

St. Catherine University

SOPHIA

Masters of Arts in Education Action Research
Papers

Education

5-2020

Breathing and Behavior: The Effects of Mindfulness Practices on Work Completion and Self- Regulation in the Upper Elementary Montessori Classroom

Kate Spencer

Follow this and additional works at: <https://sophia.stkate.edu/maed>



Part of the [Elementary Education Commons](#)

Breathing and Behavior: The Effects of Mindfulness Practices on Work Completion and Self-Regulation in the Upper Elementary Montessori Classroom

Submitted on May 21, 2020

in fulfillment of final requirements for the MAED degree

Kate Spencer

Saint Catherine University

St. Paul, Minnesota

Advisor _____

Date _____

Abstract

The purpose of this study was to determine the effects of a mindfulness curriculum and practices on student self-regulation and work completion. The study took place in a large suburban school in western Canada with 19 participants in a grade four, five and six Montessori classroom. The intervention took place over a period of six weeks, during which the researcher led mindfulness lessons using the MindUp curriculum. Additionally, students took part in mindfulness and yoga practices daily and weekly, respectively. Data was collected using student journals, an observational tally, student work cycle folders, and student pre and post surveys. The data shows an increase in mindful and self-regulated behavior as well as improved work completion rates. It is recommended that future studies focus on a broader subject base as well as a more longitudinal period of intervention and data collection.

Keywords: self-regulation, mindfulness, Montessori, work completion, MindUp

A student wanders around the classroom aimlessly. He stops to chat with a friend, picks up a material and begins to fiddle. The teacher glances meaningfully at him and he makes his way back to his desk. He sits and leans his head in his hand looking at the work in front of him as he flicks his pencil back and forth over his fingers. This is not a difficult scene to imagine for many educators as they struggle to engage their students. Many students today are often unfocused, disengaged and unmotivated to complete their assignments.

This study explored the connection between students' abilities to concentrate and their work-completion. The researcher sought to discover if the implementation of a mindfulness curriculum improved students' ability to focus and complete their work in a Montessori setting. When students lack skills that support their ability to focus for extended periods, block out distracting stimuli, or persevere when work is challenging, it makes it difficult for them to succeed academically. These crucial skills are often referred to under the umbrella of executive functioning.

This study was conducted in a Montessori public school classroom comprised of 19 grade four, five, and six students. Due to the "family grouping" of three grades that is common in Montessori, as well as the individualized nature of the program, each student is likely to be working on a different piece of work than any of their peers at a given time. This can provide even more distractions for those students who struggle with the skills necessary for concentration, as other students are often working with engaging and beautiful materials. Similarly, students in a Montessori classroom can rarely look to their classmates for visual clues on what they should be doing. They need to make choices, prioritize, time manage, stay focused on their personal goals, and concentrate on their work while not distracting peers, being a

conscientious member of the class, and caring for the materials and environment. All of these actions require executive functioning skills.

In the class in which this study was carried out, there were students with autism, ADHD, learning disabilities, chronic health, and a variety of other unlabeled difficulties. While concentrating can be challenging for all students, it is often particularly difficult for those students with exceptionalities as executive functioning is sometimes decreased. The researcher sought to answer the question: What is the effect of mindfulness lessons (Mind-Up, yoga, meditation) on the self-regulation and work completion of upper elementary Montessori students? The researcher hoped that mindfulness lessons and activities could provide skills and strategies for all learners to improve their concentration, self-regulation, and consequent work-completion rates.

Theoretical Framework

This research used the framework of Csikszentmihalyi's Flow Theory. Flow Theory, which is also known as Optimal Experience Theory, asserts that intrinsic motivation can be so consuming and cause such high concentration, that one may lose track of time. Those who experience flow report positive feelings after the experience and are likely to seek opportunities to repeat the experience (Anderman & Anderman, 2009; Schmidt, Shernoff & Csikszentmihalyi 2015). Flow Theory focuses on the experiences of people who are intrinsically motivated to participate in an activity for the sake of enjoyment. Rathunde (2001) used the term "optimal experiences" to describe the immediate experience that Csikszentmihalyi's research subjects had while they were in a state of flow. He wondered what common characteristics the activities that facilitated flow possessed. This state of total absorption and enjoyment has been coined *flow* by Csikszentmihalyi and his colleagues, though earlier psychologists Lev Vygotsky and Jean Piaget

studied Optimal Challenge Theory (Anderman & Anderman, 2009). Optimal Challenge Theory states that when people partake in activities that are at the peak of their abilities, they enjoy the activities more. They are more intrinsically motivated than if that activity were comfortably within the range of their skills or beyond the scope of their abilities (Anderman & Anderman, 2009).

In the classroom, Flow Theory is witnessed when students are utilizing a high level of skill along with a high level of challenge in a given activity. Students feel that the work is worthwhile and challenging but have the confidence that they can succeed because of the skills that they possess. Students will become absorbed in the activity and utilize a growth mindset as problems occur, and they seek out methods of solving the problems they encounter.

Csikszentmihalyi (2014) described how the body and mind come together as one in this state of flow. One could compare this blissful state to an alternative- a lecture-style educator who cannot be sure that any of his/her students are listening or processing the information that is being imparted (Csikszentmihalyi, 2014). In the lecture example, students are passively listening (or not), while the Flow Theory requires that a student be actively engaged in work or activity.

Many of the suggestions made by Rathunde and Csikszentmihalyi for how to access flow are achievable in an elementary classroom. They highlighted the following elements necessary for flow: student choice, students' authority over their own time, clarity of goals, the opportunity to work with others in a non-competitive setting, and meaningful feedback (Rathunde and Csikszentmihalyi, 2005; Csikszentmihalyi, 2014). Though those experiencing flow reported very well defined goals, the intermittent goals throughout the process seemed to be what brought enjoyment (Csikszentmihalyi, 2014). For example, if one's goal was to become excellent at yoga, they might begin by learning to focus their breath on a simple sun salutation. By setting a

challenging goal and achieving it, one can achieve satisfaction and enjoyment, then set a new goal to accomplish that enjoyment and joy again. There is also clear feedback throughout this state of concentration; one knows if they are succeeding at any given time (Csikszentmihalyi, 2014). Csikszentmihalyi (2014) gives the example of playing an instrument. If a note is off, one can hear it and self-correct. In this way, the instrument has provided feedback that the musician must interpret and correct (Csikszentmihalyi, 2014). Immediate feedback increases concentration as the musician must focus on playing but also listen for errors (Csikszentmihalyi, 2014). Activities that do not offer this immediate feedback, listening to a lecture, for example, allow the brain to become distracted more easily (Csikszentmihalyi, 2014).

Flow theory relates to my research as I seek to increase the intrinsic motivation and focus of my students through explicitly taught mindfulness practices. Flow Theory states that when a high challenge, high skill activity is undertaken, a deep concentration, level of satisfaction, and intrinsic motivation to repeat the exercise is achieved. This is what I seek for my students.

Review of Literature

Students in today's schools are expected to be able to concentrate and complete their work. Nevertheless, their lives outside of school are often jam-packed with sports, homework, art activities, family commitments, and technology, creating children who seek more downtime (Brown, Nobile, Teufel, & Birch, 2011). Many students have a hard time focusing long enough to complete a task (Schaub, 2016). Tarrasch (2018) asserted that on-task behavior and self-regulation were direct indicators of student academic success. Though students' inattentiveness and low levels of on-task behavior were problems for schools and teachers, lack of focus was also linked to depression, learning disabilities, substance abuse, and relationship issues later in

life (Mehta et al., 2011; Moore, Anderson, Glassenbury, Didden, & Lang, 2013). Fortunately, numerous studies over the past twenty years have shown that mindfulness practices can increase students' attention span and academic engagement, as well as improving their self-regulation and executive functioning skills (e.g., Bazzano, Anderson, Hylton, & Gustat, 2018; Schaub, 2016; Schonert-Reichl, et al., 2015). This section reviews the scholarly work done on specific mindfulness interventions and their effect on work-completion and self-regulation in the elementary classroom.

