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Mindfulness and its Effects on Self-Regulation in a Lower Elementary Classroom

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An Action Research Report
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Abstract

The purpose of this action research was to determine the effect of a variety of mindfulness activities and exercises on self-regulation. Twenty-eight students from a lower elementary class of first, second, and third graders in a public Montessori school participated in the study. Data was collected over a period of six weeks using an on task behavior tally sheet, productivity scoring rubric, observational notes, behavior logs, self-assessments, student feedback, and an auditory following directions matrix. Results show a promising association between mindfulness and self-regulation. All students enjoyed partaking in mindfulness and reported positive associations with the intervention and showed increases in multiple measures. Improvements were observed in productivity, behavior, listening and following directions, and focus to include a decrease in the amount of disruptive behaviors. The data shows that mindfulness can be integrated into the classroom to assist students socially, emotionally and academically. Further research should be conducted to validate these results.

Keywords: mindfulness, self-regulation, executive function, Montessori

Do you ever feel like you are repeating yourself, constantly redirecting children to keep their hands to themselves, to focus, to ignore distractions, to sit still, or stop making those weird noises? How about those that cannot complete anything, those that rush through assignments, or from one place to another not caring who or what is in their way, or those that are so emotionally unstable that it changes the whole dynamic of the class? If you stepped into my classroom, this is what you would see.

The Montessori philosophy encompasses and fosters independence, grace and courtesy, respect for nature and materials. According to Lillard (2007), in a Montessori classroom, "children are calmly and quietly working, their work is organized, and they are concentrating, carrying out activities in a series of steps that have been shown to them by the teacher or other children" (p. 21). Furthermore, a Montessori classroom is supposed to be an idyllic and peaceful environment with children who are self-directed and self-regulated, which is far from my reality.

Mindfulness has been linked with education, in that it provides a pathway to many benefits in EF and self-regulation, therefore it is associated with positive impacts on children socially, emotionally and academically. Montessori education has many parallels to mindfulness including the act of concentration, the sensory experience, and practical life skills (Lillard, 2011, p. 78). Lillard (2007) even goes as far as saying that, "the deep concentration children achieve in Montessori classrooms seems in some ways akin to meditation" (p. 105). Montessori unfolded "the exercise of silence," that could be considered a form of mindfulness in which children "control all movements and listen to the sounds of the environment" (Lillard,1972, p. 6). Lillard (1972) quoted Maria Montessori that "the children, after they had made the effort necessary to maintain silence, enjoyed the sensation, took pleasure in the silence itself" (p. 77).

Mindfulness offers social benefits and may improve social skills (Greenberg & Harris, 2012; Zelazo & Lyons, 2012). Lillard (2007), reported that "theorists of child development have noted the close connection between attention and self-regulation and that children who are better at self-regulating show more positive and social behavior on a variety of measures" (p. 103**).** Lillard (2007) states that according to Montessori's observations,

> Children who can concentrate treat others kindly and work constructively with materials rather than choosing to distract classmates or abuse materials. Research suggests her observations have merit and are particularly relevant in today's world of attention controlling television and computer programs (p. 192-193).

Self-regulation and executive functioning (EF) skills have a direct correlation to not only school success, but life readiness. "The importance of self-regulation in the classroom is apparent when we consider that high levels of motivation and self-regulation are clearly associated with academic achievement independent of measured intelligence" (Ervin, Wash, Mecca, 2010, p. 22). With a wide array of problematic behaviors, using mindfulness as an intervention deems worthy of increasing self-regulation, improving executive functions as well as social-emotional skills, thus increasing academic achievement.

I hypothesized that implementing a mindfulness intervention into the classroom might help students improve their behavior, concentration, independence and therefore, productivity, thus creating a more normalized environment. For this research, I utilized a variety of whole group, fundamental mindfulness lessons including modeling, music, movement, and meditation.

This study was conducted over a period of six weeks in a lower elementary (first through third grade) Montessori classroom in a public, neighborhood, Title I school with a high population of English Language Learners. Through this action research, I hope to ensure that all

of my students can get the best education in a safe, and authentic Montessori environment and learn essential skills to be successful not only in school but life. I used multiple means as a way to assess for any effect, including on task behavior observations, weekly work plans to check for productivity, observational notes, behavior logs, behavioral self- assessments, student feedback forms, and an auditory following directions evaluation. I sought to gain understanding to the question: what effect will mindfulness activities or exercises have on self-regulation in a mixed first through third grade Montessori classroom?

