these kids?” Gathering these observations is part of the process of improving mindfulness delivery in the classroom. As an instructor, Joanna also recommends looking at the relational aspects of student responses, like “how are kids relating to one another?” For example, if there’s bullying in the classroom, is that going to be reduced if mindfulness integration is increased over time? From her collection of experiences, mindfulness tends to reduce bullying among students. Such a positive observation would indicate successful utilization of mindfulness in the classroom.

From Katie’s perspective, the best way to gauge the effectiveness of mindfulness in the classroom is to perform quantitative research. To assess how much mindfulness practice lessens test anxiety, Katie looks for marked differences between how students perform on tests before doing a mindfulness exercise versus afterward. “There’s a difference every time I do [mindfulness]. Like every time a student comes into my office and we progress forward with mindfulness practice, their grades will improve a tiny bit.” Although grade improvement may not always correlate with increased engagement in mindfulness, an overall improvement in academic performance is a positive outcome of reduced test anxiety. Thus, an improvement in academic performance following mindfulness engagement may indicate a decrease in test anxiety.

**Conclusion**

Overall, commitment, knowledge acquisition, implementation, and ongoing assessment are four areas of development for teachers who want to design a program for implementation in their classrooms. Although each participant expresses their commitment to mindfulness and test anxiety in different ways, they each share a dedication to the wellbeing of their students and recognize that mindfulness can be used to lessen test anxiety. Education and professional
development are two areas in which participants have the most convergence. They each completed formalized mindfulness training with a focus on stress reduction and have acquired extensive knowledge surrounding test anxiety reduction.

Implementation of mindfulness in the classroom was completed in different ways for Joanna, Katie, and Mary. In contrast to the previous category in which participants had a similar mindfulness knowledge base, the category of implementation contains the largest amount of divergence among participants. Mary does not implement mindfulness activities on a regular basis in her classrooms. Instead, she leads students in structured exercises when test anxiety is an apparent issue and provides resources for interested students to gain more information about it. Katie implements five minutes of mindfulness every day in her Careers class, but will engage students in longer and more elaborate exercises during her one-on-one guidance office sessions. Joanna engages students in regular mindfulness exercises as well, but her employment of mindfulness in the classroom is more geared toward the stress levels of students; observations of more stress prelude more regular implementation of mindfulness.

Finally, ongoing assessment is an important facet of designing an anxiety-reducing mindfulness program for utilization in classrooms. To consolidate a collection of effective mindfulness techniques, all participants supplement student feedback with detailed observations of student conversations and reactions. Ultimately, the combination of a commitment to mindfulness and test anxiety reduction, an extensive knowledge basis on the positive effects of mindfulness on anxiety, and a commitment to incorporating student feedback into mindfulness exercise choice allows for effective implementation of mindfulness into classrooms.
Chapter 5: DISCUSSION

5.0 Introduction to the Chapter

This study explores how mindfulness-based programming can be used to lessen test anxiety among grade 3 to post-secondary level students in Ontario. Research suggests that mindfulness-based interventions can be utilized to prevent and treat test anxiety, but the literature does not contain a practical set of guidelines for how to use mindfulness exercises in this way. This study uses research and mindfulness instructors to compile a collection of pragmatic approaches to test anxiety reduction. Data was collected from three participants with different experiential and educational backgrounds. Two overall commonalities were extracted from their interviews: they each share a commitment to test anxiety reduction and utilize mindfulness regularly in their classrooms.

Lawler’s list of key ingredients for successful program implementation in schools (2014) was used as a framework to extract common categories and themes in the data. Themes were constructed around the following four categories: teacher commitment, knowledge acquisition, implementation, and ongoing assessment. According to Lawler (2014), acquisition of insight within these categories is foundational for construction of a thorough understanding of program design for the classroom setting. This chapter summarizes the findings in each of these categories; outlines implications (broad and narrow); provides recommendations for teachers, administrators, school boards, and professional associations; suggests areas for further research; and ends with concluding comments.
Overview of key findings and their significance

Using Lawler’s key ingredients for successful program implementation in schools (2014) as a framework, various themes were composed around the goal of implementing mindfulness into grade 3 to post-secondary level classrooms in Ontario.

