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The Impact of Mindfulness on Student Success

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THE IMPACT OF MINDFULNESS ON STUDENT SUCCESS

A Thesis

Presented to

The Graduate Faculty

Central Washington University

In Partial Fulfillment

of the Requirements for the Degree

Education Specialist

School Psychology

by

Casey D. Nightingale

May 2018

CENTRAL WASHINGTON UNIVERSITY

Graduate Studies

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ABSTRACT

THE IMPACT OF MINDFULNESS ON STUDENT SUCCESS

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As schools are adopting the whole child approach, it is important to examine how the approach impacts academic success. The purpose of this study was to examine the effects of a school-based mindfulness curriculum on student reading scores and classroom engagement. Using a multiple baseline design, this study examined the rate of improvement in reading scores and academic engagement in elementary students receiving a mindfulness curriculum. The curriculum was introduced in addition to the regular curriculum in 15-minute lessons twice a week. Rate of improvement was examined utilizing curriculum-based measures, while student engagement was evaluated through classroom observation methods. This study found that the following the implementation of a mindfulness curriculum oral reading fluency increased an average of three words correct per minute, retell fluency an average of three words per minute. Furthermore, student engagement during reading instruction increased from 52% to 75% in group one, and from 38% to 73% in group two. At maintenance, five weeks after Group One completed the mindfulness curriculum, and two weeks after Group Two completed the curriculum, oral reading fluency increased nine words per minute from baseline mean in Group One, and four words per minute in group two. Additionally, engagement for Group One increased from 52% at baseline to 65% at maintenance. Group Two's engagement increased from 38% at baseline to 92% at maintenance. While there was a positive directionality to the

group reading scores after introduction of the intervention, due to limitations of the study, causation cannot be attributed to the mindfulness curriculum.

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CHAPTER I

INTRODUCTION

Historically, education focused on teaching children skill acquisition (Ritchart & Perkins, 2000). Teachers expected students to memorize and restate information. Skill acquisition leaves little room for creativity (Ritchart & Perkins, 2000). The whole child approach adds focus on social-emotional, physical, creative skills, in addition to the cognitive skills, which increase a student's self-worth, and improve long-term outcomes (Thomsen & Ackermann, 2015). Teaching children social and emotional skills is one way to broaden education, moving toward a focus on the whole child (Yoder, 2014). Children spend many of their formative developmental years in school (Waters, Barsky, Ridd & Allen, 2015). Much of that time focuses on cognitive skills such as reading, writing, and mathematics. The area of students' social and emotional health has become a focus of the education system in the past two decades (CASEL, 2015; Edutopia, 2011). This new focus has given rise to questions about the best way to support students, especially as students struggle with mental health and behavioral disorders.

In recent years, there has been an increase in the number of adolescents diagnosed with mental health disorders (Schonert-Reichl & Lawlor, 2010). Through the modern focus on social-emotional skills with students, educators have an opportunity to assist those who may be dealing with mental health issues. In fact, of adolescents ages 13-18, 22% have suffered from a severe mental disorder at some point during their life (Merkiangas, et al., 2010). With the lifetime prevalence of adolescent mental disorders, working with elementary school children on Social and Emotional Learning (SEL) skills may prove beneficial; because the children have not yet manifested problem behaviors or emotions (Schaps & Battistich, 1991).

Not only is there is a need to be proactive with children's mental health it is also likely

students need to learn foundational social-emotional skills to succeed in school, and later in life (Yoder, 2015). Just as children need reading, writing, and math interventions to gain these skills, they also need to learn how to manage their thoughts, feelings, and behaviors (Ritchhart & Perkins, 2000). In the same way problem behaviors can hinder a student's academic success. An increase in positive behaviors could improve academic success (Metz et al., 2013). If schools take a whole child approach, including SEL students may show increased abilities to utilize these skills in the education system, as well as holistic improvement in their daily lives. One approach to SEL is using mindfulness techniques to assist children in learning self-regulation skills. An exploration of recent research suggests a growing need for more study on the effects of mindfulness on student success.

Definition of Terms

Every Student Succeeds Act (ESSA)

A reauthorization of the nation's education law signed into law December 10, 2015. This new law replaces the previous version, No Child Left Behind. (U.S. Department of Education, n.d.)

Equanimity

Equanimity is the ability to be with any experience without over-identifying, pushing away, or grasping on to them. It is a balance of caring yet remaining impartial to experiences (Desbordes et al., 2015).

Executive Functions

Executive functions are brain-based cognitive skills that facilitate critical thinking and self-regulation. The skills of executive functions enable the brain to organize and act on information (Learning Works for Kids, 2016; Morin, 2017)

Social-emotional learning (SEL)

Social-emotional learning is a process through which people build self-awareness, self-regulation, and decision making skills to manage emotions, set goals, and establish relationships, which supports success in school and in life. The competencies developed are foundational for positive health practices, engagement, and school success (CASEL, 2015).

Meditation

Meditation is an umbrella term used to describe a range of practices used to increase self-awareness, relaxation, and well-being. Meditation is a training of the mind for various ends (Lutz, Slagter, Dunne & Davidson, 2008).

Mindfulness

Mindfulness, in its Buddhist origins mindfulness (Sati), is defined as memory (Sujato, 2012). In the modern clinical uses, mindfulness involves bringing a nonjudgmental awareness to the present moment (Kabat-Zinn, 1990).

Whole Child

The whole child approach is an educational perspective that works to ensure each student is healthy, safe, engaged, supported and challenged. Working with students in a holistic capacity understanding children are more than academics, they are also artistic, physical, moral, social beings (Noddings, 2005; The Whole Child, n.d.).

CHAPTER II

LITERATURE REVIEW

This chapter provides an overview of previous research relevant to the current study. It introduces the concept of social-emotional learning, as well as current educational practices such as the Every Student Succeeds Act and the Common Core standards. It goes on to explain the difference between meditation and mindfulness before exploring the connection between mindfulness and social-emotional learning regarding student academics.

Social-Emotional Learning

The Collaborative for Academic, Social, and Emotional Learning (CASEL) has proclaimed SEL is an integral part of education for over 20 years (CASEL, 2015). This organization identified five SEL competencies; self-awareness, self-management, social awareness, relationship skills, and responsible decision making (CASEL, 2015). Professional organizations like CASEL and the American public both recognize the importance of these skills (Weissberg & Carscarino, 2013). In the 2013 PDK/Gallup Poll, Americans reportedly agreed that a full range of social, emotional, and cognitive skills should be included in public schools (Weissberg & Carscarino, 2013). This increased interest in SEL spurred public health science research on the effects of SEL on health and wellness (Jones, Greenburg, & Crowley, 2015). While exploring the relationship between teacher assessments of kindergartners and future outcomes, Jones et al. (2015) found SEL skills have positive effects on graduation rates, college attendance, and employment. Schools, teachers, and parents express the need to include SEL for school success and begin to set SEL standards for students as young as prekindergarten (Denham, Bassett, Zinsser, & Wyatt, 2014).

Although SEL in schools is increasing, there remains a gap in the evidence and understanding of best practices regarding SEL implementation (Lawlor, 2014). Despite this gap, schools and state boards of education are working to find ways to incorporate whole child educational practices in SEL areas. In Washington State, there is a group working to find ways to incorporate SEL into school districts statewide (SEL for Washington, 2015). The same group announced that the budget signed by the Governor is to include funding for an SEL workgroup. The SEL for Washington workgroup, Social-emotional Learning Benchmarks Workgroup (SELB) issued a report on October 1, 2016, outlining recommendations for SEL in the state (SELB, 2016). The report recommended implementation of a statewide SEL framework. The SELB cautions the SEL standards should not become another assessment tool, as there are many variables that can affect a student's SEL development. For instance, neglect, abuse, grief, trauma, stress, or anxiety can all affect children differently. Leaving a need for school personnel to be aware and accepting of the variability to avoid labeling or stigmatizing students. Instead, the workgroup offered a more integrated approach to improve access to mental health, changing the approach to discipline, reengaging students and an endorsement of increased communication between schools and homes (SELB, 2016). According to CASEL (2015), there are also federal policies being developed and the Every Student Succeeds Act (ESSA) supports SEL.