Mindfulness is a focused and non-judgemental awareness of the present moment during which one's mind and body are integrated (Lillard, 2011; Greenberg & Harris, 2012). Regular mindfulness practices in schools include meditation and mindful movement or yoga. Self-regulation is the ability to focus one's attention and persist at a task, recognize and regulate emotions, control one's thinking through planning and strategies, and evaluate progress to correct errors (Yenter, 2018; Ervin, Wash, & Mecca, 2010). These skills are directly related to the high-level functions of the prefrontal cortex called executive functions, which deal with working memory (attention capacity), reasoning, and self-control (Lillard, 2011). According to the Gale Encyclopedia for Mental Health (2012), these functions are necessary to carry out goals and monitor and adapt behavior to changing circumstances, both of which are crucial elements in the successful education of a child.

Mindfulness has gotten a plethora of attention in the educational world over the last 40 years for a variety of reasons (Bartz, 2017). One reason is its apparent impact on student work and academic performance as a result of increased concentration by students who practice mindfulness (Bartz, 2017; Lillard, 2011; Mehta et al., 2011; Tarrasch, 2018; Carboni, Roach & Fredrick, 2013). The practice of explicit mindfulness training may help students experience

Csikszentmihalyi's (2014) flow state. Mindfulness training may help them access that state of flow in their work (Rathunde, 2001). Rueda, Rothbart, McCandliss, Saccomanno, and Posner (2005) stated that attention spans grow as children do. Still, home and school environments can also influence the ability of children to concentrate through attention training such as mindfulness practices.

The effects of a mindfulness curriculum on attention and focus are well researched. Many studies have made the connection between Attention Deficit Hyperactivity Disorder (ADHD) and anxiety, depression, learning difficulties and relationship problems (Carboni et al., 2013; Flook et al. 2010; Mehta et al., 2011; Tarrasch, 2018;). Researchers have made the hypotheses that if mindfulness could increase students' focus and consequently, their work-completion rates, then they could increase their confidence, which would have a positive effect on the problems listed above (Mehta et al., 2011; Tarrasch, 2018; Flook et al. 2010). Mehta et al. (2011) looked specifically at the effects of mindfulness on students with ADHD. They stated that students with ADHD have reduced dopamine levels but showed that with meditation and yoga, dopamine levels increased in the central nervous system. Dopamine is a neurotransmitter associated with pleasure and attention regulation (Mooren, 2012). Mehta et al. (2011) saw an improvement in the academic and behavioral success of over 50% of participants after engaging in a six-week mindfulness program. A smaller study by Carboni, Roach, and Fredrick (2013) also looked at the impact of mindfulness on eight male students with ADHD. The researchers found that their mindfulness interventions were successful in increasing the students' on-task behavior (Carboni et al., 2013). Tarrasch's (2018) study on 101 fourth and fifth graders concluded that when anxiety, which impairs attention, is reduced through mindfulness activities, academic performance will increase.

Furthermore, scholars studying Montessori classrooms and students have noted that many of the practices in Montessori classrooms teach mindfulness in a variety of ways (Ervin, et al., 2010; Lillard, 2005; Lillard, 2011). Yoga and tai chi are often referred to as mindful movement activities as they rely on concentration and harmony between the brain and the body. The "Walking the Line" activity, practical life activities such as carefully wiping a table properly without missing spots, the way students are taught to walk around the room with care, and grace are all examples of mindful movement in the Montessori classroom (Lillard, 2011). Montessori discussed concentration and flow as follows: "It is an application to work. An interesting piece of work, freely chosen, which has the virtue of inducing concentration..." (Montessori, 1949, p. 257). Montessori believed that normalization produced caring, constructive, and contributing members of a community (Lillard, 2011). Rathunde (2001) asserted that the Montessori prepared environment assisted children in sustaining their attention due to the facilitation of choice, freedom, "optimal social context" (p. 16), differentiation, and discipline. Lillard credited the three-hour work cycle with allowing the children to enter a state of deep concentration similar to that described in Flow Theory (Csikszentmihalyi, 2014; Lillard, 2011). Studies have found that Montessori students were more self-regulated and reported greater affect due to a variety of influences, and this had a direct effect on their academic success and work-completion (Ervin, et al., 2010; Rathunde & Csikszentmihalyi, 2005). Lillard (2011) explained that while many Montessori activities are mindful, Montessori students' mindfulness did not come strictly from those activities but could also be influenced by other factors such as three-year age groupings and the element of choice.

As illustrated by the evidence above, mindfulness activities can be beneficial for students' work completion rates. This section looks at the evidence for the effectiveness of

specific interventions on self-regulation in the classroom. Firstly, it can be challenging to accurately measure a student's ability to self regulate, so much of the data collected is through surveys completed by the students, teachers and parents pre and post-intervention (van de Weijer-Bergsma, Langenberg, Brandsma, Oort, & Bögels, 2014; Mehta, et al., 2011; Tarrasch, 2018). Secondly, while this is a discussion of specific mindfulness interventions, it is essential to note that many of the mindfulness programs are multimodal. Therefore, it is difficult to isolate which element of the program may have been most successful or had the most significant impact.

One of the most common interventions was meditation, though there is a wide variety of what meditation might look like (van de Weijer-Bergsma et al., 2014). Generally, meditation involves sitting still and integrating the mind and body to pay more considerable attention to sensory details, sensations, emotions, and breath to keep one's mind in the present moment (van de Weijer-Bergsma et al., 2014). Lillard described "meditation [as a] means to mindfulness" (2011, pg. 2) and explained that through practice over time, one could increase their capacity for attention. Mehta et al. implemented 25-minute yoga and meditation sessions simultaneously with behavioral therapy for 76 students with ADD/ADHD between ages six and 11 in India (2011). It is interesting to note that they intended to make multimodal mindfulness curriculums accessible by providing simple training to high school students who then taught the mindfulness programs at the lower elementary level (Mehta et al., 2011). By using trained high school volunteers instead of paid instructors, the program could be delivered to a larger body of students for much less money. The study concluded that this type of mindfulness curriculum was effective in improving behavior in students with ADD/ADHD in a low-cost manner (Mehta et al., 2011). Likewise, Tarrasch's (2018) study, which included 101 third, fourth, and fifth graders,

focused on a ten-week small-group mindfulness workshop. His research was also multimodal as he incorporated mindful movement (yoga and walking), sensory practices, mindful eating, and breathing exercises (Tarrasch, 2018). Tarrasch (2018) concluded that there was a minor improvement in students' impulsivity as a result of the mindfulness program. Resistance to impulsive thoughts and an increase in self-control are critical elements of self-regulation (Tarrasch, 2018).

Yoga is the activity of moving mindfully through a series of traditional poses to connect the mind and body through the breath (Case-Smith, Shupe Sines & Klatt, 2010). Yoga is a common activity in classrooms today for a variety of reasons: balance, stress-reduction, mindfulness, flexibility, strength, social-emotional learning, etc. Wang and Hagins (2015) discussed several benefits to adults and adolescents, such as improving mood, decreasing stress, reducing intrusive thoughts and aggression, assisting with body awareness and sleep habits. In elementary students, benefits included self-control, increasing self-esteem, stress-reduction, and body awareness (Bazzano et al., 2018; Case-Smith et al., 2010; Wang & Hagins, 2015). Case-Smith et al. (2010) asserted that creativity, playfulness, and imagery are helpful tools when teaching yoga to children, for example: "lift a leg like a dog" (p. 229). After the study by Case-Smith et al., students were asked to draw a picture of the yoga program and describe it in a small group. Students reported feeling calm, happy, more focused/able to concentrate, and they said that they were able to use breathing and calm down strategies when they got mad (Case-Smith et al., 2010).

Another popular mindfulness intervention is the MindUp Program, which was developed by the Hawn Foundation and focused on teaching students first about neuroscience and then mindfulness practices (2011). Activities included breathing exercises, lessons that are designed

to promote self-regulation specifically through sustained attention, and a link between body and mind, positivity, and social-emotional understanding (Schonert-Reichl et al., 2015). Schonert-Reichl et al. (2015) conducted a study with 100 fourth and fifth graders utilizing the MindUp program. The collected assessment information from parents, teachers, and students on empathy, perspective-taking, self-confidence, mindfulness, social responsibility, and optimism (Schonert-Reichl et al., 2015). The positive results of the MindUp program are corroborated across studies as significant gains in well-being, social behaviors, emotional awareness, and self-control related to executive functioning were reported (Bartz, 2017; Schonert-Reichl et al., 2015).