Teacher Commitment

The first of Lawler’s requirements for program implementation in classrooms, teacher commitment, contains five component parts. These are: exposure to mindfulness and its benefits; commitment to reduce student test anxiety; establishment of a personal mindfulness practice; knowledge about the stress-reducing power of mindfulness practice; and personal experience with test anxiety. All three participants became exposed to mindfulness in different ways, but they each witnessed many positive student responses toward its use in the classroom. Joanna, Katie, and Mary also share a dedication toward reducing test anxiety and deliberately design their classrooms to be calm and supportive learning environments. Joanna and Katie have personal experience with mindfulness and test anxiety, as they both integrate mindfulness practice into their daily lives and each of them has struggled with test anxiety throughout their academic years. In contrast, Mary does not have personal experience with either mindfulness or test anxiety and approaches mindfulness integration in her classrooms from a research-based perspective. After becoming aware of research linking mindfulness practice with reduced anxiety, she became fascinated with its ability to lessen test anxiety and started using it in her classrooms for anxious test takers. Thus, despite Mary’s lack of personal experience, she is committed to mindfulness and test anxiety reduction, and able to effectively lead her students in mindfulness exercises. For instructors who want to integrate mindfulness into their classrooms, personal experience with mindfulness and test anxiety is not a necessity; however, a strong commitment to anxiety
reduction and mindfulness practice is a necessity. Generally, teacher commitment towards mindfulness and test anxiety reduction set the stage for lasting utilization of mindfulness in the classroom, and are foundational requirements for the next three categories.

*Knowledge Acquisition*

The second of Lawler’s requirements for program implementation in classrooms, knowledge acquisition, contains four component parts. These include: recognition of anxious test-takers; exposure to the benefits of mindfulness practice; exploration of mindfulness resources; and experience with mindfulness professional development. Participants have extensive knowledge regarding the behavioural and mental signs of anxiety and remain hypersensitive to their expression in the classroom. Notable observational signs of test anxiety include increased heart rate, dizziness, nausea, panic, increased galvanic skin response, worry, lack of confidence, compulsive questioning, over-preparation for assessments, perfectionist tendencies, unrealistic expectations, shaking, and heavy breathing. In addition to being aware of the many signs of test anxiety, participants had many forms of exposure to the benefits of mindfulness practice (whether anecdotally, personally, or observationally), and had many resources in which they extracted practical mindfulness techniques for integration into class lessons. In terms of mindfulness professional development, Joanna, Katie, and Mary each completed mindfulness stress reduction training. However, their continued professional development beyond the completion of this training varied, with Joanna attending periodic mindfulness community activities and silent retreats, Katie attending workshops and conferences, and Mary remaining involved with mindfulness research. Commonly, for instructors who want to implement mindfulness into their classrooms, knowledge acquisition is an essential preliminary step and can be completed in a variety of ways.
Implementation

The third of Lawler’s requirements for program design in classrooms, implementation, contains five component parts. These include: overcome negative stigma surrounding mental health; recognize that students may respond differently to mindfulness practice; engage in regular meditative practice with students; employ mindfulness techniques in association with test-taking; and engage students in regular mindfulness activities to solidify their practice. In order to commence implementation of mindfulness in the classroom, teachers should first take steps to reduce any negative stigma that may exist in the school community surrounding the validity of test anxiety. This is more likely to promote openness about test anxiety among students, which is a helpful guiding factor for selection of appropriate mindfulness classroom implementation strategies. These strategies should involve regular engagement in meditative practice, as regularity promotes habit formation and long-term adoption of a process. Additionally, it is helpful for mindfulness exercises to be utilized in conjunction with test taking because this is more likely to immediately reduce test anxiety. Overall, implementation of mindfulness in the classroom requires transparency from students, regular integration, and familiarity with a faculty of exercises.