Every Student Succeeds Act

After being signed into law in December 2015, ESSA takes full effect for the 2017-2018 school year (Vaillancourt-Strobach & Cowan, 2016). ESSA yields control to individual states, so they can design their own accountability systems (ASCD, 2016 a). The ESSA permits states to establish student performance goals, offer measures beyond standardized tests for student performance, and the ability to implement their own plans for improvement when they are low-

performing (ASCD, 2016 a). The National Association of School Psychologists (NASP) highlights, with this law, school and student success will be measured by more than standardized test scores (NASP, 2016 a). In fact, ESSA requires at least one measure of student success that allows for meaningful differentiation in school performance, this can include student engagement, college readiness, access to advanced coursework, school climate among other measures (Darling-Hammond et al., 2016). Schools will have more opportunity to support student success while improving school climate which reflects a whole child approach (ASCD, 2016 b). ESSA integrates school climate, safety efforts comprehensive school mental health, as well as behavioral services into the school system (NASP, 2016 b). The services ESSA allows for can include developing, implementing, and evaluating interventions for academic, SEL, mental or behavioral issues, and developing individual and small group counseling services including social skills (NASP, 2016 b). In fact, districts will be required to allocate 20 percent of title IV funds to support a well-rounded education, and 20 percent to support safe and healthy students (ASCD, 2016 c; CASEL, 2016).

One of the challenges with SEL skills is the ability to clearly define and assess them. Long (2016) explains some of the components of ESSA will include multiple assessment measures especially those for SEL. This offers students other options to illustrate their competency, rather than expecting all students to perform well on traditional assessment measures. These factors include critical thinking, collaboration, communication, and independent learning ability (Darling-Hammond et al., 2016). According to Long (2016), ESSA also focuses on growth rather than on proficiency. ESSA allows for measures of student growth, even for students whose scores fall below proficiency (Long, 2016).

These new measures focus on students' individual abilities and skills, which may foster a sense of self-worth and, thus promote competency in SEL skills. In implementing ESSA, and SEL in schools, one of the primary challenges is finding a way to fit SEL skills into existing curricula easily with limited disruption.

Common Core Standards

Social-emotional learning is also in line with the Common Core standards ensuring it should fit into current curriculums (SEL for Washington, 2015). Because of the government investment in increasing SEL, researchers must explore the best ways to incorporate SEL into the curriculum. The Common Core was designed to provide consistency in education (Common Core State Standards Initiative, 2016). Outlining what students should be able to do at the end of each grade, the Common Core is a list of standards in the areas of Mathematics and English Language Arts (ELA) (Common Core State Standards Initiative, 2016).

Zakrzewski explains Common Core standards support SEL highlighting how SEL is innately beneficial to academic success (2014). For instance, when examining the math standard, one can find SEL skills including as self-management, and self-efficacy (Zakrzewski, 2014). For a student to meet the math standard, which requires students to make sense of problems and persevere to solve them, the student must have self-efficacy, be able to manage stress, regulate emotions, and maintain attention control (Zakrzewski, 2014). These skills are included in the SEL learning standards and an SELB workgroup proposed benchmarks (Social-emotional Learning Benchmarks Workgroup, 2016). As schools work to prepare students to be college and career ready, it is important to understand that SEL skills are as useful as academics (Elias, 2014 a). Mastering academics and Common Core standards occur better when school climate and culture supports and encourages SEL traits (Elias, 2014 b).

Meditation

Mindfulness is often confused with meditation as it has similar goals, primarily to increase self-awareness; Mindfulness and mediation are complementary. Meditation is an umbrella term that refers to a myriad of activities including prayer, chanting, contemplation, and mindfulness (a technique that helps a person quiet the mind and is often associated with sitting, eyes closed, mantras, visualization, or yoga; Cowen, 2016). Mediation can incorporate mindfulness. Meditation often requires setting aside time to practice, with the goal of creating tranquility, bliss, and deeper insight (National Center for Complementary and Integrative Health, 2016). While there are many types of meditation, there are common factors among them: sitting or lying in a comfortable position with few distractions, placing attention on an object, word, or sensation without judgment (National Center for Complementary and Integrative Health, 2016). The list of meditation forms is extensive; however, most are defined as either Focused Attention (FA) or Open Monitoring (OM; Lutz, Slagter, Dunne & Davidson, 2008). When using FA meditation there is the use of an object to focus on, while in OM meditation the focus is on not reacting to the moment. Mindfulness would fit under the OM meditation practice.

Mediation has a long history stemming from many religious traditions (Matthieu, Lutz & Davidson). In particular, the Buddhist view of meditation is an active state in which the meditator is working to discourage an unwelcome mental state or to subdue an unwelcome thought (Buddha Dharma Education Association Inc., 1998).

Mindfulness

There are many definitions of mindfulness, many of which characterize the concept as being fully aware and attentive to the present moment (Brown & Ryan, 2003), and avoiding judgments (Kabat-Zinn 1994). However, avoiding judgment indicates in some way that

judgment is *bad* and nonjudgmental is *good*, therefore, mindfulness incorporates the aspect of equanimity (Schonert-Reichl & Roeser, 2016). In mindfulness, the goal is not to judge the judgments that may arise, but to be with any experience without over-identifying, grasping onto, or pushing it away. Equanimity, a state of non-judgment, in mindfulness encourages participants to notice the experience, and any thoughts or feelings, including judgments, which come up in a balanced way (Schonert-Reichl & Roeser, 2016). As the term equanimity is new for many people and this study focuses on children, the phrase *with kind curiosity* (Dormoy, 2015) replaced equanimity in this study.

For instance, if a child practices mindfulness and notices his/her mind wandering; kind curiosity would allow the child to notice his/her wandering mind but not focus on judging it. The child would not reprimand himself or herself for leaving the present moment, just notice s/he did and return to awareness of the moment. Therefore, in this research, the definition of mindfulness was paying attention to the present moment with kind curiosity. Mindfulness can be utilized to cope with a wide spectrum of issues including self-regulation, focus, self-awareness, and impulse control; practitioners and teachers strive to develop this deeper sense of self-awareness, improve emotional recognition, impulse control, and focus (Cowen, 2016). There are ways to incorporate mindfulness into everyday activities; with practice, even things like walking down the street can be done mindfully

While a feeling of calm is often a byproduct of mindfulness that is not the primary purpose. The goal is to fully embrace an experience while recognizing and *sitting with* all the emotions attached to that experience. Calmness does not receive a higher value than other emotions like anger or sadness. Mindfulness helps to normalize all emotions. This allows students to accept their emotional experience with kind curiosity. Mindfulness is also not the

absence of thought (Cowen, 2016). Mindfulness practice brings awareness of thought; it does not suspend it. While multiple spiritual traditions have utilized mindfulness, mainstream settings are incorporating it as a secular activity (Cowen, 2016). Mindfulness can create a peaceful environment but should not be forced, it is not about discipline. Attempting to force children into a state of focus, or demanding a chaotic classroom *shut up* works against the goals of mindfulness (Cowen, 2016). Using mindfulness to bring awareness may offer these changes but forcing it will not help to bring a child into a mindful moment and may cause an aversion to mindfulness in the future (Cowen, 2016).

Ritchhart and Perkins (2000) contrasted the difference between mindless responses and mindful responses when they presented these examples: they explained a scenario in which second-graders from a traditional class were posed the following question: “There are 26 sheep and 10 goats on a ship. How old is the captain?” None of the students questioned the validity of the problem, in fact, the majority, 88%, responded with the age 36. When a mindfulness-based second-grade class was given the same question, close to one-third of the children raised suspicion about the nonsensical problem (Ritchhart & Perkins, 2000 p. 29). It seems clear when children are on providing mindless responses in school, they risk answering problems without examining the nature of the questions.

Boredom and malaise also result from mindlessness creating an environment that feels stagnant and may increase anxiety (Langer & Moldoveanu, 2000). Additionally, when students begin to feel they know the material well, they view it more mindlessly (Rempel, 2012). Using mindfulness can decrease mindlessness leading to an increase in creativity, flexibility, as well as the ability to retain and use information (Ritchhart & Perkins, 2000). Mindfulness can help students disengage from mindless automatic responses (Thompson & Gauntlett-Gilbert, 2008).

By becoming more aware of their surroundings and being attentive to their inner-feelings, choices, and behaviors may become more consistent with the needs and core values of the students (Brown & Ryan, 2003).

Mindfulness to Support Social-Emotional Learning

Most studies examining the effects of mindfulness on youth focus on decreasing negative behaviors rather than increasing positive behaviors (Waters et al., 2015). This appears congruent with the western idea of medicine, which focuses on the illness, not prevention (Waters et al.). However, this may be changing in the education system as SEL becomes increasingly prevalent in the school curriculum.

There is a link between mindfulness and SEL skills; skills that the education system currently promotes. While SEL focuses on interpersonal skill development and psychoeducation, mindfulness focuses on attention training to better use SEL skills (Brensilver, 2016). Specifically, Brensilver (2016) explains mindfulness builds on self-regulation directly affecting the SEL skills of self-awareness and self-management. As SEL programs utilize equanimity to teach students to reduce impulsivity, mindfulness cultivates the concept of equanimity improving student's ability to notice an experience and pause before reacting (Brensilver, 2016). Mindfulness compliments SEL programs by offering students tools to work with the nervous system and brain (Mckenna, 2016).