Review of Literature

For more than a decade, educational researchers and practitioners have been drawing attention to mindfulness techniques as a possible solution to the problem with children having a deficiency in self-regulation and executive functioning skills. This is a growing trend since children today are even more inundated with stressors, whether it be from heightened expectations of student achievement, growing up in a time with technological advances which create a need for instant gratification, as well as any number of other factors dealing with overall wellness. Blair suggests that many children are enrolling in school without specific abilities or experiences, which shows they lack self-regulation skills (2002, p. 112). This reality then puts it on teachers to successfully develop such self-regulatory skills in the interest of students being able to function in the classroom. However, according to Flook, Goldberg, Pinger, & Davidson (2015), self-regulation is not explicitly taught in school even though evidence suggests its importance in school readiness and life success (p. 45). It can be concluded that in order for children to experience such success, strategies need to be implemented and according to Diamond and Lee (2011), teaching these strategies within the school day holds the most

significant promise. This literature review examines the effects of mindfulness and its counterparts as a way to improve self-regulation and executive functioning skills in children.

An Explanation of Self-Regulation and Executive Functioning

According to researchers at Harvard University, self-regulation and executive functioning skills are essential for learning and development (n.d., p. 1). Self-regulation and executive functioning are very much interrelated, although sometimes are referred as two separate entities. Executive functioning (EF) and having the capability to focus play a fundamental role in effective self-regulation (Flook et al., 2015, p. 44). According to Diamond, EFs include reasoning, working memory and self-control and is defined as a collection of control functions needed to think and concentrate (2012, p. 335). Early intervention is ideal as EF deficiencies only get bigger with time and can predict later problems (Diamond, 2012, p. 336). Self-regulatory skills include focusing attention, controlling emotions, managing thinking, behavior and feelings.

Theoretical Framework

Self-regulation is sometimes thought of as self-regulated learning and refers to thoughts, feelings, and actions as reported by Schunk (2012). The theoretical framework for self-regulation includes several theories. The aim of self-regulation according to behavioral theorists lies with the three points of self-monitoring, self-instruction, and self-reinforcement, all of which can be taught to students (Schunk, 2012, p. 405).

For self-monitoring, students need to be aware of their behavior in order to know what they are doing wrong and want to change it, so data is collected and presented in order for improvements to be made. Methods for obtaining behavioral data may include time-sampling measures where behaviors are recorded in specific intervals of time, and behavior ratings which

rate how often particular actions occur. Students can use written records of their work to see what exactly they are and are not spending their time doing. Researchers state that monitoring needs to be done continuously and recorded promptly for it to be successful. Reid, Trout, and Schartz, 2005 (as cited in Schunk, 2012), reviewed self-regulation literature and concluded that self-monitoring coupled with self-reinforcement are often successful interventions for the progression of on-task behavior and therefore academic achievement (p. 404).

Self-instructional methods include rules or an adult modeling or guiding what to say and do for students to be able to verbalize or use self-talk to walk themselves through a series of steps. Self-instructional statements have been helpful to keep students on task and have been successful in teaching social and motor skills, as well as academic skills. Adults praise students for procedural methods until skills are mastered.

The last part of the behavioral theory is self-reinforcement which involves students reinforcing their behavior and academic achievements keeping a record of accomplishments, which helps regulate and reinforce specific behaviors. Where the behavioral theory lacks, the social cognitive theory lends itself. A more widely researched theoretical framework is the social cognitive theory. From the social cognitive standpoint, choice is a significant factor. The sub-processes of the social cognitive method are very similar to those of the behavioral approach, which are self-observation, self-judgment and self-reaction according to Schunk (2012, p. 407). Both behavioral and social cognitive theories have a basis in goal attainment and motivation. When students take on a task they “observe, judge and react to perceived progress” according to Schunk (2012, p. 407).

Self-observation and self-judgment are very similar where students compare their behavior or performance to that of what is expected, and the teacher acts as an essential part of

this by guiding and teaching. The sheer difference between the two involves goal setting and motivation. The last method is self-reaction, which requires self-efficacy or the understanding that a goal is being met and having the motivation to continue. Schunk conducted two studies and reported that self-regulated learning is further improved by self-monitoring and the evaluation of progress, but that students will need to be guided and provided opportunity to practice these skills (Schunk, 2012, p. 413).

Bandura, 1986/1997; Pintrich & Zusho, 2002; Zimmerman, 2000/2001; Zimmerman & Schunk, 2004 (as cited in Schunk, 2012), all state that according to social cognitive theorists there is a correlation with personal, behavioral, and environmental factors and occurs in cycles because of the frequent changes when learning (p. 411). Moreover, Harvard researchers (n.d.) state that the development of EF skills is slow and shaped by experiences and social interactions (p.1).

An Explanation of Mindfulness

Mindfulness is the ability to have self-awareness. “Mindfulness training enhances attention and EF by bringing awareness to a particular attentional object, whether it be by breath, external stimuli, thoughts or emotions” (Flook et al., 2015, p. 45). According to Thompson and Gauntlett-Gilbert (2008), mindfulness is paying attention on purpose, being present in the moment and being free of judgment (p. 396).