It is through these mindfulness interventions that executive functioning can be improved, but other strategies can also help to increase self-regulation, executive function, and work-completion (Bartz, 2017; Lillard, 2011; Schonert-Reichl et al., 2015; Tarrasch, 2018). In addition to the use of the MindUp curriculum in this study, students were given choice within limits with regards to their choice of work and time management within the week. The element of choice gives students the freedom to take more responsibility for their learning and has been shown to increase work completion and intrinsic motivation while decreasing disruptive behavior (Lane et al., 2015; Lillard, 2005). When a student struggled with making appropriate choices, the researcher narrowed but maintained the options to allow students to feel empowered and successful. Student work plans facilitated this part of the intervention and were also used to track the students' success with the completion of that work. The children also reflected on their self-regulation and consequent work completion through journaling and student surveys.

Reflection tools and self-assessment have shown to be beneficial as students can use metacognition to think of things in new ways and be mindful about their choices and deviations, redirecting themselves to come back to focus on their own (Bagby & Sulak, 2011; Tarrasch,

2018). While many different interventions have proven successful, this study focused on the MindUp curriculum, yoga, and choice, as these were the most appropriate for the context of the research and were successful according to the literature that was reviewed. While the literature provides many benefits to a mindfulness curriculum through the exploration of numerous varied studies, overall, there is a lack of meaningful studies measuring the direct effects of mindfulness programs on Montessori elementary-aged students' ability to self-regulate. Additional research is necessary to prove that a mindfulness curriculum affects students' abilities to self-regulate and improve executive functioning. In a world where reasoning, self-control, organization, and critical thinking skills are valued highly, it is essential that teachers no longer exclusively serve the academic needs of students but also their social, emotional, and cognitive needs. Therefore, this action research aimed to explore the effects of a multimodal mindfulness program on the self-regulation skills and work-completion rates of upper elementary Montessori students.

Methodology

This action research project was designed to study the effectiveness of mindfulness lessons and practices on students' ability to concentrate and complete their work in a Montessori environment. Beginning immediately after winter break, Unit I and III of the MindUp curriculum were used to teach students about neuroscience and the benefits of mindfulness in their daily lives. Students also participated in a weekly yoga session to practice mindful movement over the six weeks -study. The interventions were conducted in the researcher's own class over six weeks, to discover if mindfulness exercises could improve work completion and focus. There were 19 participants whose parents passively consented to their participation through the process outlined in Appendix A. The subjects of the study (ages nine to 11 years) were students in a public Montessori classroom in a suburban area of western Canada. There were seven boys and twelve

girls. There was one student with Attention Deficit Hyperactive Disorder (ADHD), one with Autism Spectrum Disorder (ASD) and one with a chronic health designation that was present less than 25% of class time throughout the study. The teacher had been teaching in the position and grade 4/5/6 class for three and a half years prior to beginning the study. She has kept the same students for three years, therefore the oldest students in the study were in their third year in her class. The fifth graders were in their second year, while the fourth graders were in their first. She completed professional development training on mindfulness and yoga in the classroom and had implemented MindUp in previous classroom settings. In addition, she practiced mindfulness and yoga personally for approximately 18 years prior to the implementation of the study.

The study began with a Likert scale pre-survey to collect baseline data on the students' knowledge and experience of mindfulness in the classroom (Appendix B). This was administered to the students with paper and pencil and then collected by the researcher. Students' first and last initials were recorded on the sheets to ensure that the researcher obtained each participant's survey. This survey was completed again after three weeks of the intervention (the midpoint) and then as a post-intervention survey.

The researcher began facilitating mindfulness lessons according to the MindUp curriculum once per week in the afternoon over the course of six weeks. These were prescribed lessons from the MindUp book that taught the students about mindfulness. Due to the brevity of the six-week time frame, the researcher chose to focus on *Unit I: Getting Focused* and *Unit III: It's All About Attitude* for a total of six lessons. The first unit focused on neuroscience and what mindfulness is. Lesson one was titled "How Our Brains Work" and focused on neuroscience and the parts of the brain that play a role in mindfulness, emotions and responses. Lesson two was called "Mindful Awareness" and allowed students to identify mindful and unmindful behaviors

in order to create a strong understanding of the meaning of mindfulness. The third lesson, “Focused Awareness: The Core Practice” taught the students how to complete a mindful breathing practice. It was after this lesson that the teacher began implementing mindfulness sessions each morning before beginning the day. Unit III (lessons ten, eleven, and twelve) emphasized how mindfulness can benefit one’s life when practiced. In lesson ten, students were read a familiar story book, *Goldilocks and the Three Bears*, but were asked to pay attention to the story from the perspective of a minor character or object. Examples were Mama Bear, Baby Bear’s books, Goldilocks’ mother, and Goldilocks’ neighbor. At the end of the book, students were asked to respond to the story as that character or object in a class discussion. The idea of perspective in different situations was discussed. Lesson eleven explored the meaning of optimism and looking on the bright side through sharing a variety of negative situations and how they could be turned positive. In the final lesson, the class brainstormed happy experiences that they had shared including field trips and fun activities. They made “mind movies” by closing their eyes and visualizing as much as they could about a chosen situation before drawing it. They were told that they could access happy memories anytime to bring them back to a calm and happy state.

Directly after the weekly mindfulness lessons, students were asked to journal according to prompts related to the lesson. These writing prompts were found and adapted from the MindUp resource (Appendix C). Next, students participated in a short (30 minute) yoga session led by the researcher. The researcher used her own 18-years of experience of yoga in order to conduct these sessions. As many of the students were first time yogis, the teacher began with mindful breathing and simple seated movements to awaken the spine and shoulders. She led the students through sun salutations until the students were familiar with the alignment and

positioning of those poses. The focus was always on the breath as they moved through the poses. Over the six weeks, the teacher would add on to the sun salutations in a variety of ways to challenge the students while keeping the integrity of the breath throughout the practice. Each session ended with the students lying down on their backs or seated while the teacher led them through a short visualization or mindful breathing practice with their eyes closed.

As is suggested by the MindUp book, the researcher also implemented daily mindfulness sessions using her own scripts as well as audio files from the “Calm” app (Calm, 2020). These were separate from the lessons as they were the time in which students could practice mindfulness. These were carried out first thing in the morning, after students completed their daily planner, a regular part of the morning routine, to give late students a couple of minutes to settle in before starting. On days when the students had gym class first thing in the morning, the mindfulness practice was carried out immediately following. Students were asked to sit in a comfortable seat such as on a chair, cross-legged on the floor or they could lie down. The researcher encouraged students to close their eyes in order to shut out the dominant visual stimuli and be mindful of sounds, their body, and their breath. Students were also encouraged to make a silent mindful intention for the day, such as moving gracefully throughout the school and classroom, being thoughtful and considerate of others, or staying focused on their work despite distractions. The mindfulness practice sessions lasted between two and three minutes.

To gather quantitative data on students’ concentration levels, an observational tally was used (Appendix D). The researcher was looking to see if a student was concentrating and engaged in work, using work as a prop, in between work, receiving help, wandering or interfering, or disrupting the class as a whole. She focused on three different students each day to observe and recorded their names. Throughout each week, the researcher had observed all

students. Due to illnesses and interruptions, a given student was observed on different days of the week in order to observe a variety of stages of their concentration. For example, student one may have been observed on a Monday in week one but in week two, he or she was observed on a Thursday. The class had a work cycle each day in which the students were expected to choose their work according to their weekly work plan, obtain the materials necessary to complete it, begin and complete work. The work cycle is a three-hour block of time for students to complete their individual work. The researcher kept a tally on those three selected students every 50 minutes during the work cycle. Usually, that allowed for three observational intervals each day. On a standard day, the researcher would observe and record students' behavior at 9:20 am, 10:10 am and 11:00am. Due to late starts of work cycle, interruptions, construction on the school, professional development days, and snow days, there were occasionally days in which the researcher only recorded one or two intervals in a day or none at all.