SEL programs engage executive functions and brain-based skills, such as flexibility, focus, planning, self-awareness, self-control, time management, and working memory (Growing Minds Today, n.d.; Learning Works for Kids, 2016). Both cognitive and emotional skills include executive functioning (Brock, Rimm-Kaufman, Nathanson & Grimm, 2009). Kindergarten teachers reported socio-emotional skills are at the forefront of school readiness, while other

evidence supports learning-related skills, such as attention, as important predictors of educational performance (Brock, Rimm-Kaufman, Nathanson & Grimm, 2009). Utilizing mindfulness to build on cognitive and emotional SEL skills can, therefore, better prepare students for learning.

Integrating mindfulness into SEL programs, especially for those children with executive function difficulties, can be beneficial (Flook et al., 2010). As neural systems in attention, memory and self-control are interrelated with executive functions, better executive function skills from SEL programs, improve areas of other neural systems by proxy, including both emotional and behavioral areas (Flook et al., 2010). Children must use skills associated with cognitive problem-solving, and self-regulation within classrooms impacting academic learning (Brock, Rimm-Kaufman, Nathanson & Grimm, 2009). For instance, students must be able to utilize working memory to remember instructions, attend to the lesson, and stay on task to learn (Brock et al., 2009).

Teaching mindfulness to increase present-focused attention decreases preoccupation with other concerns and lowers anxiety and other emotions allowing more resources to focus on the task at hand (Brown, Ryan & Creswell, 2007). While many studies focus on the effects of mindfulness in adults, fewer focus on children. This is interesting as the tasks associated with SEL, such as maintaining positive engagement, and managing emotions while maintaining positive social interactions, are necessary for school behavior (Denham et al., 2014).

Students who enter school for the first time must sit still while attending to lessons and to have positive social interactions (Denham et al. 2014). The use of mindfulness in schools can improve student's behavior, and ability to focus, and maintain attention (Franco, Manas, Cangas & Gallego, 2011). Other studies examining the use of mindfulness with youth found improvements in cognitive functioning, emotional regulation, behavior, social skills and reduced

stress, anxiety, and depression (Brensilver, 2016). In fact, incorporating a brief one-minute mindfulness activity at the beginning of class leads to measurable stress reduction (Newmark, Krahnke & Seaton, 2013).

Trauma and stress in childhood impact both social and executive functioning (Meiklejohn et al., 2012). Stress experienced by children can result in externalizing behaviors such as anger, or internalizing behaviors such as lowered self-esteem, all of which can affect school performance (Rempel, 2012). Given that many students have stressors including family, schoolwork, and peer-interaction conflicts and that these factors have a likely impact on well-being and general functioning; interventions to combat stress are beneficial for the learning environment (Greenburg & Harris, 2012; Meiklejohn et al., 2012).

In fact, the stress students experience impacts brain structures affecting cognition and mental health in many aspects of the child's life (Zenner, Herrnleben-Kurz & Walach, 2014) highlighting the importance of teaching skills that assist students in combating stress and improving mental health. Specifically, researchers found mindfulness strategies can alter neural circuitry reducing depression and anxiety, and therefore promote health (Greenburg & Harris, 2012; Joyce, ETTY-Leal, Zazryn, & Hamilton, 2010). Davidson and colleagues found an increase in brain activation in areas associated with anxiety reduction and increased positive affect occurred after utilizing mindfulness (2002).

Students using Mindfulness-Based Interventions (MBIs) have reported decreased worry and mental health distress, as well as improved mood, concentration, feelings of calmness and overall well-being (Biegel, Brown, Shapiro & Schubert, 2009). Research also suggests students with learning disabilities experienced a decrease in anxiety and improved social skills and academic performance after using mindfulness skills (Rempel, 2012). Studies looking at

mindfulness as a treatment for externalizing disorders noted sustained behavioral improvements at an eight-week follow-up (Bogels, Hoogstad, van Dun & Restifo, 2008; Klatt, Harpster, Browne, White & Case-Smith, 2013). Using mindfulness with students demonstrating behavior problems improved behavior and school attendance (Franco, Manas, Cangas & Gallego, 2011).

Students who experience higher anxiety and mental health difficulties are at higher risk for school dropout, and problems with peer relationships than those without anxiety and other mental health problems (Schonert-Reichl & Lawlor, 2010). In addition, children's social-emotional skills and later psychological health are positively correlated, indicating increasing activation in these areas of the brain may have a positive influence on their behavior and academics (Schonert-Reichi & Lawlor, 2010). As many parents do not seek out programs for their children to assist with stress, adding beneficial universal prevention programs into the school can be a valuable option (Rempel, 2012).

Waters et al. reviewed the effects of 15 mindfulness-based programs in the schools and found them beneficial (2015). One study explored whether mindfulness in schools increased students' ability to maintain attention and found a decrease in teacher-reported problems; student reported reductions in test anxiety, and improved attention (Napoli et al., 2005). This is important to the education system as academics, SEL, physical, and mental health are interrelated, indicating the best way to cultivate one, is to cultivate all; allowing schools to offer a place to educate, support personal development, and prevent disorders, (Meiklejohn et al., 2012; Zenner et al., 2014).

By increasing attention regulation and decreasing mindlessness, students increase their skills in finding alternate interpretations of situations and reduce emotional reactivity leading to enhanced overall well-being (Waters, Barsky, Ridd & Allen, 2015). Additionally, research

indicates the use of mindfulness can increase self-compassion in participants; decreasing self-limiting thought processes and increasing the ability to cope effectively with stress (Neff & Germer, 2012). To guide students in coping with the stresses they face, teachers need strategies to support and empower students (Rempel, 2012). Furthermore, the addition of MBIs aligns with the whole child approach to education by encompassing the students academically, emotionally, socially, and ethically (Waters, Barsky, Ridd & Allen, 2015).

Mindfulness in Schools

Understanding that schools have limited resources, a whole child approach must fit within the current academic setting with minimal disruption. One approach that can fit into the school system is mindfulness (Zenner, Herrnleben-Kurz & Walach, 2014). School-based mindfulness programs have been sporadic as the field is working to make the adult MBIs developmentally appropriate (Mckenna, 2016). Incorporating MBIs into schools began in the early 2000s by teaching mindfulness as a tool for wellness and resiliency to teachers; and has evolved to the development of curriculum adapting techniques to the needs of children and adolescents (Mckenna, 2016).

Utilizing MBIs in the classroom can assist students to label emotional states, engage the parasympathetic nervous system when stuck in a fight or flight state, and promote grounding and centering (Mckenna, 2016). The incorporation of these skills can support creativity and critical thinking (Napoli, Krech & Holley, 2005). Furthermore, students learn perspective taking, school-related functioning, and prosocial skills (Greenburg & Harris, 2012; Rempel, 2012). As students develop the ability to disengage their attention and re-orient it to a more positive alternative interpretation of the situation, they increase their well-being (Waters, Barsky, Ridd & Allen, 2015). Moreover, as students learn to deal with situations more effectively, there are

fewer classroom interruptions, allowing the teacher and students to focus more on the lesson (Rempel, 2012).

Educators teach a classroom full of students with varying learning needs and manage those students' behaviors (Black & Fernando, 2014). Lower rates of disruptive behavior in the classroom, decrease emotional distress for those present and increases the likelihood of better learning outcomes (Black & Fernando, 2014). The use of MBIs can increase teacher self-efficacy, job satisfaction and job retention, which positively adds to the broader learning environment (Black & Fernando, 2014; Diamond, 2010). Therefore, MBIs assist with SEL program effectiveness and support better teacher-student relationships, classroom management, school climate, and stress relief (Jennings, Frank, Snowberg, Coccia & Greenburg, 2013; Wisner, 2014). Just as teacher-student relationships can improve, MBIs can assist with better social skills and interpersonal relationships in general (Brown, Ryan & Creswell, 2007).

Brensilver (2016) suggests MBIs promote prosocial attitudes and behaviors by helping students understand what they feel. For instance, it is difficult to be empathetic and take another's perspective, if the student is unable to pause and experience and understand his or her own perspective first. Mindfulness, therefore, allows a participant a personal encounter with his or her own feelings to better develop accurate empathy for others (Brensilver, 2016). Students need to be able to focus attention, they also need to be able to understand and regulate emotions, which can all lead to prosocial skills (Zenner et al., 2014). Students with prosocial skills in kindergarten, as assessed by their teachers, have positive outcomes later in their life (Jones et al., 2015).