Research Results

There are many studies that have been conducted pertaining to mindfulness and its effects on children academically, socially and behaviorally. Greenberg and Harris (2012), review many studies conducted on mindfulness with elementary age children and conclude that there are limitations in current research. Birdee et al. (as cited in Greenberg & Harris, 2012, p. 162), in

2009 had reported on 19 studies, but all lacked one aspect or another to be considered adequate. Galentino et al., 2008 (as cited in Greenberg & Harris, 2012, p. 162) also deduced that the studies were not sufficient. Burke (2010) also looks at numerous studies and claimed that there are small samples, very few with controls and objective measures, and the research contain other discrepancies. One study conducted by Napoli et al., 2005 (as cited in Burke, 2010, p. 139), had 228 1st through 3rd-grade students who took part in 12 sessions over a period of 24 weeks. Each Attention Academy Program (AAP) session was 45 minutes long and involved sitting meditation, movement and body scans that were all taught by an experienced mindfulness instructor. Data collection included a self-rated test and teacher-rated scales.

More recently, Schonert-Reichl et al., (2015) conducted a randomized controlled trial that consisted of 100, 4th and 5th- grade students who took part in a MindUP intervention program. There were 12 lessons taught once a week, with each session lasting between 40 to 50 minutes in duration. Each child also took part in 3 minutes of mindful activity 3 times a day. Data that was collected involved behavioral assessments of EF, self-reports of well-being, peer recommendations of social behavior, a cortisol test, teacher surveys and academic achievement scores. Findings were promising, demonstrating that the intervention produced positive behavioral and cognitive results in students. The MindUP curriculum incorporates kindness lessons as well as a variety of mindful exercises and activities to include sensorial, breathing, and active listening techniques. Both the AAP and MindUP programs offer a way to incorporate mindfulness curriculum into the school day successfully with reported positive outcomes.

Another study conducted by Flook et al. (2015), included 67 participants whose mean age was 4.67 years old and who were randomly assigned to a control group or to kindness curriculum. Students were assessed before and after the 12-week intervention that targeted

attention and emotion regulation with kindness as a concentration. Literature, movement, and music were incorporated to teach concrete concepts and taught by experienced mindfulness instructors. The sessions consisted of 10 hours of training with 20 to 30 minutes each time. Measures included subscales of emotional and prosocial behavior, peer evaluation, reward system, school grades, a computer program assessment and Flanker test. Flook et al. (2015) concluded that results showed positive outcomes including higher academic achievement for the group that received the intervention.

Felver, Tipsford, Morris, Hiatt-Racer, and Dishion (2017), conducted a study with 24 parent-child dyads. The children were 11 years of age. Students and their parents were recruited and compensated for their participation which lasted eight consecutive weeks. Each session was 90 minutes in length one time a week. Data was collected prior to and post-intervention which consisted of questionnaires, an EEG after five minutes of a relaxation exercise, a computerized measure of attention regulation, as well as self-report forms.

Mindfulness Methods

Mindfulness activities and exercises offer a way to improve or learn many developmental milestones and to promote success in school and life. Self-regulation is essential for all children to learn as it is a healthy part of emotional development and according to Flook et al. (2015) is recognized as a significant factor in school success (p.44). Similarly, Greenberg and Harris (2012) state that mindfulness may improve school related functioning (p. 163). Greenberg and Harris (2012) also report that studies show students who partake in mindfulness show less aggression, have increased attendance, less school-related behavior management methods and EF improvements including improved attention. Zelazo and Lyons (2012) report that mindfulness offers educational benefits, while Felver et al. (2017) similarly state that research suggests that

school-age youths psychosocial problems may be related to attention regulation (p. 872). Control of emotion and attention are the stepping stones for school readiness behaviorally, cognitively (Flook et al., 2015) and socially (Flook et al., 2015; Greenberg & Harris, 2012; Zelazo & Lyons, 2012).

Mindfulness offers positive social behaviors. Many mindfulness programs involve techniques that focus on developing empathy and compassion (Greenberg & Harris, 2012). Potential benefits of mindfulness training include calmness, emotional stability (Zelazo & Lyons, 2012), and well-being (Greenberg & Harris, 2012; Zelazo & Lyons, 2012).

Mindfulness is an umbrella term for many types of interventions or adapted practices. Mindfulness can pertain to various skills or of many techniques (Burke, 2010; Greenberg & Harris, 2012; Thompson & Gauntlett, 2008). Mindfulness is often just thought of as meditation, which has many forms that can benefit children including guided meditation (Burke, 2010), sitting meditation (Burke, 2010; Diamond & Lee, 2011; Greenberg & Harris, 2012; Lillard, 2011), attention to thoughts and feelings (Diamond & Lee, 2011; Greenberg & Harris, 2012; Hooker & Foder, 2008) or concentrating attention (Lillard, 2011). However, mindfulness is more than just meditation.