Student journals that were completed after the mindfulness lessons were also collected for the study. These journals were open-ended but students were given the prompts that corresponded with the lesson they had just received (Appendix C). These allowed for qualitative data about what students learned, how they felt about the lessons and mindfulness as well as ways or situations in which they may implement some of the strategies discussed.

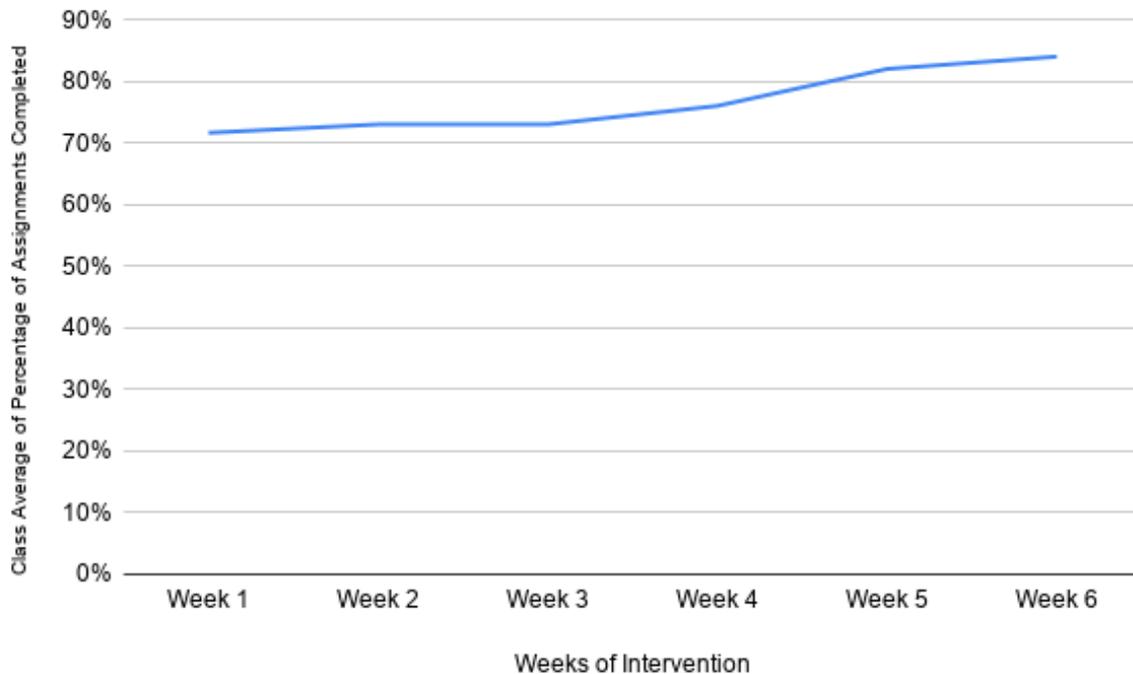
The final quantitative data tool was the students' weekly work plans (Appendix E). Each student has an individualized work plan for the week that lists the assignments the student is expected to complete. They are produced by the teacher-researcher according to a student's grade level, but some modifications are made for unfinished work that is overdue, as well as necessary adaptations for students that require them. Therefore not all work plans for a given grade look the same. The first three weeks of the intervention were four-day weeks, so the

researcher made the work plans accordingly by eliminating a few assignments to make up for the lost day. The fourth and sixth weeks had five school days. The fifth week was a three-day week, so the researcher reflected that in the number of assignments given. The researcher calculated students' percentages of work completed at the end of each week to observe if work completion rates increased as the students practiced more mindfulness.

Analysis of Data

The purpose of this study was to identify the effects of mindfulness practices on work completion and self-regulation in the upper elementary Montessori classroom. Students' lack of focus and completion of their assigned work demonstrated a need for interventions. The subjects for this study were nine fourth graders, six fifth graders and four sixth graders in a public Montessori classroom in a large suburban school that had both Montessori and non-Montessori classrooms. It is important to note that one participant had extremely low attendance and therefore missed many of the lessons, as well as mindfulness sessions and yoga practices. Another left after the midpoint survey for an extended vacation so her data is missing in the final survey as well as the work completion data in the final three weeks. The researcher chose the MindUp curriculum as well as yoga and mindfulness sessions as her interventions to improve students' mindfulness. Both qualitative (journals) and quantitative (observational tally, work completion rates, Likert scale surveys) data was collected.

To analyze the work completion rates of students, the researcher calculated the percentage of completed assignments out of the total number assigned for the week (see Figure 1). Each student's percentages were recorded at the end of each week. The researcher averaged the percentages across the class for each week. If students added in additional chosen work

Figure 1*Work Completion Over Six Weeks*

beyond what the teacher-researcher assigned, as is common in the class, that work was not considered in the percentage. Additionally, even if students completed extra work as a result of adding their own assignments, 100% completion was the maximum they could receive. The researcher tried to be as consistent as possible with the workload given each week. For example, students may have been given 20 assignments in a five-day week but only 16 in a four-day week to account for the lost work time necessary to complete them. The teacher-researcher checked completed work each day of the week and gave feedback for work to be improved or corrected as necessary. Corrections and editing were expected to be completed by Friday. Any new work completed on Friday that had not yet been checked was counted as complete for the purpose of the percentage calculations as the students did not yet have an opportunity to correct it after

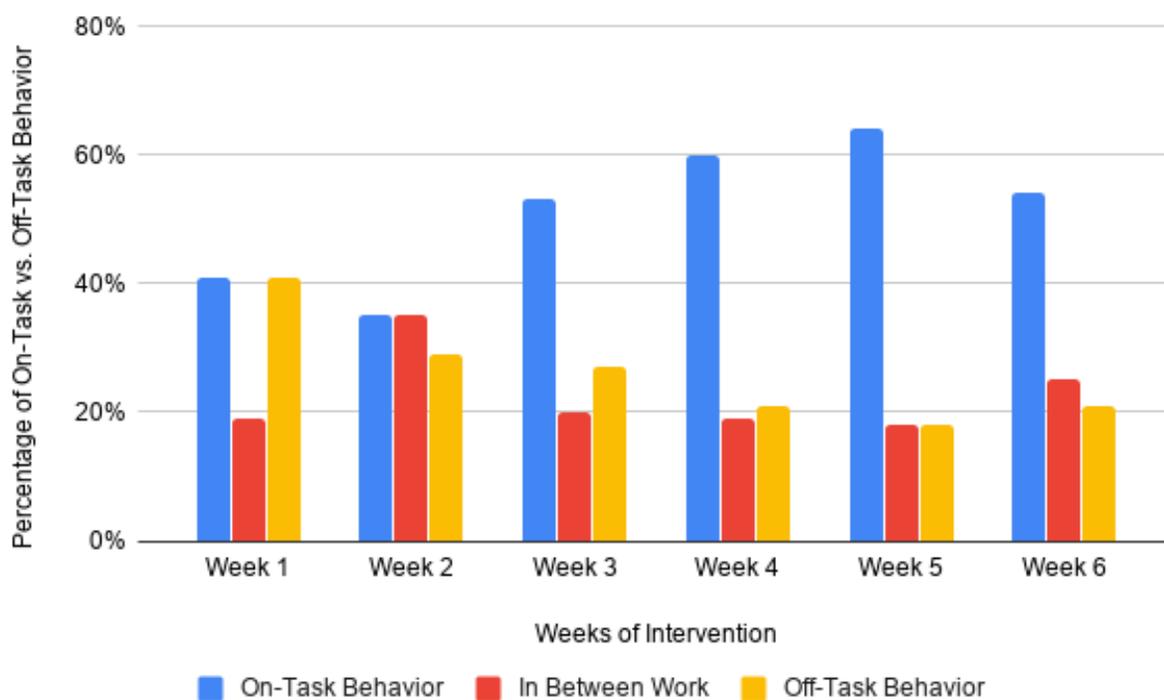
feedback was given. Outliers from the average include a student who was hospitalized for a medical condition during the study. Some students understandably showed large drops in the percentage of work completed in weeks where they were absent more than one day. One student missed three workdays in week two, for example, and consequently only completed 10% of her work. A field trip on Wednesday of week three caused excitement in the class and work completion decreased for a number of the students that week. As can be seen below (Figure 1), there was a 12% increase in work completion over six weeks while mindfulness lessons and practices were implemented.