Mindfulness and Academic Performance

Depression, anxiety, and low self-esteem hinder students academically by disrupting the cognitive processes and pulling focus from the task-at-hand (Rempel, 2012). Students in states of stress or emotional arousal may resort to an emotionally reactive state instead of a cognitive response state (Bakosh, Snow, Tobias & Barbosa-Leiker, 2015). Furthermore, teaching children mindfulness in the education process allows them to examine alternative views, and increase their creative thinking skills (Rempel, 2012). In fact, as MBIs stimulate plasticity in the brain and improve skills such as attention, information processing, memory, creativity and flexibility, skills that facilitate learning (Waters, Barsky, Ridd & Allen, 2015). MBIs can influence neural networks developed in infancy through childhood, which underlie skills such as self-regulation (Posner & Rothbart, 2005).

Of those studies examining mindfulness with students, few examine the effects of mindfulness on academic performance (Durlak, Weissberg, Dymnicki, Taylor & Schellinger, 2011; Waters et al., 2015). Research primarily focuses on attention and SEL measures, however, it is, in part, through these skills that academic outcomes improve (Bellinger, DeCaro & Ralston, 2015; Franco et al., 2011). However, research indicates MBI programs may improve academic performance, attention, and decrease stress; enhancing the holistic development of the student (Bakosh et al., 2015; Nidich and Nidich, 1989; Rempel, 2012; Zenner et al., 2014; Zoogman, Goldberg, Hoyt & Miller, 2014). Developing skills in SEL and attention using MBIs can improve children's ability to adjust to school and acquire academic skills (Posner & Rothbart, 2005).

The ability for students to cope with stressful situations can improve academics, especially in high-stakes testing situations, as students are able to devote more energy to the test

(Bellinger et al., 2015). Additionally, students using MBIs retain information better as mindfulness has effects on relaxation, working memory and interest in the present moment (Mrazek, Franklin, Phillips, Baird & Schooler, 2013; Ramsburg & Youmans, 2013).

As discussed earlier, students experience stress in both personal and academic settings. High-stakes tests are prevalent in the current education system adding to the anxiety experienced by students, this test anxiety correlates with lower academic performance (Cunha & Paiva, 2012; Bellinger et al., 2015). The more test anxiety a student experiences, the higher the feeling of inadequacy, which leads to social anxiety and self-criticism (Cunha & Paiva, 2012). Mindfulness offers a tool for coping with stressful situations, increases self-concept, and can offer skills to inhibit intrusive or ruminating thoughts and self-criticisms (Bellinger et al., 2015; Franco et al., 2011). Incorporating MBIs into classrooms can offer skills for students to reduce anxiety and thereby improve academic outcomes (Beauchemin, Hutchins & Patterson, 2008).

Learning to regulate emotions and cope with stress can help students to attend to the current task increasing academic performance (Bellinger et al., 2015; Brown, Ryan & Creswell, 2007; Newmark, Krahnke & Seaton, 2013). Worrying about performance and consequences utilizes working memory, creating a competition for the memory system (DeCaro, Rotar & Kendra, 2010). This competition disrupts the ability of the working memory to focus on academics resulting in lower performance, the higher the stakes, the higher the worry (DeCaro et al., 2010). Utilizing mindfulness skills during times of increased stress can prevent the deterioration of working memory, as well as improve reading comprehension, visuospatial processing, and backward digit memory (Mrazek, Franklin, Phillips, Baird & Schooler, 2013).

Incorporating a brief, MBI into schools can offer academic benefits and it is feasible (Rempel, 2012). Teachers must accept implementation in the classroom to ensure fidelity of the

mindfulness-based program intended to target SEL skills (Schonert-Reichi & Lawlor, 2010). There does appear to be a high acceptability rate among teachers and students using MBIs (Klatt et al., 2013; Zenner, Herrnleben-Kurz & Walach, 2014). However, professional trainers rather than classroom teachers often implement MBI programs and few programs have been manualized making training teachers and program comparisons difficult (Bakosh et al., 2015; Zenner et al., 2014). In fact, peer-reviewed journals have published studies on only 60 percent of youth mindfulness programs all of which have been pilot studies (Waters et al., 2015).

Creation of multiple programs has occurred within the past 15 years (Meiklejohn et al., 2012). These programs may focus on MBIs, but the methods used to teach the skills differ. MBI research does show maintenance of improvements over time (Klatt et al., 2013; Semple, Lee, Rosa & Miller, 2009). Additionally, research indicates results of a brief exposure to mindfulness instruction yields results (Wisner, 2014), however, the more frequently students practice the better their results (Kuyken, Weare, Ukoumunne & Huppert, 2013). Most programs range in length from four to 24 weeks (Zenner et al., 2014)

One of the largest studies conducted on MBIs in schools took place in a public elementary school in California (Black & Fernando, 2014). The program used, *Mindful Schools*, collected data from 409 students at three assessments periods finding improvements in behavior, attention, self-control, participation, and respect for others that lasted up to seven weeks after the intervention (Black & Fernando, 2014). While this study did not specifically examine academics, increasing attention and prosocial behavior may have implications on academic outcomes. The Mindful Schools program teaches mindfulness with a goal to improve school readiness, aptitude, and mental health (Biegel & Brown, n.d.). Over 11,000 students in 41 schools have received the Mindful Schools curriculum (Meiklejohn et al., 2012). Its wide usage

makes an evaluation of its effectiveness across educational domains (academic, social-emotional etc.) important.

The current study posed the following question: Will students rate of improvement in academics increase after receiving mindfulness curriculum. I hypothesized the implementation of a mindfulness program would positively influence student academic success.

CHAPTER III

METHODS

Participants

The participants in this study were fourth-grade students from Selah Intermediate School (SIS) in Selah, Washington. The age range of the participants was between ages 9 and 11 years old. Zelazo and Lyons explain self-regulation is more malleable during younger ages while the brain is primed for neural plasticity (2012), making this a prime age group to work with. All participants were in a general education elementary classroom in the school; there were no exclusionary criteria regarding age, race, or socioeconomic status. Students continued to receive regular classroom instruction as well as current SEL program. All students were from the same fourth-grade general education class, which had three teachers who rotate teaching subjects. Students were randomly assigned numbers and then divided into groups. Students with odd numbers were placed in group one, and students with even numbers were assigned to group two. Group one consisted of eight students, five girls, and three boys. Group two began with seven students, three girls, and four boys. However, one student, student six, moved after the three baseline data points were collected, leaving group two with six students.

Design

This study utilized a multiple baseline design, allowing all students to benefit from the mindfulness curriculum. However, due to time constraints, only two groups were utilized reducing the validity of this design. Additionally, it is not possible to remove the intervention once students have been taught the mindfulness skills, as they cannot unlearn them. Multiple baseline design allowed for the mindfulness curriculum to be introduced in a sequence. In this design both groups began with a baseline phase that continued until the mindfulness curriculum

was introduced. Each group can be considered as separate A-B designs, with the A phase lasting longer for group two before the mindfulness was introduced

During baseline, subjects received regular classroom instruction, the rate of improvement assessments in reading was tracked. Presentation of the mindfulness curriculum was staggered between the two groups of students. The first group received the mindfulness curriculum for two weeks before the second group began. The mindfulness curriculum was presented in addition to the regular classroom curriculum. To maintain anonymity, the researcher assigned a number to each student, this file was password protected. Students were removed from their class at 8:35 am twice a week to receive the mindfulness curriculum, they returned to class at 8:50 am. Each student continued to receive the Sanford Harmony SEL program which was already in place school-wide. Each class receives 15 minutes of Harmony time five days a week. The Sanford Harmony curriculum includes a Meet Up time, during which each morning students sat in a circle and share ideas and experiences, develop listen and show interest in others, and solve problems (Sanford Harmony, 2017). Mindful groups were conducted in the hallway just outside of the classroom. The researcher predicted the mindfulness curriculum presented twice a week, would increase reading scores at a higher rate than pre-intervention scores as well as when compared to waitlisted peers.

Mindfulness Curriculum

This study utilized the Mindful Schools Curriculum. This curriculum was designed for under-resourced public schools, to be adaptable for diverse environments, and integrated into the regular school day (Mindful Schools, 2017). The program consists of 16 lessons that require 15 minutes presented twice a week for 8 weeks (Mindful Schools, 2014). A qualified outside trainer or a classroom teacher can implement the curriculum after training (Mindful Schools,

2017). Prior to the study the researcher completed the six-week training for the Mindful School Curriculum and was therefore qualified to implement the training.

The Mindful Schools program conducted a study with 937 students and 47 teachers in an Oakland public school (Mindful Schools, 2017). The study examined the effects of mindfulness on behavior finding a small effect. As many mindfulness programs have limited research support regarding academic progress, this program was chosen because of its development for large varied population, additionally, it is adaptable, and can be integrated into the regular school day. Students also received a workbook to practice the skills at home. The workbook consists of coloring pages with activities they can try at home and then write and draw about. While the curriculum also includes a workbook for teachers that contains ideas and sample activities to incorporate mindfulness into the classroom environment, this was not the case in the current study as there were separate groups in the same classroom at different lessons in the curriculum.