Using a variety of mindfulness training or techniques switching this up in order to prevent boredom and to keep improving (Diamond & Lee, 2011; Schonert-Reichl et al. 2015), as well as to continually challenge, keep things exciting, motivating and engaging (Diamond, 2010) are necessary for children. Luckily there are many activities for teachers to choose from and implement that support mindfulness. Researchers suggest drawing (Hooker & Foder, 2008), the arts (Greenberg & Harris, 2012), journaling (Hooker & Foder, 2008; Zelazo & Lyons, 2012), and listening to music (Bell, McIntyre, & Hadley, 2016; Hudziak, 2016; Thompson & Gauntlett-

Gilbert, 2008; Schonert-Reichl et al., 2015) or other aspects of the environment such as sounds (Thompson & Gauntlett-Gilbert, 2008). Listening to classical music specifically can show improvements in mindfulness and awareness (Bell, McIntyre, & Hadley, 2016, p. 232) and daily listening shows successes with emotional regulation, the ability to pay attention, as well as with EFs (Hudziak, 2016). Even with informal or regular daily practices (Thompson & Gauntlett-Gilbert, 2008) such as eating (Hooker & Foder, 2008), walking (Burke, 2010; Hooker & Foder, 2008; Lillard, 2011; Thompson & Gauntlett-Gilbert, 2008), and breathing (Greenberg & Harris, 2012; Hooker & Foder, 2008; Schonert-Reichl, et al., 2015; Thompson & Gauntlett-Gilbert, 2008) can and should be incorporated into mindfulness activities (Thompson & Gauntlett-Gilbert, 2008).

Using the senses is a large part of mindfulness and using activities to support this type of learning helps with self-awareness, checking in with self (Thompson & Gauntlett-Gilbert, 2008), calming down (Burke, 2010), being aware of the environment and of others (Brown, Ryan & Creswell, 2008; Diamond & Lee, 2011), and the process of thought (Thompson & Gauntlett-Gilbert, 2008), which all relates to prosocial skills (Flook et al., 2015; Schonert-Reichl et al., 2015). Having mindfulness of body and using visualization (Hooker & Foder, 2008), guided imagery (Greenberg & Harris, 2008), body scans (Burke, 2010; Diamond & Lee, 2011), silence (Lillard, 2011), and discussing experiences (Burke, 2010) are also a large part of mindfulness. Researchers also suggest utilizing nature (Greenberg & Harris, 2012) and going outside of the classroom to support mindful practices (Thompson & Gauntlett-Gilbert, 2008).

There are formal mindfulness interventions, but here the focus will be on more informal interventions. However, mindfulness techniques for children are much different than those for adults, and according to Lillard (2011), it needs to be developmentally appropriate. Teaching

mindfulness to children should be done so more concretely (Diamond & Lee, 2011; Hooker & Foder, 2008), and use humor, creativity, imagination, cartoons, books, and movies (Hooker & Foder, 2008). Similarly, Zelazo and Lyons (2012) recommend using props to teach mindful activities in order for children to clearly understand the point of techniques as well as to use sensory objects (Brown, Ryan, & Creswell, 2008) since so much of mindfulness deals with the senses or sensorimotor experiences (Lillard, 2011). Mindfulness for children needs to be fun.

When teaching children mindfulness, it is best to start simple (Hooker & Foder, 2008), and keep it simple throughout the intervention (Lillard, 2011; Zelazo & Lyons, 2012). Using metaphors helps convey a more concrete understanding of the exercise or activity, as well as to see the purpose (Thompson and Gauntlett-Gilbert, 2008; Zelazo & Lyons, 2012). Mindfulness activities or exercises should be kept to short lengths of time (Hooker & Foder, 2008; Thompson & Gaulntlett-Gilbert, 2008) and ensure that children are not kept sitting too long (Schonert-Reichl et al., 2015). In fact, incorporating movement based activities is an essential factor in mindfulness with children according to Zelazo and Lyons (2012).

Some popular physical activities that support mindfulness are yoga (Diamond & Lee, 2011; Greenberg & Harris, 2012; Hudziak, 2016; Lillard, 2011; Zelazo & Lyons, 2012), Tai Chi (Greenberg & Harris, 2012), stretching (Zelazo & Lyons, 2012), or any motor movement that connects the mind and body (Lillard, 2011; Burke, 2010). One researcher reported on three studies that only consisted of exercise alone, which did not have proper outcomes, therefore, she points out that just doing physical activity may not be as effective as coupling movement with character development or techniques that involve mindfulness, such as yoga (Diamond, 2010, p. 337). This idea also supports the other researchers in using various methods (Burke, 2010; Greenberg & Harris, 2012; Thompson & Gauntlett, 2008).

Reports show that there are ideal times of the day to practice mindfulness, such as with transitions, before tests, and at the beginning of the day (Hooker & Foder, 2008). Diamond (2010) and Schonert-Reichl et al. (2015) report that teaching mindfulness with three intervals including morning, after lunch and before going home is more beneficial. Teaching mindfulness throughout the day (Schonert-Reichl et al., 2015) and embedding mindful practices in all activities is more ideal than teaching it in one sitting (as cited in Diamond & Lee 2011). Also, repeated practice of mindful exercises is vital so that they become automatic and routine (Diamond & Lee, 2011; Greenberg & Harris, 2012; Lillard, 2011; Schonert-Reichl et al., 2015; Thompson & Gauntlett-Gilbert, 2008). Similarly, according to Diamond (2010) giving children the experience of being able to apply what they are learning solidifies the concept more (p. 786). According to researchers, teachers play an active role in the development of mindfulness in children. Teachers need to model, scaffold and support students (Diamond, 2010), a teacher's behavior serves as a model, in which they need to examine their inner selves (Zelazo & Lyons, 2012). Teachers should also practice what they preach (Hooker & Foder, 2008).