Ongoing Assessment

The fourth of Lawler’s requirements for program integration in classrooms, ongoing assessment, contains three component parts. These include: address student difficulties associated with mindfulness practice; regularly observe student stress levels; and collect qualitative and quantitative feedback from students. Before bringing mindfulness into the classroom, it is important to understand that students may express resistance to it, experience difficult emotions, and have reservations about applying it in their own lives. According to all three participants,
finding appropriate responses to these student difficulties requires experimentation and observation. As teachers, it is also important to regularly observe and gauge student stress levels because elevated stress often indicates a need for mindfulness interventions. Finally, one of the most important means of mindfulness program improvement is via collection of qualitative and quantitative student feedback. Qualitative feedback constitutes verbal or written feedback regarding the usefulness of mindfulness exercises and quantitative feedback may include any indication of grade improvement or decline before and after participation in mindfulness exercises. Ongoing assessment, via the collection of qualitative and/or quantitative data, is an integral aspect of program improvement.

**Implications**

*Broad*

This study illuminates a need to study the impact of mindfulness exercises on test anxiety and potential ways to educate teachers, administrators, and parents about how to recognize and address test anxiety. The findings of this study outline practical considerations and steps involved with utilizing mindfulness to lessen test anxiety in grade 3 to post-secondary classrooms in Ontario. These steps are laid out in a comprehensive manner so that educators with diverse backgrounds can gain insight on the process involved with being a mindfulness instructor. The diverse backgrounds and personal experiences of the research participants may broaden the audience of this study and inspire instructors with limited experience with mindfulness to implement its exercises in the classroom. For example, Mary approaches mindfulness and test anxiety from a primarily research-based perspective, with very little personal experience in both areas. She does not have her own mindfulness practice and cannot recall an instance in which she has experienced test anxiety. Despite this lack of personal experience, Mary has a strong curiosity
toward the utilization of mindfulness exercises as a preventative and curative intervention strategy for test anxiety. For teachers, Mary’s lack of personal experience with test anxiety and mindfulness may serve as inspiration for those individuals who are fascinated by mindfulness and want to utilize mindfulness-based interventions to decrease test anxiety. An accumulation of knowledge surrounding mindfulness and an ability to recognize the observational signs associated with test anxiety can act as adequate foundation for manifestation of mindfulness in the classroom.

Narrow

As a future teacher, this study has given me a greater appreciation for the benefits of mindfulness practice, a deeper awareness of the debilitating effects of test anxiety, and a commitment to bring mindfulness into my future classrooms. Before commencing this study, I was merely fascinated by mindfulness – I did not have my own personal practice or knowledge of how to lead mindfulness exercises. However, as I began collecting data and conducting interviews, I established my own personal mindfulness practice. Now, I practice mindfulness daily and have utilized it in many contexts of my life. Mindfulness has become a part of my identity. I now implement it in all my classes, in my conversations with students, and in my daily interactions. Throughout this past year, I have encountered many students who struggle with test anxiety, several of which approached me asking about ways to lessen its impact after hearing about this study. Their experiences combined with the experiences of the participants of this study have revealed how devastating test anxiety can be. Because of this, I feel compelled to provide my future students with skills to gain control of their anxiety. With the completion of this study, I feel much more prepared to help students in this area.
Recommendations

Based on the findings of this study, reducing test anxiety is a community endeavour. It requires a commitment to end negative stigma surrounding mental health and test anxiety; an investment in mindfulness education and training; and a willingness to incorporate student feedback to foster program improvement. Generally, using mindfulness to lessen test anxiety above all requires a commitment to student wellbeing. As Ana Maria Tremonti (2014) states in her description of R. H. King Academy Secondary School, mindfulness integration in school communities requires help from administrators, teachers, students and parents. It is helpful for these individuals to adopt a solution-based approach to student stress and test anxiety that includes mindfulness. This may lessen the stigma surrounding mental illness and inspire students to seek support on multiple avenues. We need to make students feel less helpless in the face of mental illness.

A possible way to increase commitment to the utilization of mindfulness-based programming to lessen test anxiety and reduce negative stigma attached to mental health issues is to start at the Ministry of Education. Currently, the *Supporting Minds: An Educator’s Guide to Promoting Students’ Mental Health and Well-being* document does not mention how to implement mindfulness-based strategies in the classroom to reduce test anxiety. In fact, the document does not feature any explicit information about mindfulness or meditation. Thus, future editions of the *Supporting Minds* document could feature information about how to lessen test anxiety using mindfulness. This could spur a widespread commitment to mindfulness practice and test anxiety reduction.
Areas for further research