The researcher was interested in the students' self-regulation as she felt it was a crucial skill in the Montessori classroom for both social and academic success. Self-regulation was measured with an observational behavior tally (see Appendix D). The researcher was looking for on-task and off-task behavior but realized there are often in-between behaviors such as students lingering or wandering as they are gathering materials or supplies needed to complete work. Consequently, she added the third category while analyzing data. The categories on the tally sheet were: engaging in work, using work as a prop, in between work, receiving help, wandering/interfering, and disrupting. Engaging in work and receiving help were considered on-task behavior. In-between work was considered an in-between behavior while all the others were considered off-task behavior. After beginning the study, the researcher noted that a category for snack should have been included as students in the class were free to take a snack when they choose. During observations, the teacher-researcher marked snacking students as in-between works. On a day with an uninterrupted three-hour work cycle, the teacher-researcher observed three students three times each, for a total of nine tallies for the day. The teacher-researcher tried to observe and tally every 50 minutes beginning at 9:20 am, then 10:10 am and a final time at

11:00 am. Due to shorter work periods and interruptions, not all days showed nine tallies. Some showed three or six. When analyzing the data, the researcher calculated percentages of behavior tallies for the week by dividing the categorized tallies with the total number for the day to determine a percentage. Figure 2 shows that the ratio of on-task to off-task behavior increased over the length of the study. Week six was a three day week, and while the teacher researcher kept the ratio of amount of work to days at school consistent, it is a possible explanation for the dip in on-task behavior.

Figure 2

On-task, In-between and Off-task Behavior



Note: This shows the results of the researcher's observational tallies over the six-week study.

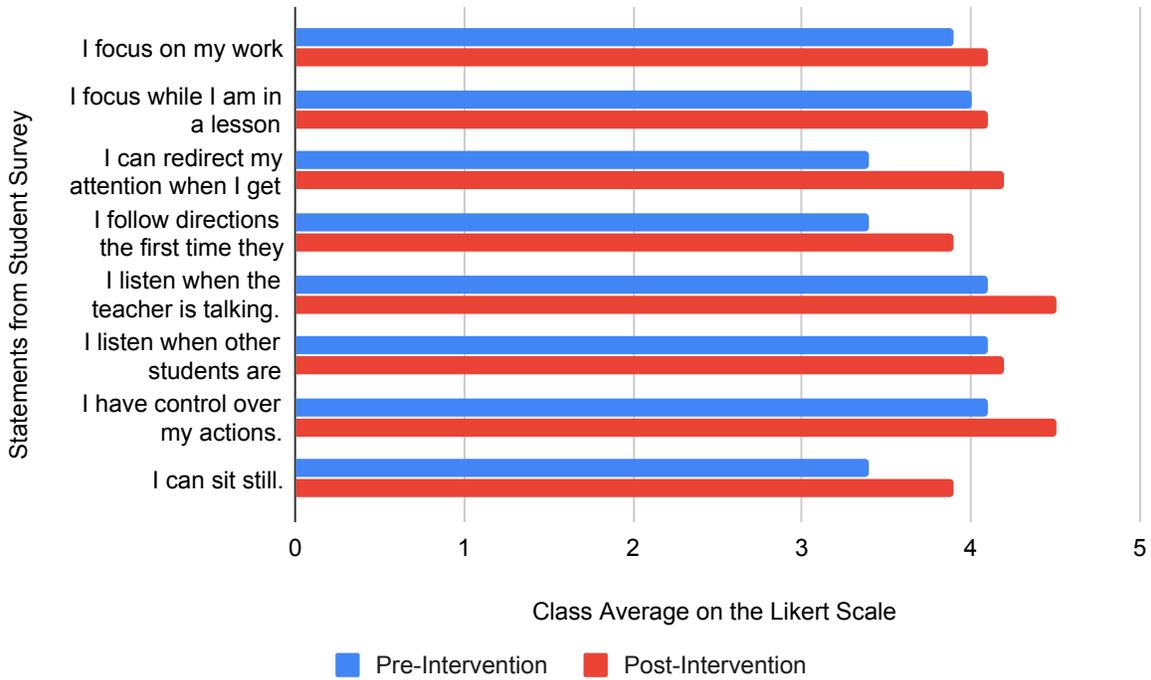
The final quantitative data tool used was the Pre- and Post-Intervention Student Mindfulness Survey (Appendix B). It was designed to assess students' knowledge of mindfulness and self-regulation as well as their ability to practice both. It was administered at the

beginning of the study before the interventions began and then following the conclusion of the study. During analysis, the researcher classified each statement in the survey according to the following three categories: ability to self-regulate and focus, knowledge of mindfulness and its benefits, and ability to practice mindfulness. Statements 3, 4, 5, 6, 9, 10, 11, 15 were classified under the ability to self regulate and focus. Statements 1, 2, 14 and 19 referred to knowledge of mindfulness and its benefits. Statements 7, 12, 14, 16, 17, 19, 20, and 21 indicated students' ability to practice mindfulness. The researcher then tallied up the responses from each student by statement. If an error was made such as a blank or unclear response, the researcher left it out of the data set. The researcher averaged the class responses for each statement in order to derive a class average to use for a comparison over time. The rating scale used on the survey was 5= always agree, 4= mostly agree, 3= neutral, 2= mostly disagree and 1= always disagree. The results are shown below in three graphs, grouped by the categories listed above.

The above data shows an increase in the class average of students' ability to self-regulate during normal classroom situations. This increase coincides with the increase in on-task behavior that was observed by the researcher and is demonstrated in Figure 2. The largest increases can be found around students' knowledge of what mindfulness means, how it relates to our classroom community and how brain function effects our actions. Relatively large gains were made in students' ability to control their breathing and refocus their attention when they get distracted. While there were no decreases indicated by the data collected in the survey, the areas of the smallest amount of growth were listening when other students are talking and focusing while in a lesson.

Figure 3

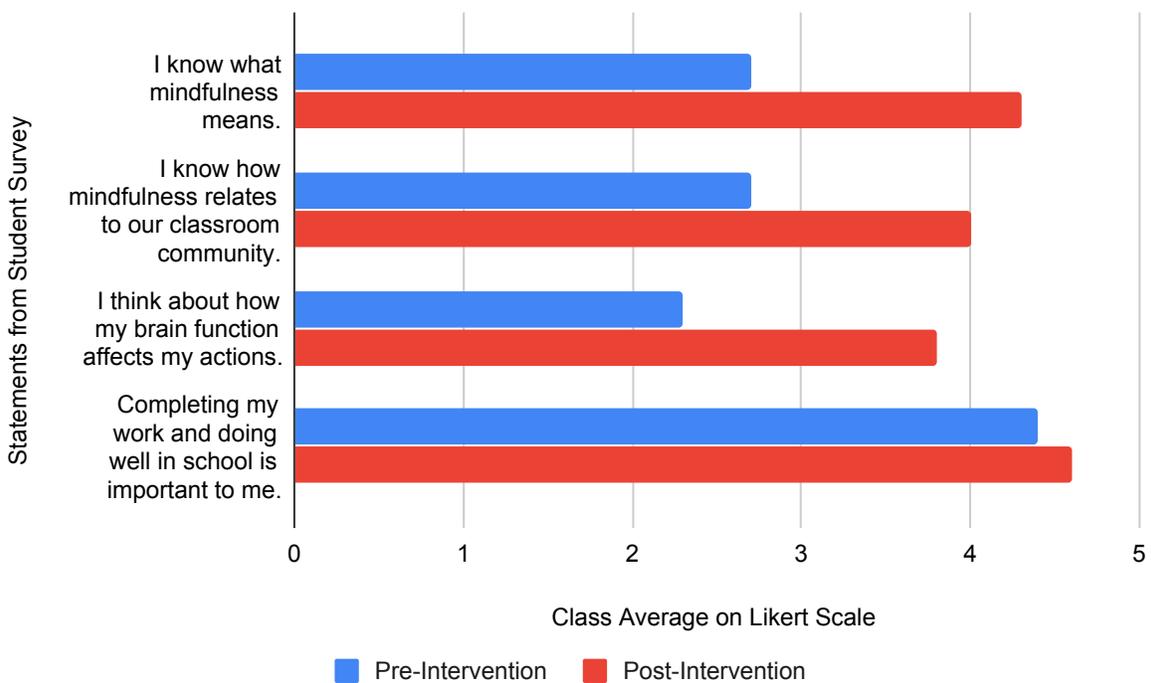
Ability to Self-Regulate and Focus



Note: This graph shows students' self-reported abilities to self-regulate and focus.