Conclusions

As reported by researchers, mindfulness has shown numerous benefits for children including self-regulation, executive functions, focus, attention, with social and emotional skills and awareness, de-stressing, and therefore academic achievement. Schonert-Reichl et al. (2015) state that there is limited research on the outcomes of mindful practices regarding overall wellness, socially, and with learning (p. 53). The truth is that more research is necessary in order to truly know the effects of mindfulness in adolescents (Burke, 2010; Diamond, 2012; Felver et al., 2017; Flook et al., 2015; Greenberg & Harris, 2012; Schonert-Reichl et al., 2015; Thompson & Gauntlett-Gilbert, 2008; Zelazo & Lyons, 2012).

Overall, it seems clear that teachers are likely to get positive results from teaching some combination of mindful adapted practices, including those that aid in self-regulation and EF, social-emotional skills, and therefore academic achievement by teaching various mindfulness activities and exercises. Teachers must keep in mind the usage of appropriate tools, resources, and concepts specifically geared toward children. Building these mental processes will help emotions that will improve behavior, which will assist with school success that undoubtedly will aid in life readiness. There are many key factors for success in developing mindfulness in children. Mindfulness has had a powerful impact on adults, so the thought is that mindfulness could have similar effects on children since it seems to target social, emotional, and academic development. It can be concluded that in order for mindfulness to become a more established evidence-based intervention, more research needs to be conducted.

Methodology

The purpose of this action research project was to discern what effect mindfulness activities or exercises would have on self-regulation in a mixed first through third-grade Montessori classroom. I collected data over a span of six weeks during the winter months of the 2017-2018 school year. The participants in this project ranged from six to nine years old and included 24 students from start to finish. The data of four other students are also interspersed due to losing two students and gaining two new students throughout the data collection time frame. With permission from their parents, the students in the class participated in a variety whole group mindfulness activities and exercises.

The first week of data collection consisted of gathering baseline information. During this initial week, I gave my students a behavioral self-assessment which contained questions about self-regulation behaviors (Appendix A). I explained the assessment to students and directed them

to follow along as I read each question. They were to circle thumbs up for yes, thumbs to the side for sometimes, and thumbs down for no. Student self-assessment of their performance will help them become more self-aware as well as indicate student's perceptions of their progress toward learning objectives. I also marked each question, for each student, which would allow for feedback to compare similarities and differences and allow for further reflection and to growth of improved outcomes, if any. This procedure was also repeated at the end of my research to determine if any changes in perceptions had transpired.

I also utilized a tally sheet (Appendix B) to record the number of students who were showing on task behaviors at 30-minute intervals during the morning work period when students work independently. This worked out to five times each morning, four days a week due to a double block of prep periods on Wednesdays. This data helped to identify and track self-regulation skills as well as patterns throughout the morning work period, starting with baseline collection and following for five more weeks. This also helped gain a snap shot of the entire class dynamic and the learning environment at different intervals. For this observation, on task behavior constituted engagement in a lesson or learning activity, whereas, those who had behaviors that were not purposeful and disengaged from learning were considered off task.

Observational notes (Appendix C) provided logistics of what types of mindfulness activities and exercises were taught daily. It also includes information regarding the behaviors and reactions observed including discussions of feelings to the intervention. Observations of behaviors and important occurrences throughout the day, such as a student using techniques independently, any change in behaviors noticed with individuals and the class overall are included on this form as well. The observation form served as a written record for distractions and deviations from the normal routine. This data collection tool helped to provide pertinent

information that was not collected by other means. Observational notes began during the baseline week, which did not include any notes on mindfulness, since the intervention did not begin yet.

I implemented an auditory activity that included students listening to one step directions and then performing the written task. This activity was done during the baseline week as well as once a week after that with each activity being different from the last. I explained the directions to my students which entailed keeping their eyes on their paper, not talking and waiting to hear each direction, in which would only be said one time. Scores were coded in the listening and following directions matrix (Appendix D) where students received a score each week. This allowed to seeing any changes in student's abilities to focus attention, use active listening skills, and in practicing self-control.

Student work plans of written assignments were also used to show how much work was completed each day. Information from the plan was transferred to the productivity scoring rubric (Appendix E) at the end of each week. This data provided a baseline, which showed the amount of work being completed each day. An increase in productivity may prove whether or not the intervention helped with self-regulation such as focusing attention, time management, effort, and motivation.