Instruments

Dynamic Indicators of Basic Early Literacy. To monitor student's academic progress, this study used a Rate of Improvement measure (ROI). These measures assess academic progress between points in time. ROI was calculated by calculating the difference of words correct per minute between baseline and intervention phases. Monitoring student progress requires tools that are sensitive to small changes, but that do not confound the data after frequent administration from practice or carryover; the instrument also needed to be quick to administer (Cusumano, 2007).

This study utilized the Dynamic Indicators of Early Literacy (DIBELS) Next Reading measures. Dynamic Indicators of Early Literacy Next reading measures assesses early literacy skills (Center on Teaching and Learning, 2017). Curriculum-Based Measurement (CBM)

monitors progress and can quantify rate of learning, and student's response to specific programs (Dexter & Hughes, n.d.). Curriculum-Based Measurements offer an evaluation of the impact of instruction, intervention, or implementation of a program (Cusumano, 2007). Progress monitoring is effective when it is short and easily administered by teachers or school psychologists (Dexter & Hughes, n.d.). Dynamic Indicators of Early Literacy Next CBM's take between two and 30 minutes to conduct depending on the specific test (Center on Teaching and Learning, 2017). The specific DIBELS Next Reading measure used for assessment of students in the current study was the DIBELS Oral Reading Fluency (DORF) measure. This measure is recommended for the middle of first-grade through the end of sixth-grade (Center on Teaching and Learning, 2017). Students are scored based on the median number of words read correctly in one minute. The DORF measures provide valid and reliable data for decision-making and student outcomes (Center on Teaching and Learning, 2017; Dewey, Powell-Smith, Good III & Kaminski, 2014; Good III et al., 2013; Powell-Smith, Good III & Atkins, 2010).

Social Validity Survey. Social validity of the MBI was assessed using a paper questionnaire (see appendix A) given to the teacher in week 16 of the study. This measure was chosen as its format is similar to educational evaluations, and its brief format takes into account the time demands of the classroom teacher.

Dependent Variables

Additional Variables

Engagement. Student engagement is a multifaceted construct referring to the degree of attention, curiosity, and interest students show during learning (Hidden Curriculum, 2014). Multiple researchers link school engagement to academic achievement (Appleton, Christenson & Furlong, 2008; Leonard, Stiles, Gudino & G, 2016). Additionally, as mindfulness works to

increase present focused attention, allowing students to be more engaged in the moment. For this study, academic engagement was assessed using a partial interval observation method during reading instruction. A trained research assistant, Felicia Hernandez, a current School Psychology student in the second year of her program helped evaluate student engagement in the classroom. She also worked in the district and completed all required research training and district background checks. Ms. Hernandez was assigned to group two, who she observed once at baseline, and weeks one, and eight of intervention, and week 16 of the study. She was scheduled to also observe in week four, however her schedule did not allow for this. Each student participant in the group was observed for a ten-minute period in fifteen-second intervals. Percentage of engagement was noted. Interobserver agreement was conducted in twenty percent of the intervals.

Social Validity. Social validity assessments offer the ability to determine the acceptability of an intervention (Schwartz & Baer, 1991). Stakeholder buy-in is imperative to the success of interventions in schools and is especially useful in single subject design interventions (Robinson-Zanartu, Mendoza, Mesa & Wager, 2017).

Procedure

The primary researcher obtained permission from the targeted elementary school using the Letter of Cooperation (see appendix B). A selection of teachers at the school was on a volunteer basis. Teachers gave parents' consent forms for their children's participation, which included information about procedures and risks and benefits; in addition, the form explained the purpose of the study (see appendix C). The researcher sat with the students, explained the study, gave the assent form (see appendix D) and confirmed students' agreement to participate. All students with consent and assent participated in the study.

The researcher attended the classroom twice a week for 15 minutes per session utilizing the Mindful Schools curriculum. The lessons took place at a time determined by the teacher's classroom schedule. The time agreed upon was during the regular SEL program at the start of the day. The primary researcher gave the mindfulness lessons to each group twice a week, during the intervention period. The researcher maintained a 99 percent treatment adherence, having missed ringing the mindful bell after one class.

At baseline, students were assessed using the DIBELS Next Oral Reading Fluency (DORF) measure three times during the first week of the study. The researcher and trained research assistant administered the DORF on all participants of the study noting only the student's assigned number on the DIBELS scoring form. Only the researcher and assistant had access to the forms. The primary researcher conducted DIBELS assessments with group one, and the assistant conducted the assessment with group two students. The baseline assessments occurred on Monday, Wednesday, and Friday of week one during the class SEL meeting time. Weekly progress monitoring assessments were planned to occur on Friday mornings at the same time as the Mindfulness curriculum, however, due to classroom schedule changes, after week four of the study, DIBELS assessments were completed weekly on Fridays at 1:45 pm. This change occurred as the science teacher who initially agreed to students being pulled from her class originally taught the science block in the mornings but switched with the math teacher to teach later in the day. During the weekly intervention assessments, students were asked to take a mindful breath prior to reading the passage.

The Mindful Schools curriculum was implemented by the researcher in the intervention groups and run for 8 weeks for each group. As group two started the curriculum two weeks after group one the curriculum ran for a total of 10 weeks, with the first week of baseline data and a

follow up DIBELS assessment two weeks after curriculum for both groups ended, the full study lasted 13 weeks. Students' DIBELS Next Reading scores were collected weekly by the research and research assistant for the 10 weeks of curriculum, and one last time two weeks after curriculum ended for both groups. Effects of the mindfulness curriculum were evaluated by comparing the level of performance at baseline and during the intervention.

CHAPTER IV

RESULTS

The purpose of this study was to examine the effects of a mindfulness curriculum on student academic success. Specifically, this research sought to understand students' rate of improvement in reading fluency after engaging in a mindfulness curriculum in addition to their current academic curriculum and SEL curriculum. Students were removed twice a week from their normal SEL curriculum to receive the mindfulness curriculum. At the onset of the study, 15 students returned consent and began the baseline data. One student, number 6, moved after the baseline period, leaving the study with 14 participants.

Students participating in the study engaged in the mindfulness curriculum during the Meet Up time but continued to receive Meet Up time three days a week. The researcher and research assistant conducted the DORF assessments during science class for two minutes once weekly. The researcher and assistant also observed students during reading class to track academic engagement.

The researcher analyzed the rate of improvement in oral reading fluency scores on DIBELS assessments, see *Figure 1*. The researcher analyzed individual and group data, for oral reading fluency and retell scores. The graphs constructed for each group and individual examined both oral reading fluency and retell fluency. Student engagement was recorded on a group level to determine each groups' engagement level during reading instruction.

Between-Groups Oral Reading Fluency

At baseline, both groups were stable and followed a declining trend in oral reading fluency, see *Figure 1*. Group One began the mindfulness curriculum after three baseline data points were collected January 29, 31, and February 2, 2018. The baseline point for each

individual in group one was collected, and a mean score was determined for all members of group one and plotted on a graph. This continued for each DIBELS score throughout baseline and intervention for both groups. Group One baseline scores were on a stable downward trend, mean oral reading fluency scores were 94, 87, and 80, until the onset of the mindfulness curriculum. Once the intervention began, an increase in oral reading fluency was apparent, with scores returning to near the highest baseline point mean scores for intervention had an average of 91. This increase in words correct per minute was occurred the first week of intervention. Scores took a brief two-week downturn with mean scores of 75 in week two, and 72 in week 3, then continued to increase over the following weeks. While there was an increase in variability, the trend also increased, with the majority of the data points falling above the trend line.