Figure 4

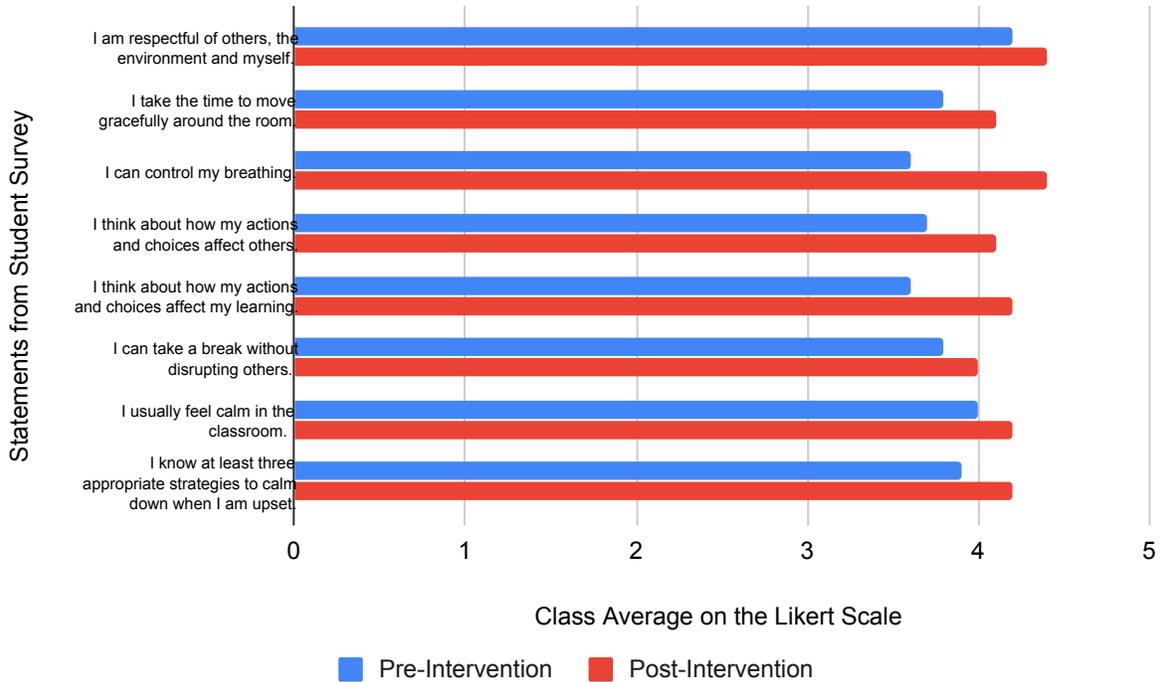
Knowledge of Mindfulness



Note: This graph shows students' self reported understanding of mindfulness and its benefits.

Figure 5

Ability to Practice Mindfulness



Note: This shows students’ self-reported abilities to practice mindfulness in the classroom.

The researcher used student journals as a qualitative data tool in the study. The journals were completed using prompts that were given to students immediately after the weekly mindfulness lesson (Appendix C). The prompts were directly related to the lesson for the week. Students were free to choose which prompt, of the two or three possible that they wanted to use to share their understanding of the lesson. During analysis, the researcher looked for themes throughout the journals to find common understandings. These journals were important for the MindUp process and it was evident that the students enjoyed completing them based on their conversations during the exercise. However, the journals did not inform the research question. One common theme was that mindfulness practices such as breathing or meditation can make

you feel calm and happy after being stressed, frustrated or angry. Students illustrated this in before and after pictures in which they depicted themselves with sad or angry faces prior to practicing mindful breathing and happy, calm faces afterwards. Some students used speech bubbles in some of their drawings that indicated that they felt less frustrated, and more focused and willing to work after practicing mindfulness. Most of the students' reflections on optimism and positivity indicated that they understood that they could choose to see the negative side of a situation or the positive side. An example that one student gave would be that if it rained on sports day, they could choose negativity- "the whole day is ruined"- or positivity- "the tug of war will be so much fun in the mud." A number of students listed jokes or kind words that could be shared with a peer if they were feeling down, in order to lift them up, which makes everyone feel better. Students drew pictures and wrote to share their thinking and ideas with the teacher. Only one student mentioned negative feelings toward the mindfulness practices or Mind-Up lessons completed in class, which was that the practices made her sleepy.

Based on the data analyzed, the researcher determined that the interventions were successful in increasing work completion and behaviors indicative of self-regulation in the classroom. The increase in work completion is supported by the graph indicating that on-task behavior increased. Additionally, many students indicated that they better understood how mindfulness practices would help them in the classroom such as increasing their work completion and focus.

Action Plan

MindUp, yoga and mindfulness practices were used as interventions to determine whether mindfulness could have an effect on student self-regulation and work completion in the upper elementary Montessori classroom. There was a clear increase over the course of the study

in student work completion, students' ability to practice mindfulness, knowledge of mindfulness and its benefits as well as their self-reported ability to self-regulate and focus in the classroom.

After analyzing the data collected regarding the effects of a mindfulness program on student self-regulation and work completion a few conclusions can be made. One conclusion that can be made is that the MindUp program, yoga and mindfulness practices generally had positive effects on self-regulation as well as work completion in the upper elementary Montessori classroom. Previous research corroborates this finding across a variety of ages and environments. Another finding is that students' behavior was on-task more frequently after beginning the intervention of mindfulness lessons and practices. Finally, work completion increased over the span of the study, which indicates that mindfulness can improve focus and productivity in the classroom.

Despite the successes of this study demonstrated by the literature and data above, this study would need to be conducted on a much larger scale across a variety of contexts in order to be considered significant. Only 19 students were involved in one classroom in a school in southwestern Canada. This was an exploratory study to determine the efficacy of mindfulness exercises in this specific context. Additionally, a more longitudinal study would be beneficial to determine if students practicing mindfulness over a longer period of time would further increase work completion and self-regulation. It would also be interesting to see the long-term benefits of such a study, as this is a large gap in the literature. There are a variety of mindfulness programs available to be used by teachers in the classroom, so a comparative study would also provide an interesting perspective to educators that may be looking for the most appropriate program for their environment and class composition. The class in which this study took place was not particularly diverse culturally or linguistically, so a more varied demographic may have provided

data on the cultural relevance of a mindfulness curriculum. Though this study was looking at the possible effects on a Montessori classroom in order to determine whether mindfulness increased work completion and self-regulation within the Montessori work cycle, it is possible that the positive results could also be observed in a more traditional classroom setting. Utilizing the mindfulness interventions within a traditional classroom as well as using a Montessori and traditional classroom as a control may also derive interesting conclusions. More general conclusions could be made if some of these variables were explored more broadly.

The success of this study is encouraging and the teacher will continue to utilize mindfulness lessons and practices within the classroom environment. The teacher would like to give the students ownership over the mindfulness curriculum so she will seek to do that in a number of ways. First, morning mindfulness practices will continue. The teacher will continue to use the Calm app in addition to seeking out new resources to keep the practices new and interesting. She will have students write their own scripts for morning practice, which can then become part of a class resource to be used by the students when they begin to lead the class-wide mindfulness practices themselves. Yoga will still be practiced occasionally as a class while the teacher also develops a resource material to facilitate individual yoga practice when students choose. The teacher would also like to create a listening station in which students can listen to the calm app on their own as a self-regulation strategy. Adults need to model this behavior as well in order to be successful, so the teacher will also continue her mindfulness journey, practicing meditation and rooting herself in the basic tenets of the MindUp lessons.

It is the hope of the teacher that this new focus on mindfulness will make self-regulated and productive students the norm in the classroom. When the majority of students are on task and practice grace and courtesy, it provides a model for others to do the same. If the classroom is

viewed as a calm and safe place in which to learn and grow, students are more likely to focus and delve deep into their studies. This breeds feelings of success and self-worth that comes from within and leads to true intrinsic motivation. While further research is necessary to determine the effects of mindfulness practices on self-regulation and work completion, the researcher was happy to contribute to the growing base of research on this topic.