A behavior log (Appendix F) was kept during the baseline week of all students. From there, I identified a subset of eight students who consistently exhibited more problematic conduct and needed the most redirection to monitor for this data set only. This collection process contained marking specific undesired behaviors and then separating that data onto a specific student sheet to compare the information two ways, as a whole as well as individually (Appendix G). This process helped document the undesired behaviors prior to and during the intervention to monitor any changes.

After the conclusion of collecting data for the week of baseline, I started the intervention of mindfulness. I introduced mindfulness as a way to pay attention on purpose. I started my intervention with a discussion. I explained to my students that we all have things going on that make us sad, mad, nervous, worried, uncomfortable, and many other feelings. I also explained that sometimes we are not focused on things how we should be, or not getting our work done, or making very good choices. Many of my students wanted to share specific things that make them feel or act a certain way, which created some buy-in. As a result, I told them I was going to start doing some activities and exercises with them to try to help deal with some of these problems. I told them that they might not like what we are doing, but I asked them to give it a try and to take it seriously. They were all in agreement, and so the intervention began.

I did a variety of whole group mindfulness activities three times a day with my students. We started in the morning, to set the intention for the day, again before or after lunch, depending on prep periods and the schedule for the day, and lastly, at the end of the day, in closing. Activities were chosen that were purposeful, simple, fun, and did not take much time, although, some did range from two minutes to twenty minutes. Mindful practices included breathing techniques, yoga and stretching, journaling, mindful art, and drawing. Guided meditation, listening to music for purpose, using sensory objects, specific activities to understand mindfulness (ex: mind in a jar activity) to show concrete examples for better comprehension.

Classical music was played for the duration of work time that claimed to be good for learning, concentration, and thinking. Resources such as mindful cards containing movement activities, mindful coloring pages, meditation apps and videos, reading stories dealing with mindfulness or meditation, and mindful interactive notebook lessons were utilized to help with teaching and learning purposes. I tried to stay true to the Montessori method of following the

child, and the class by observing during these practices. I was cognizant of incorporating more of the activities that they enjoyed, while eliminating those that were not so successful or well received.

Throughout the implementation of research, I used the student feedback tool (Appendix H), once a week. This acted as a baseline of feelings before a mindful activity or exercise as well as after a mindful activity or exercise. This data collection tool helped identify how students are feeling before a mindfulness exercise or activity and if their feelings changed after the intervention as well as how they feel about mindfulness. To begin, I showed my students the faces of feelings located on the student feedback tool. I discussed what each face meant and gave them directions. Before I handed out the student feedback tool papers, I instructed the students to write their name and date and only to do the first question, which was to circle one face that shows how they feel. Depending on the activity, I then asked them to turn over the paper once that was finished, or I collected the papers. We then went into a mindful activity. After the exercise, students were then instructed to turn back over their papers, or they were handed back out for completion and given specific instructions.

Analysis of Data

Behavioral self-assessments offered some insight into student perspectives of self-regulation. Data for many questions remained unchanged from pre-intervention to post-intervention (Table 1), although, responses to seven statements had a more considerable shift. Five (20%) of students changed their response to “I follow directions” from sometimes to yes. With that same trend, seven (30%) of students changed their response to “I stay on task” from sometimes to yes. The statement “I get distracted easily” had a lot of movement in which seven (30%) of students changed their response from yes to sometimes or no. The assertion “I usually

feel calm" had some movement starting with four students who do not usually feel calm, ending with zero students who do not usually feel calm. When posed with the statement "I finish my work on time" there was some shifting of five students, with the most significant being that 46% of students feel like they finish their work on time and 54% of students feel like they finish their work some of the time. There was a small amount of change in the statement "I worry a lot" which the answer no gained three students. Lastly, the assertion "I have trouble making choices" had a change of five responses, where the yes answers were dispersed to sometimes or no answers.

Table 1. Changes in Student Responses to Behavioral Self-Assessment

Statement	Pre-Intervention			Post-Intervention		
	Y	S	N	Y	S	N
I follow directions.	9	14	1	14	9	1
I stay on task.	6	17	1	13	10	1
I get distracted easily.	8	10	6	1	15	8
I usually feel calm.	15	5	4	19	5	0
I finish my work on time.	6	16	2	11	13	0
I worry a lot.	9	12	3	9	9	6
I have trouble making choices.	7	10	7	2	11	11

Key: Y=Yes, S= Sometimes, N=No

On task behavior during week one, or the baseline collection, averaged to 64% (Figure 1). Within the start of the intervention already a 17% increase in on task observations. Each week continued to increase with a spike in week four, and a 1% drop week five and a 1% drop again the last week of observation. This data is consistent with the data within my observational notes.

Mindfulness done prior to work time including movement and classical music were well accepted and requested. Many students asked “can you put music on,” for independent afternoon activities, when asked why they claimed “it helps me focus” or “I can think better.” Students’ awareness to being monitored every 30 minutes during the work period could also be related to the observed improvements in on task behavior. Inconsistent weeks due to two Mondays in which holidays were observed, and distracting events in the classroom all are concluded to be a normal part of the ebb and flow of on task behavior.