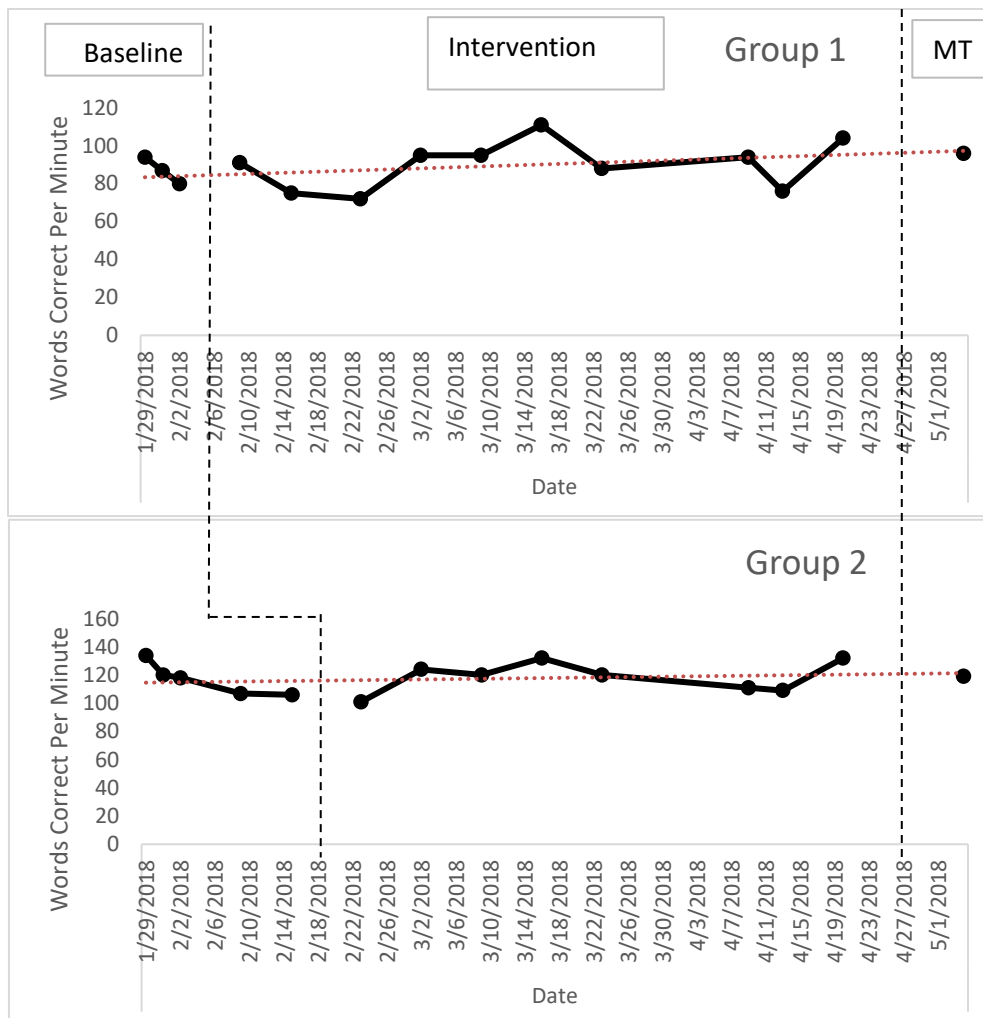


Figure 1. Between-Group Oral Reading Fluency Rates. This figure illustrates the change in oral reading fluency for each group 1/29/2018-5/1/2018.

Group One ended intervention in week nine (04/30/2018) just prior to spring break. Due to shortened day schedules and conferences, researchers were unable to collect DIBELS data during week nine, so DIBELS were conducted the Monday following spring break. Mean scores upon returning to school were maintained above the baseline mean, However, in week ten, scores for both groups dropped to their lowest scores since week six. Researchers noted that during DIBELS assessments on Friday, April 13th, students appeared to be having a difficult day. Many complained of being tired or feeling “meh”. Although asked, no reason was determined

for the student's struggles during this week. This was the first week back after spring break and students were given DIBELS assessments on Monday of this week as well as Friday. It is possible conducting two assessments in the week back from a break contributed to the lower scores. Scores for group one increased the following week, which was three weeks after completing the mindfulness curriculum. Overall, group one saw an average increase of three words per minute (wpm) from mean baseline to mean intervention scores.

Group Two followed a similar trend, with baseline scores stable and decreasing, mean scores of 134, 120, 118, 107, and 106. Group Two's mean scores did not begin to increase at the same time as group one. However, once mindfulness curriculum was introduced, two weeks after group one, DIBELS scores began following an upward trend line. Unlike Group One, Group Two did not have an immediate increase in ORF, increase occurred in the second week of intervention. Mean scores for Group Two were lowest in week one of intervention, 101, and rose in following weeks, with a mean score of 132 in week 11, the last week of data collection prior to maintenance. Group two increased an average of two wcpm from baseline to intervention. When examining overall wcpm groups one and two combined had an average baseline of 99, which increased to 102 correct words per minute with intervention.

Between-Groups Retell Fluency

Retell fluency (RTF) is a measure used to prevent students from speed-reading without attending to the meaning of what they are reading. A student who reads quickly and accurately on the DORF measure, but does not comprehend what they read is proficient in reading. However, retell is not an ideal measure of comprehension. Results for students in group one indicate RTF increased slightly with the introduction of the intervention from a baseline average of 21 words per minute, to 37 words per minute in week one of interventions, see *Figure 2*.

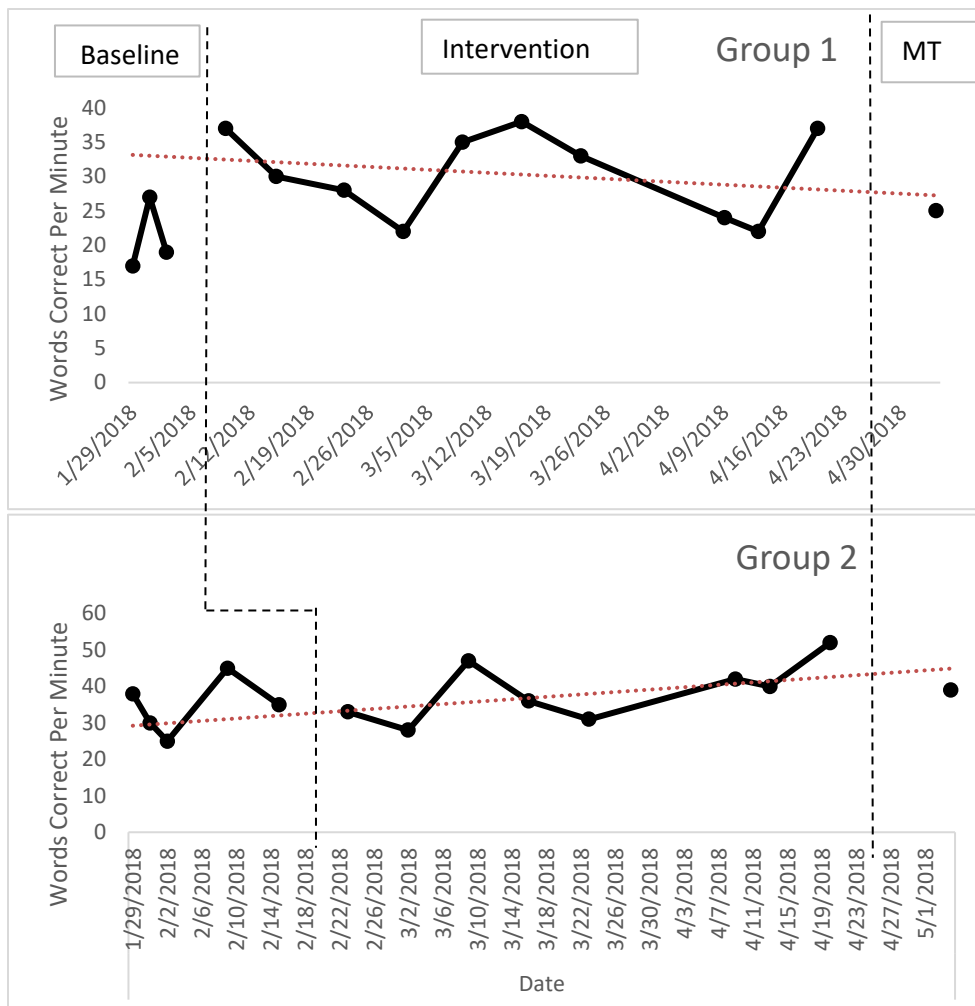


Figure 2. Between-Group Retell Fluency Rates. This figure illustrates oral reading fluency rates between the two groups.

Students average scores during intervention were 30.6 words per minute. Results for group two also indicate an increase in retell fluency with the onset of intervention group two baseline average was 35 words per minute, while the average during the intervention was 38.6 words per minute. Group one also showed a decrease in the assessments conducted the week upon returning from spring break but returned to near the highest score the following week.

Between-Subjects Oral Reading Fluency

Most students' baseline DORF measures indicated low scores prior to the introduction of the mindfulness curriculum, and at the onset of MBI students' scores increased, and continued to increase, see Table 1. Four students in group one made an average increase of 7.5 wcpm, while four students decreased three wcpm from baseline to intervention. Student number one had an increase of 14 wcpm from mean baseline to mean intervention. Student one's mean baseline score was the second lowest score (57). Student five who had an average baseline score of 106 wcpm, gained 13 wcpm. The four students who decreased in wcpm, decreased an average of three wcpm.

Table 1

*Difference Between Students' Baseline and Intervention
DORF Scores*

<u>Student</u>	<u>Baseline</u>	<u>Intervention</u>	<u>Difference</u>
1	57	71	14
2	119	117	-2
3	82	86	-4
4	105	101	-4
5	106	119	13
6	Moved	Moved	Moved
7	107	104	-3
8	167	156	-11
9	85	86	1
10	90	112	22
11	50	52	2
12	109	111	2
13	118	113	-5
14	113	114	1
15	89	87	2

Three students in group two increased an average of 8 wcpm, while three students decrease an average of 6 wcpm. The largest gain in either group was from Student 10 in group two. This student increased from 90 wcpm to 112 wcpm, an increase of 22 wcpm.