Stemming from the centralized goal of this study – to prevent test anxiety and stress from becoming chronic concerns for Canadian students – further research should attempt to illuminate the longitudinal effects of mindfulness integration in classrooms. Can effective mindfulness programming aid students in building resilience to test anxiety and general stress-inducing situations throughout their lifetimes? Since chronic stress is a concern among our population, a longitudinal study perhaps spanning a decade, could illuminate the long-term effects of mindfulness practice. Such studies could establish a control condition – where participants do not partake in mindfulness exercises – and an experimental condition – in which participants complete mindfulness exercises – and measure the quantitative difference in test scores and/or grades between the two conditions. Another possible avenue for future study is interviewing students about their experiences with mindfulness, gaining their perspectives on its usefulness in their lives. In the same way, data can also be collected from parents who have children that are participating in a class mindfulness program. It may be the case that parents are able to monitor daily habits and changes in demeanours in their children, offering an additional source of data surrounding the effects of mindfulness practice. A final potential area of future study involves examining optimal developmental stages for mindfulness participation. Is there a specific age or stage of development that test anxiety is an especially large concern? Does this coincide with optimal developmental stages for mindfulness participation? These are questions that can be addressed in future studies in order to inform the use of mindfulness for test anxiety reduction in classrooms. Ultimately, there are many potential areas for further study in the realm of mindfulness and test anxiety stemming from questions that were not explored in this study.
Concluding Comments

Ultimately, my research prioritizes students’ needs by compiling practical ways to bring them the benefits of mindfulness. This study frames mindfulness as an integral aspect of an education par excellence, a term William James equates with the prospect of repeatedly refocusing a wandering mind (James, 1890). Mindfulness, by extension, is built on this goal of centering oneself in the present moment and thus, can be linked to William James’s idea of an excellent education. This was not a compelling enough reason for me to base my MTRP on mindfulness. I was looking for a concrete link between students’ needs and mindfulness practice.

Subsequently, as I began to accumulate experience in Ontario classrooms, from the grade 3 to post-secondary levels, I realized that many students experienced significant test anxiety but had very few – if any – strategies to lessen it. From there, I immersed myself in test anxiety research, where I discovered a prevailing gap in the literature surrounding test anxiety reduction techniques that students can practice on their own. With increased research, I noticed a link between the symptoms that mindfulness can reduce and the symptoms associated with test anxiety. Because of this, I constructed my research to fill that gap and provide insight on how to use mindfulness to decrease the debilitating effects of test anxiety.

In our academically focused society, the negative effects of test anxiety are amplified because, in many cases, test anxiety has a direct negative consequence of reduced academic performance. In response to this, I formed my research and interview questions around bridging the gap between mindfulness and test anxiety, searching to provide a practical guide for mindfulness integration in the classroom. This guide is directed primarily at teachers, but can be used by parents, administrators, policy makers, and training companies as a framework for using mindfulness to lessen test anxiety and increase student focus.
My data indicates a need for commitment, knowledge, experimentation, and ongoing assessment amongst mindfulness instructors who want to reduce test anxiety. Whether or not individuals have their own personal mindfulness practice, they can gain an appreciation for its positive effects (as Mary did), familiarize themselves with techniques, and experiment with what works for students. Primarily, school communities need to realize how stressed out students are. They need to see that there’s a problem before a solution can be achieved. One effective solution is mindfulness practice. Ultimately, mindfulness is a tool that students can utilize in every facet of life, especially to lessen test anxiety. Because of this, mindfulness can be thought of as a pathway towards achievement of an education par excellence.
REFERENCES


Shapiro, A. (Speaker) (2013, November 22). Effective Stress Management Instruction for Teens: What teachers should know. *Quebec Provincial Association of Teachers Annual*
Convention. Lecture conducted from Quebec Provincial Association of Teachers, Montreal, QC.


Appendix A: Letter of Consent for Interview

Date: October 8, 2015

Dear [Participant Name],

I am a graduate student at OISE, University of Toronto, and am currently enrolled as a Master of Teaching candidate. I am studying *how mindfulness-based programming can be utilized to lessen test-writing anxiety in Greater Toronto Area high school classrooms* for the purposes of investigating an educational topic as a major assignment for our program. I think that your knowledge and experience will provide insights into this topic.