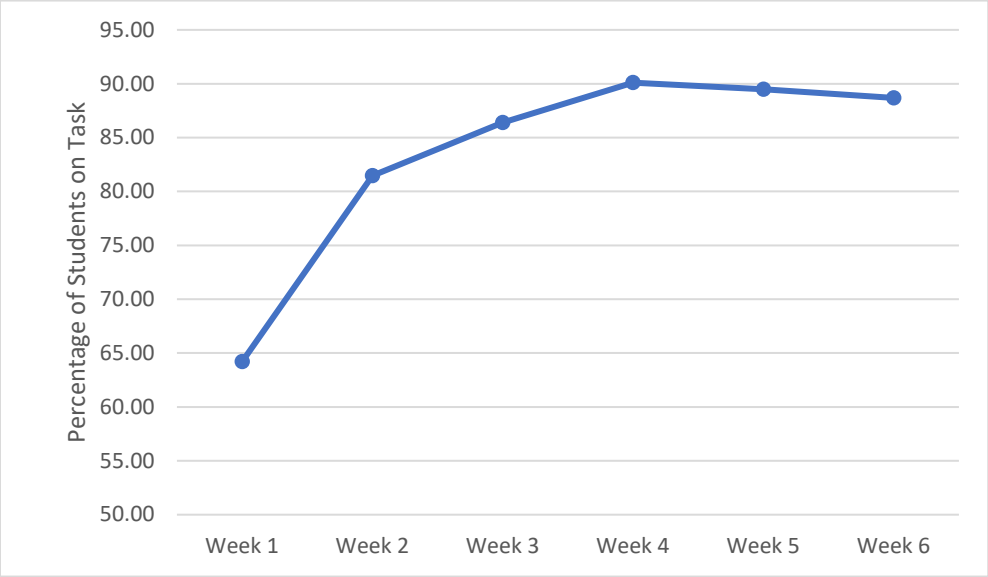

Figure 1. On task behavior

In analyzing the on task observation data, it can be inferred that the difference from the pre-intervention to week six of post-intervention, is less sporadic and more balanced (Figure 2). On task behavior data was collected four days a week at every half hour mark during the morning work period. Week one on task behavior was all over with significant peaks and valleys during each collection time, whereas week six on task behaviors were much higher in range, and even though they dropped and rose and different times it is a more consistent pattern. It can be concluded that the intervention of mindfulness does play a significant role in on task behavior.

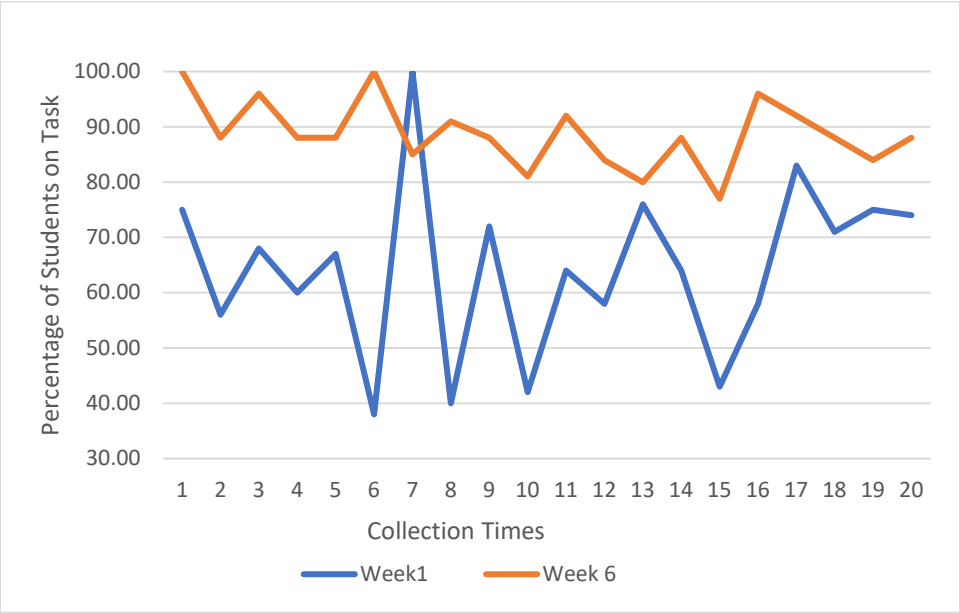

Figure 2. Comparison of students on task from pre-intervention to post-intervention

From the listening and following directions auditory assessments, data was analyzed from baseline to week six. 11 (40%) of students had one to two errors, 11 also had three to four errors, leaving two students or 10% with five or more mistakes. Week two, or the first week of intervention shows two students have zero errors, and the middle of the road values decreased to nine students each, however five or more errors gained one student. With each progressing week, the no errors almost double. The other significant point worth mentioning is that for week five and six, no students scored in the five or more errors range, and the three to four mistakes went down to one student. The intervention shows to have a positive correlation with listening and following directions.