Between-Subjects Retell Fluency

Student retell scores increased an average of three wcpm overall, see Table 2. Even students in group one averaged an increase of 10 wcpm on their retell scores and only one student in group one decreased in wcpm. Student eleven decreased from a baseline average of 28 wcpm in retell to an average of 12 wcpm in retell.

In group two there were four students who increased an average of 10 wcpm, and two students who decreased an average of 6 wcpm. Student two decreased from 53 wcpm retell, to 46 wcpm, while student 10 decreased from 25 wcpm to 21 wcpm. Examining further, of the three students who decreased in retell fluency, one student also decreased in oral reading fluency. However, student eleven increased in oral reading fluency two wcpm and dropped four wcpm in retell. Student ten increased oral reading fluency by 22 wcpm but decreased in retell fluency by four wcpm.

Table 2

Difference Between Students' Baseline and Intervention Retell Scores.

<u>Student</u>	<u>Baseline</u>	<u>Intervention</u>	<u>Difference</u>
1	26	30	4
2	53	46	-7
3	5	20	15
4	30	36	6
5	14	27	13
6	Moved	Moved	Moved
7	29	30	1
8	67	72	5
9	24	26	2
10	25	21	-4
11	28	12	-16
12	34	24	10
13	21	46	25
14	24	33	9
15	21	30	9

Student Engagement

This study also examined student engagement during reading instruction. The researcher and research assistant observed each group for 10 minutes, with observers selecting one student from the group for each interval and coding if the student was engaged during any portion of the 15-second interval. At baseline, group one was engaged in the reading lesson 52% of the time, while group two was engaged 38% of the time. In week one of the intervention, after two mindfulness lessons, two observers analyzed both groups to ensure interobserver agreement.

Group one was engaged 55% of the time by observer of and 75% of the time by observer 2. This resulted in 73% agreement between the two observers. Variance in interobserver agreement could be likely due to observing different students in the group at different times. As no sampling plan was used during the first interobserver agreement, the subsequent interrater observations were conducted in the same way for consistency. At week six group one was

engaged 75% of the time. Observation for group two was not observed in week five as originally planned, however, an interobserver agreement was conducted in week six. Observer one found group two to be engaged 75% of the time, while observer two found them to be engaged 73% if the time, resulting in 97% agreement.

Results of the observations suggest student engagement increased after the implementation of the mindfulness curriculum. Group one engagement increased from 55% to 75% and group two increased from 38% engagement to 75% engaged. Additionally, student engagement was assessed two weeks after group two completed the mindfulness curriculum, which was four weeks after group one completed the curriculum. Results of that observation indicated group one was 65% engaged while group two was 95% engaged. Notably, during this last observation, there was considerable more distraction than during other observations. The students were conducting silent reading while their teacher prepared them for the school-wide jog-a-thon which was planned to start in 20-minutes. The teacher was calling table groups to the front of the classroom to pin papers on their backs, which would be used to track how many laps each student had completed. Furthermore, the teacher had brought her dog to the class and the dog was barking as people entered the room.

Social Validity

All three teachers in the selected classroom were given a social validity scale at the completion of the study, two scales were returned. Teacher one indicated she “agreed” that the mindfulness curriculum made a positive impact in the classroom, and the progress monitoring was feasible. She also “strongly agreed” that the mindfulness curriculum was easy to include in the classroom, was worth the time and effort, and she would recommend the curriculum to other educators. Teacher two responded that she “strongly agrees” the curriculum made a positive

impact, was easy to include, progress monitoring was feasible, was worth the time and effort and would recommend the curriculum to other teachers. She responded “neutral” to the curriculum improving school outcomes. However, she commented on the form explaining that at the beginning of the study she taught the students at the end of the day and did not notice any benefits. However, when the schedule changed she began teaching at the beginning of the day and was then able to see benefits in the morning.

CHAPTER V

DISCUSSION

The purpose of this study was to evaluate the effectiveness of implementing an MBI in a general education classroom on student academics. Overall, introducing a mindfulness curriculum as a supplement to regular classroom curriculum, and current SEL curriculum related positively to improved student reading scores. While most studies examining mindfulness in schools focus on the impact on behavior, the results of this study suggest mindfulness has a larger scope of benefits for students.

Mindfulness Curriculum and Academics

Results from this study suggest that mindfulness curriculum is both feasible and effective as an academic support. These results support previous research that suggests that SEL skills can improve academics (Bellinger, DeCaro & Ralston, 2015; Franco et al., 2011). Student reading scores in this study increased after the onset of the MBI. In fact, reading scores for group two, which began the intervention two weeks after group one, did not see an increase in reading scores until the introduction of the intervention. This suggests the MBI may be responsible for the improved reading scores although without a third intervention group the researcher cannot rule out another reason for the improvement. Each group had an increase in oral reading fluency scores from baseline to the end of the intervention period. Additionally, maintained an increase in scores at maintenance. Both groups also had an increase in retell fluency scores from baseline to end of the intervention.

The results of the RTF scores suggest students were reading for content and not simply increase the reading speed to the detriment of comprehension. Furthermore, reading accuracy for students remained above 90% for all students, indicating students increased fluency and

remained accurate. This suggests students were increasing their reading to learn skills not just their learning to read skills.

Conversely, an alternative explanation is that another unknown factor is responsible for the increase in reading scores. For instance, an increase in student motivation to do well on the DIBLES assessments could explain an increase in scores. However, as students were not offered incentives for quality of performance, internal motivation would be a likely factor influencing student performance. The effect of the MBI cannot be ruled out as a reason for an increase in personal motivation. As discussed earlier, SEL programs and the use of mindfulness can increase executive functioning (Growing Minds Today, n.d.; Learning Works for Kids, 2016). The effects on self-awareness and self-management could lead to an increase in motivation.

Mindfulness Curriculum and Engagement

Student engagement during reading instruction also demonstrated an increase in both groups. Group one had an increase of 23% from baseline to the end of the study. While there was a slight decrease during the maintenance phase, the distractions in the room were higher than normal, as there was a dog in the room and the class was preparing for a school-wide outdoor activity. Students in group one had an engagement level of 65% during this day, which was an increase of 13% from their baseline engagement scores. Group two had a 37% increase from baseline to intervention and continued to show an increase in the engagement at maintenance. Group two was observed to have 92% engagement during a class with increased distractions. One of the teachers in the class reported at the end of the study that this class had a lot of “behaviors” and could be “volatile.” She explained she saw a difference in the environment after the mindfulness curriculum was introduced. However, due to low interrater agreement and a lack of a sampling plan, results of engagement are not reliable or valid.

While the focus of this study was on effects on academics, skills learned reportedly reached other areas of participants' lives. Students were provided a workbook and told they could complete it at home after each lesson. Most students reported having completed the entire workbook within the first week of mindfulness classes. While many parents may not have the skills to share or seek out programs for their children (Rempel, 2012), the skills learned in the 30 minutes per week of mindfulness curriculum were utilized at home according to students' report. This suggests the skills learned during MBIs can help with social skills in many aspects of the students' life (Brown, Ryan & Creswell, 2007). Furthermore, while the students were not given scales to fill out, many students spoke to the primary researcher stating "all kids should have this class". Mindfulness allows participants a way to conduct inner exploration and has been linked to autonomous motivation (Deci & Ryan, 2008). Deci and Ryan explain when a person identifies an activity's value they integrate it into their view of self. When this is combined with an intrinsic motivation a person self-endorses their actions, and thus becomes autonomous motivation.

Fidelity of curriculum remained at 100% throughout the study. This was assessed by the primary researcher completing a checklist following classes. The ease of the program assisted in the ability to complete all components of the curriculum. Additionally, the curriculum allowed for the ability to adjust the schedule when needed. The ability to adjust and maintain fidelity of the program lends to the feasibility to incorporate MBIs into school programs.

Limitations

Although the findings of this study are encouraging, a number of limitations must be addressed. First, due to time constraints of the study, there were only two groups, rather than the three that were originally planned for the multiple baseline design. This leads to a lower internal

validity of the study. The addition of more groups, or classrooms, could increase internal validity and provide more data. Due to the small sample size, it is also difficult to generalize the results of this study to larger populations. Future research should include a larger sample size, with more groups to increase both internal and external validity.

Second, due to a lack of a sampling plan during engagement observations, engagement in this study lacks interrater reliability. A sampling plan would allow for each observer to be observing the same student at the same time and create a better assessment of reliability.