References

- Anderman, E. M., & Anderman, L. H. (2009). Motivating children and adolescents in schools. *Columbus, Ohio: Merrill.*
- Bagby, J., & Sulak, T. (2011). Connecting Montessori practice and metacognition. *Montessori Life*, 23, 8-9. Retrieved from <http://pearl.stkate.edu/login?url=https://search-proquest-com.pearl.stkate.edu/docview/851705195?accountid=26879>
- Barry, D. (2012). Executive Function. In K. Key (Ed.), *The Gale Encyclopedia of Mental Health* (3rd ed., Vol. 1, pp. 592-594). Detroit, MI: Gale. Retrieved from https://link-gale-com.pearl.stkate.edu/apps/doc/CX4013200179/GVRL?u=clic_stkate&sid=GVRL&xid=c b7d2a37
- Bartz, A. L. (2017). Using Mindfulness to Self-Regulate in the Upper Elementary Classroom. Retrieved from Sophia, the St. Catherine University repository website: <https://sophia.stkate.edu/maed/245>
- Bazzano, A. N., Anderson, C. E., Hylton, C., & Gustat, J. (2018). Effect of mindfulness and yoga on quality of life for elementary school students and teachers: results of a randomized controlled school-based study. *Psychology research and behavior management*, 11, 81.
- Brown, S., Nobiling, B., Teufel, J., & Birch, D. (2011). Are kids too busy? Early adolescents' perceptions of discretionary activities, overscheduling, and stress. *The Journal of School Health*, 81(9), 574.
- Carboni, J., Roach, A., & Fredrick, L. (2013). Impact of Mindfulness Training on the Behavior of Elementary Students With Attention-Deficit/Hyperactive Disorder. *Research in Human Development*, 10(3), 234-251.
- Case-Smith, J., Shupe Sines, J., & Klatt, M. (2010). Perceptions of children who participated in a

- school-based yoga program. *Journal of Occupational Therapy, Schools, & Early Intervention*, 3(3), 226-238.
- Csikszentmihalyi, M. (2014). *Flow and the Foundations of Positive Psychology The Collected Works of Mihaly Csikszentmihalyi / by Mihaly Csikszentmihalyi*. (1st ed. 2014. ed.). Dordrecht: Springer Netherlands : Imprint: Springer.
- Deci, E. L., & Ryan, R. M. (2008). Facilitating optimal motivation and psychological well-being across life's domains. *Canadian psychology/Psychologie canadienne*, 49(1), 14.
- Ervin, B., Wash, P. D., & Mecca, M. E. (2010). A 3-year study of self-regulation in Montessori and non-Montessori classrooms. *Montessori Life*, 22, 22-31. Retrieved from <http://pearl.stkate.edu/login?url=https://search-proquest-com.pearl.stkate.edu/docview/366315263?accountid=26879>
- Flook, L., Smalley, S. L., Kitil, M. J., Galla, B. M., Kaiser-Greenland, S., Locke, J., & Kasari, C. (2010). Effects of mindful awareness practices on executive functions in elementary school children. *Journal of applied school psychology*.
- Flow Theory. (2009). In E. M. Anderman & L. H. Anderman (Eds.), *Psychology of Classroom Learning: An Encyclopedia* (Vol. 1, pp. 413-416). Detroit, MI: Macmillan Reference, USA. Retrieved from https://link-gale-com.pearl.stkate.edu/apps/doc/CX3027800118/GVRL?u=clic_stkate&sid=GVRL&xid=1283b43f
- Greenberg, M. T., & Harris, A. R. (2012). Nurturing mindfulness in children and youth: Current state of research. *Child Development Perspectives*, 6(2), 161-166.
- The Hawn Foundation. (2011) *The mind-up curriculum: Brain-focused strategies for learning and living*. New York: Scholastic

- Lillard, A. S. (2005). *Montessori: The science behind the genius*. New York: Oxford University Press.
- Lillard, A. S. (2011). Mindfulness practices in education: Montessori's approach. *Mindfulness*, 2(2), 78-85. doi: 10.1007/s12671-011-0045-6
- Maynard, B. R., Solis, M., Miller, V., & Brendel, K. E. (2017). Mindfulness-based interventions for improving cognition, academic achievement, behavior and socio-emotional functioning of primary and secondary students. *Campbell Systematic Reviews*, 13.
- Mehta, S., Mehta, V., Mehta, S., Shah, D., Motiwala, A., Vardhan, J. & Mehta, D. (2011). Multimodal Behavior Program for ADHD Incorporating Yoga and Implemented by High School Volunteers: A Pilot Study. *ISRN Pediatrics*, 2011 (1), 1-5.
doi:10.5402/2011/780745
- Moore, D.W., Anderson, A., Glassenbury, M., Didden, H.C.M., & Lang, R.B. (2013). Increasing on-task behavior in students in a regular classroom: Effectiveness of a self-management procedure using a tactile prompt. *Journal of Behavioral Education*, 22, 302-311.
- Mooren, F.C. (2012) Dopamine. In: *Encyclopedia of Exercise Medicine in Health and Disease*. Berlin, Heidelberg: Springer. <https://doi-org.pearl.stkate.edu/10.1007/978-3-540-29807-6>
- Murray, A. (2011). Montessori elementary philosophy. *Montessori life*, 23(1), 22-33.
- Rathunde, K. (2001). Montessori education and optimal experience: A framework for new research. *NAMTA JOURNAL*, 26(1), 11-44.
- Rathunde, K. & Csikszentmihalyi, M. (2005). The Social Context of Middle School: Teachers, Friends, and Activities in Montessori and Traditional School Environments. *The Elementary School Journal*, 106(1), 59-79.
- Reid, R., Trout, A. L., & Scharz, M. (2005). Self-regulation interventions for children with

- Attention Deficit/Hyperactivity Disorder. *Exceptional Children*, 71(4), 361- 377.
- Rueda, M., Rothbart, M., McCandliss, B., Saccomanno, L., & Posner, M. (2005). Training, maturation, and genetic influences on the development of executive attention. *Proceedings of the National Academy of Sciences of the United States of America*, 102(41), 14931-14936.
- Schaub, Jamie L.. (2016). The Effects of Mindfulness Practices and Activities on Student Attention and Work Engagement in a Multi-age 4th to 6th grade Montessori Classroom. Retrieved from Sophia, the St. Catherine University repository website:
<https://sophia.stkate.edu/maed/173>
- Schmidt J.A., Shernoff D.J., Csikszentmihalyi M. (2014) Individual and Situational Factors Related to the Experience of Flow in Adolescence. In: Applications of Flow in Human Development and Education. Dordrecht: Springer.
- Schonert-Reichl, K. A., Oberle, E., Lawlor, M. S., Abbott, D., Thomson, K., Oberlander, T. F., & Diamond, A. (2015). Enhancing cognitive and social–emotional development through a simple-to-administer mindfulness-based school program for elementary school children: A randomized controlled trial. *Developmental psychology*, 51(1), 52.
- Smith, Michael A. *Calm*. Version 4.17.1. San Francisco, CA. Calm.com
- Tarrasch, R. (2018). The effects of mindfulness practice on attentional functions among primary school children. *Journal of Child and Family Studies*, 27(8), 2632-2642. doi:
<http://dx.doi.org.pearl.stkate.edu/10.1007/s10826-018-1073-9>
- van, d. O., Bögels, S.,M., & Peijnenburg, D. (2012). The effectiveness of mindfulness training for children with ADHD and mindful parenting for their parents. *Journal of Child and*

Family Studies, 21(1), 139-147. doi:<http://dx.doi.org.pearl.stkate.edu/10.1007/s10826-011-9457-0>

Yenter, J. (2018). Mindfulness and its Effects on Self-Regulation in a Lower Elementary Classroom. Retrieved from Sophia, the St. Catherine University repository website:

<https://sophia.stkate.edu/maed/248>

Wang, D., & Hagins, M. (2016). Perceived Benefits of Yoga among Urban School Students: A Qualitative Analysis. *Evidence-Based Complementary and Alternative Medicine*, 2016, 7.