I am writing a report on this study as a requirement of the Master of Teaching Program. My course instructor who is providing support for the process this year is Dr. Arlo Kempf. The purpose of this requirement is to allow us to become familiar with *mindfulness professional development, implementation, and ongoing evaluation in the context of addressing test-writing anxiety*. My data collection consists of a 60-minute interview that will be tape-recorded. I would be grateful if you would allow me to interview you at a place, time and modality convenient to you. I can conduct the interview at your office, workplace, in a public place, via Skype, over the telephone, or anywhere else that you might prefer.

The contents of this interview will be used for my assignment, which will include a final paper, as well as informal presentations to my classmates and/or potentially at a conference or publication. I will not use your name or anything else that might identify you in my written work, oral presentations, or publications. This information remains confidential. The only people who will have access to my assignment work will be my research supervisor and my course instructor. You are free to change your mind at any time, and to withdraw even after you have consented to participate. You may decline to answer any specific questions. I will destroy the tape recording after the paper has been presented and/or published which may take up to five years after the data has been collected. There are no known risks or benefits to you for assisting in the project, and I will share with you a copy of my notes to ensure accuracy.

Please sign the attached form, if you agree to be interviewed. The second copy is for your records. Thank you very much for your help.

Yours sincerely,

Researcher Name: Amanda Teseo

Email: amanda.teseo@mail.utoronto.ca

Instructor/Supervisor’s Name: Arlo Kempf

Email: arlo.kempf@utoronto.ca
Consent Form

I acknowledge that the topic of this interview has been explained to me and that any questions that I have asked have been answered to my satisfaction. I understand that I can withdraw at any time without penalty.

I have read the letter provided to me by Amanda Teseo and agree to participate in an interview for the purposes described.

Signature: ________________________________

Name (printed): ________________________________

Date: ________________________________
Appendix B: Interview Questions

Section 1: Background Information

*Any time I mention a “test” throughout this interview, I am referring to a timed, in-class, summative assessment

1. a) What is your name?
   
   b) How many years have you worked as a teacher?

   c) Can you tell me about the school you’re currently working in (in terms of demographics, size, socio-economic status, culture, etc.)?

   d) What grade(s) and courses are you teaching this year/term?

2. a) How did you become involved in mindfulness practice?

   b) How many years have you been practicing mindfulness?

Section 2: Teacher Practices (WHAT/HOW?)

3. Tell me more about your own mindfulness practice. What are some successes and challenges you endured as a mindfulness learner?

4. Tell me about your personal experiences with test writing. Have you ever felt anxious before, during, and/or after writing tests? If so, how did you deal with this anxiety?

   a) Have you ever taught students who struggle with test-writing anxiety? How have you, as an educator, responded to such students?

5. Do you implement mindfulness practice in the classroom to lessen student test-writing anxiety? If so, how, when and how often?

6. How do you recognize students who are anxious surrounding and/or during test writing?
7. From your experience, are there mindfulness-based techniques, activities, or strategies that could be utilized to lessen test-writing anxiety? What are they?

8. Can you give me an example of a time when you successfully integrated mindfulness into your classroom surrounding test administration? What were students’ reactions?

Section 3: Beliefs/Values (WHY?)

9. What prompted you to begin to use mindfulness practice to lessen test-writing anxiety in your classrooms?

10. What do you believe students who are anxious writing timed, summative, in-class tests can gain from mindfulness practice?

11. Are there any resources you can recommend to teachers who are interested in utilizing mindfulness practice to lessen test writing anxiety in their classrooms? What are they?

Section 4: Influencing Factors (WHO?)

12. Have you taken any mindfulness professional development or independent training courses?

→ If so, what were they called? Did you find them helpful toward lessening test writing anxiety in the classroom?

→ If not, do you believe taking a training course would be useful?

13. How can teachers increase their knowledge regarding how to teach mindfulness?

14. Are there professional development or training programs available in the GTA?

Section 5: Next Steps (WHAT NEXT?)

15. Are there ways to assess how effectively mindfulness-based intervention lessens test-writing anxiety among students?
→ If so, how?

→ If not, why do you think this is?

16. What goals do you have for your use of mindfulness in the classroom? What goals do you have for students?

17. What advice would you give to a new teacher wanting to integrate mindfulness practice in the high school classroom to lessen test-writing anxiety?