Third, scheduling also proved to be a limitation of this study. Due to time constraints baseline data was collected in a one-week span, while intervention data was collected at a weekly rate. At the onset of the study, a schedule was created for both implementations of the curriculum as well as conducting DIBELS and observations. However, as happens in schools, the class that was participating in the study went through multiple schedule changes throughout the course of the research. This led to adjustments in the times the DIBELS assessments and observations occurred. The schedule changes also resulted in less time during Harmony to conduct the MBI curriculum. This change resulted in less time at the end of the lessons for mindful breathing. The researcher chose to allow more processing time for students to discuss the lessons, and practice new skills. In addition, due to school holidays and half-days for conferences, on two occasions each group received two lessons in one day. Future studies would benefit from incorporating the mindfulness curriculum at the beginning of the school year and incorporating it directly into the SEL lesson. This would allow for appropriate time allocated to the curriculum, and would allow for holidays, and other school events.

The short time frame also affected the oral reading fluency probes that were conducted. Generally, when conducting oral reading fluency probes, three readings are given at one time,

and the middle score is obtained and reported. However, due to time constraints this study only conducted one probe per student per week. This reduces the internal validity of the study.

Lastly, fidelity of implementation was assessed by the primary researcher. To get a more accurate representation of fidelity, it would be best practices to have a third party observe the curriculum and assess fidelity.

Directions for Future Research

Further research would benefit from integrating the curriculum into a class setting from the beginning of the year. This would allow for more access to students and teachers. As one of the teachers reported noticing a difference when her teaching occurred closer to the curriculum, incorporating the curriculum in the class would allow for the teachers to incorporate skills throughout the day. The curriculum includes a teacher's workbook that could be used during full days, to study if there are longer lasting changes with more exposure throughout the day.

As this study found an increase in retell fluency, it may be of interest in future studies to examine the effects of an MBI on reading comprehension skills. While many students in the present study increased oral reading fluency, some of them did not increase retell fluency at a matching rate, suggesting their reading fluency increased, but their understanding of the material remained the same.

Conclusions

Due to the limitations, results of this study results are not internally valid. As there was not a third group, as needed in a multiple baseline design, changes in reading scores cannot be attributed to the intervention. While study suggests an increase in reading scores the researcher cannot conclude the increase is a result of the intervention. However, the change in directionality indicates a need for more research. Results of this study suggest examination into

the effects of mindfulness on student academics is warranted. While this study did not focus on effects on behavior or social skills, including those factors in future research could offer more information as to the impact of mindfulness in schools. The feasibility and positive responses from the students regarding the mindful lessons indicate this type of curriculum could be easily implemented in schools. Further research is needed to understand the full impact of mindfulness on student academic success.

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APPENDIXES

APPENDIX A

MINDFULNESS IN THE CLASSROOM END OF CURRICULUM SURVEY

Student # _____ Teacher/Evaluator _____ Date _____

Put an X in the box that best fits the statement.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The Mindfulness curriculum made a positive impact within my classroom					
The Mindfulness curriculum improved school outcomes					
The mindful curriculum was easy to include in my classroom					
Progress monitoring procedures were practical (easy, feasible useable)					
Implementing this curriculum was worth the time and effort					
I would recommend this curriculum to other educators					

TEACHER COMMENTS/OBSERVATIONS _____

APPENDIX B
LETTER OF COOPERATION

6/6/2017

Human Subjects Review Council
Central Washington University
400 E. University Way
Ellensburg, WA 98926-7401

To Whom It May Concern:

Casey D. Nightingale has requested permission to collect research data from students (or clients or employees) at Selah Intermediate School. I have been informed of the purposes of the study and the nature of the research procedures. I have also been given an opportunity to ask questions of the researcher.

As a representative of Selah Intermediate School, I am authorized to grant permission to have the researcher recruit participants from our school. Casey D. Nightingale is also permitted to collect research data during school hours at our school.

If you have any questions, please contact me at _____.

Sincerely,

Name of Authorized Representative

Official Title

INFORMED CONSENT

CENTRAL WASHINGTON UNIVERSITY

RESEARCH PARENT PERMISSION

Study Title: Impact of Mindfulness on Student Success

Principal Investigator: Casey D. Nightingale, Graduate Student, Psychology,

casey.nightingale@cwu.edu

Faculty Sponsor: Dr. Meghan Nolte, Professor of Psychology, 509-963-2254

1. What you should know about this study:

- You are being asked to join a research study.
- This consent form explains the research study and your part in the study.
- Please read it carefully and take as much time as you need.
- Ask questions about anything you do not understand now, or when you think of them later.
- You are a volunteer. If you do join the study and change your mind later, you may quit at any time without fear of penalty or loss of benefits.
- While you are in this study, the study team will keep you informed of any new information that could affect whether you want to stay in the study.
- If children may join this study, the word “you” in this consent form will refer to both you and your child.

2. Why is this research being done?

This research is being done to examine the impact of mindfulness on student academic success. This study will look at if including a mindfulness program into the class curriculum will impact student academic success.

3. Who can take part in this study?

All students in the selected elementary classrooms are eligible to participate in the study. It is expected the study will have 100 students participating.

4. What will happen if you join this study?

If you agree to be in this study, we will ask you to do the following things:
This study does not require anything additional from participants.

5. What are the risks or discomforts of the study?

Some of the mindfulness may cause discomfort in students. Students in the mindfulness group may not be used to sitting quietly for extended periods of time (three minutes).

This could cause some discomfort for those students.

If this occurs students will be asked if they want to be removed from the mindfulness practice. There may be other side effects not yet known.

6. Are there benefits to being in the study?

Possible benefits are increased positive mood, increased positive social behavior, decreased conduct problems and/or increased academic performance.

If you take part in this study you may help others in the future. Finding ways to increase student success both academically as well as socially can lead to better methods for teaching students.

7. What are your options if you do not want to be in the study?

You do not have to join this study. If you do not join, it will not affect any benefits to which you are entitled.

8. Will it cost you anything to be in this study?

The study procedures will be provided at no cost to you.

9. Will you be paid if you join this study?

There will not be any financial compensation for participation in this study

10. Can you leave the study early?

You can agree to be in the study now and change your mind later. If you wish to stop at any time, please tell us right away.

If you leave the study early, the investigator may use information already collected from you.

11. Why might we take you out of the study early?

You may be taken out of the study if:

1. Staying in the study would be harmful.
2. You fail to follow instructions.
3. The study is cancelled.
4. There may be other reasons that we do not know at this time to take you out of the study.

12. What information about you will be kept private and what information may be given out?

Data will be collected anonymously. No names will be associated with any test results.

Data may be kept for future use. No individual results will be available; however, study

results may be requested by emailing the primary investigator.

13. What other things should you know about this research study?

a. What is the Institutional Review Board (IRB) and how does it protect you?

This study has been reviewed by the CWU Human Subject Review Council. HSRC is made up of faculty from many different departments, ethicists, nurses, scientists, non-scientists and people from the local community. The HSRC's purpose is to review human research studies and to protect the rights and welfare of the people participating in those studies. You may contact the HSRC if you have questions about your rights as a participant or if you think you have not been treated fairly. The HSRC office number is (509) 963-3115.

b. What do you do if you have questions about the study?

Call the principal investigator, Casey D. Nightingale, at 509-963-2381 or faculty advisor

14. What does your signature on this consent form mean?

By signing this consent form, you are not giving up any legal rights. Your signature means that you understand the study plan, have been able to ask questions about the information given to you in this form, and you are willing to participate under the conditions we have described.

A copy of the form will be given to you.

Participant's Name (print): _____

Participant's Signature: _____ Date: _____

Signature of Investigator: _____ Date: _____

APPENDIX D

ASSENT FORM

Assent Form
CENTRAL WASHINGTON UNIVERSITY
“Effects of Mindfulness on Student Success”

Researcher: Casey D. Nightingale, Graduate Student, Department of Psychology, 509-963-2381

Faculty Sponsor: Dr. Meghan Nolte, Professor of Psychology, 509-963-2254

What is research?

A research study is a way to learn more about people. It’s like a science project. We are doing a research study about being calm. You can choose if you want to be in this research study, or not.

What will happen?

Your teacher will teach you about things, like the brain. You will be asked to sit quietly and listen to a sound, or breathe slowly. This will happen three times a day.

Will you benefit?

A benefit means that something good happens to you. You may learn how to be more calm. This study may help us to know more about being calm. Our study may benefit others in the future.

Your privacy

We will write a report about what we learn. We will not use your name in our report.

You can choose to be in this study. You do not have to be in this study if you do not want to be. If you decide to stop after we begin, that's okay too. No one will be mad at you. You can ask questions now, or later.

If you decide you want to be in this study, please sign your name.

I, _____, want to be in this research study.
 (Print your name here)

 (Sign your name here)

 (Date)