Yenter, J. (2018). Mindfulness and its Effects on Self-Regulation in a Lower Elementary Classroom. Retrieved from Sophia, the St. Catherine University repository website:

<https://sophia.stkate.edu/maed/248>

Appendix A

**The Effect of Mindfulness Lessons on Self Regulation and
Work Completion in the Upper Elementary Montessori Classroom
Assent Form**

January 6, 2020

Dear Parents,

In addition to being your child's classroom teacher, I am a St. Catherine University student pursuing a Masters of Education. As a capstone to my program, I need to complete an Action Research project. I am going to study mindfulness and its effect on self-regulation and work completion in order to find out if students' ability to recognize and monitor their emotions and behaviours will help them complete their work cycle more consistently.

In the coming weeks, I will be leading lessons about how the brain works, why mindfulness strategies work, how to be more mindful at school, as well as guided meditation and mindful movement practices as a regular part of our work cycle activities. All students will participate as members of the class. In order to understand the outcomes, I plan to analyze the results of this Mind-up curriculum to determine if these lessons and strategies can help students be more successful in their self-regulation and work completion.

The purpose of this letter is to notify you of this research and to allow you the opportunity to exclude your child's data from my study.

If you decide you want your child's data to be in my study, you don't need to do anything at this point.

If you decide you do NOT want your child's data included in my study, please note that on this form below and return it by January 13, 2020. Note that your child will still participate in the activities but his/her data will not be included in my analysis.

In order to help you make an informed decision, please note the following:

- I am working with a faculty member at St. Kate's and a project coach to complete this particular project.

- Research has shown that students feel more calm and in control after mindfulness lessons. Additional research has also indicated that students generally perform better academically after completion of the program.
- I will be writing about the results that I get from this research. However, none of the writing that I do will include the name of this school, the names of any students, or any references that would make it possible to identify outcomes connected to a particular student. Other people will not know if your child is in my study.
- The final report of my study will be electronically available online at the St. Catherine University library. The goal of sharing my research study is to help other teachers who are also trying to improve their teaching.
- There is no penalty for not having your child's data involved in the study, I will simply delete his or her responses from my data set.

If you have any questions, please feel free to contact me at spencer_k1@surreyschools.ca or stop in to see me. You may ask questions now, or if you have any questions later, you can ask me, or my instructor, Olivia Christensen (651-690-6219), who will be happy to answer them. If you have questions or concerns regarding the study, and would like to talk to someone other than the researcher(s), you may also contact Dr. John Schmitt, Chair of the St. Catherine University Institutional Review Board, at [\(651\) 690-7739](tel:6516907739).

You may keep a copy of this form for your records.

Kate Spencer

Date

OPT OUT: Parents, in order to exclude your child's data from the study, please sign and return by January 12, 2020.

I do NOT want my child's data to be included in this study.

Signature of Parent

Date

Appendix B
Pre and Post Student Assessment

Student Initials: _____

Date: _____

	Statements	5- Always Agree	4- Mostly Agree	3- Neutral	2- Mostly disagree	1- Always disagree
1	I know what mindfulness means.					
2	I know how mindfulness relates to our classroom community.					
3	I focus on my work					
4	I focus while I am in a lesson					
5	I can redirect my attention when I get distracted.					
6	I follow directions the first time they are given.					
7	I am respectful of others, the environment and myself.					
8	I always complete my work.					
9	I listen when the teacher is talking.					
10	I listen when other students are talking.					
11	I have control over my actions.					
12	I take the time to move gracefully around the room.					
13	I think about how my brain function affects my actions.					
14	I can control my breathing.					
15	I can sit still.					
16	I think about how my actions and choices affect others.					
17	I think about how my actions and choices affect my learning.					
18	Completing my work and doing well in school is important to me.					
19	I can take a break without disrupting others.					
20	I usually feel calm in the classroom.					
21	I know at least three appropriate strategies to calm down when I am upset.					

Retrieved and adapted from: Bartz, A. L. (2017). Using Mindfulness to Self-Regulate in the Upper Elementary Classroom. Retrieved from Sophia, the St. Catherine University repository website: <https://sophia.stkate.edu/maed/245>

Appendix C
Journal Prompts

Student Journals		
Week	Lesson Topic	Journal Prompts/Questions
1	How Our Brains Work	<ul style="list-style-type: none"> • Name the parts of the brain and each part's function. • Draw a picture of yourself when your amygdala was activated. Below it, describe the situation in words. Was the threat real or perceived? • Draw a picture of yourself when you are feeling calm and thinking clearly. Below your picture, describe the situation in words. Tell how your prefrontal cortex was working.
2	Mindful Awareness	<ul style="list-style-type: none"> • Copy and illustrate the following statement: Being mindful is paying attention the best way I can. • Draw a cartoon or write about a specific time when you were mindful. • Explain a time when you were unmindful. How could you have acted more mindfully?
3	Focused Awareness: The Core Practice	<ul style="list-style-type: none"> • Draw a before-and-after cartoon showing how you might look before and after mindful breathing. • When might be the most helpful time for you to practice mindful breathing in school? Why?
4	Perspective Taking	<ul style="list-style-type: none"> • Make a T-chart in your journal. On the top of one side, write "My Thoughts." On the top of the other side, write "Their Thoughts." Think of a recent disagreement you've had with someone. Describe the thoughts for each side. • Imagine yourself and friends having a picnic on a blanket in the park. There is a bird in a nearby tree, a dog lying beside you, and an ant at the edge of the blanket. Write a descriptive paragraph about the picnic scene from the perspective of one of those creatures. Add a sketch as well.
5	Choosing Optimism	<ul style="list-style-type: none"> • Record three funny jokes or the lyrics to a humorous song or poem that you can tell to someone to lift their spirits. • At the top of your journal page, write "A Rainy Day." Describe and illustrate three imaginative activities that you could do to turn a dreary rainy day into an entertaining rainy day. • Think about how a character in a book showed optimism. Write a paragraph from that character's point

		of view to describe his or her outlook on an experience.
6	Appreciating Happy Experiences	<ul style="list-style-type: none"> • Sketch a favourite scene from the “mini-movie” you created in your mind during the lesson. Use thought and speech bubbles to show what people were thinking and feeling. • Recall a time when something you did or said gave another person a happy moment. Describe how you created a pleasant memory for someone else. • Draw two columns. At the top of one write your name. At the top of the other write the name of an adult you care about. In each column, write/ draw four events, activities, or experiences that you think would produce happy memories for that person.

Retrieved and adapted from The Hawn Foundation. (2011) *The mind-up curriculum: Brain-focused strategies for learning and living*. New York: Scholastic.

Appendix D

Teacher Observational Behaviour Tally Sheet

Date:

Time:

Number of students present:

Students being observed:

Disruptions /Weather:	ENGAGING IN WORK	USING WORK AS A PROP	IN BETWEEN WORK	RECEIVING HELP	WANDERING/ INTERFERING	DISRUPTING
	Engaging in age-appropriate and concentrated work (as per Montessori curriculum)	Adjacent to but not engaging with material or work	In process of selecting, setting up, observing others, or putting away work	Consulting with or receiving direction from a teacher in class	Moving aimlessly or conversing without focus	Dangerous, demeaning, destructive, prevents others from concentrating
Tally Marks						
Totals						

Retrieved and adapted from National Centre for Montessori in the Public Sector. (2019) *Montessori Assessment Playbook*. USA: National Centre for Montessori in the Public Sector Press.

Appendix E

Sample Student Work Plan

MATH	Mon.	Tues	Wed.	Thur	Fri.
Albanesi Card _____					
Albanesi Card _____					
Albanesi Card _____					
IXL- CC2 (Area)					
Math Project- Level 10					
Daily x Practice					
GEOMETRY					
1.					
LANGUAGE					
Editing Week #9					
Diagramming- Compound Subjects Pg 4/5					
Organization Writing					
Word Study _____					
Mind up Journal					
CULTURE					
Disc. Ed-How Do Our Bodies Take Out the Trash?					
Brain Interactive Notebook					
Nervous System Sort x3					
FRESHGRADE/ ART					
Two metal insets					