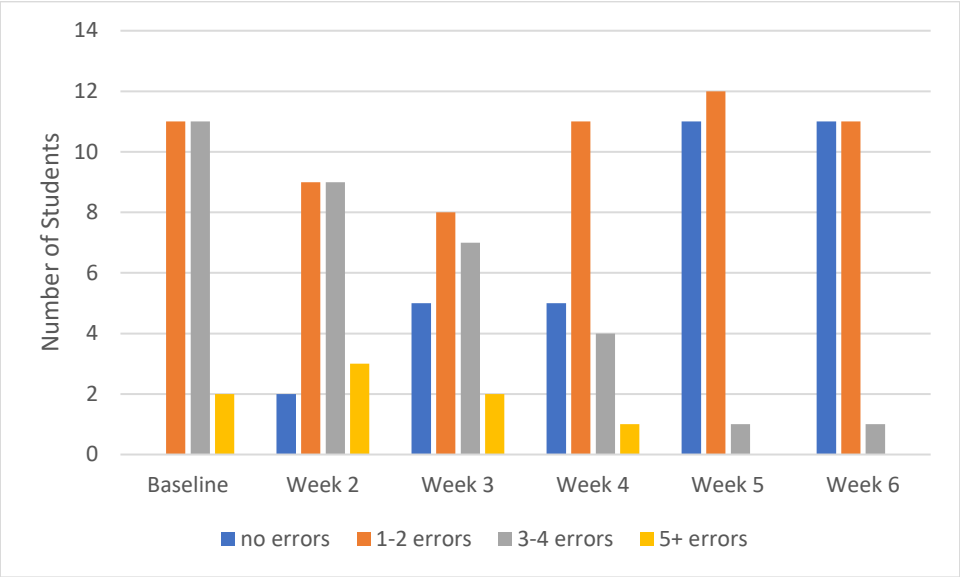

Figure 3. Comparison over time with auditory assessment for listening and following directions

Self-regulation was also measured in terms of productivity during the morning work period for the amount of work completed. Data was collected from student work plans and coded with a score for minimal, most or all work completed (Figure 4). Five (20%) of students completed minimal work, 16 (65%) of students completed most of their work and only three students completed all of their work. By week six, zero students completed a minimal amount, 19 (80%) of students completed most of their work and five (20%) of students completed all of their work. These findings mirror on task observations and it can be concluded that when more children were on task, more work was being completed, therefore, the intervention has a positive correlation on academic performance.

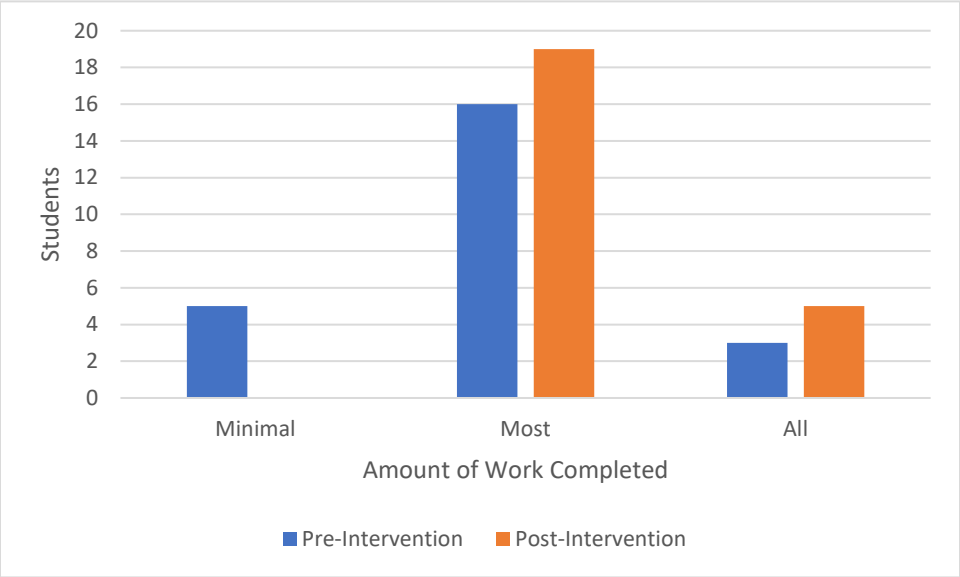

Figure 4. Changes in productivity

A subgroup of eight students were observed for specific behaviors, which were marked on a log. The data was added and averaged by weekly occurrences and analyzed week over week (Figure 5). The baseline data showed an average of 33 occurrences, dropping to an average of 26 in week two, and then to an average of 22 in week three. Week four had a decrease by an average of eight occurrences and five stayed consistent. The final week of observation dropped to an average of 11 occurrences per work period. All in all, the decrease in the average number of occurrences is significant indicating that the intervention decreases unwanted behaviors including socially, and emotionally.

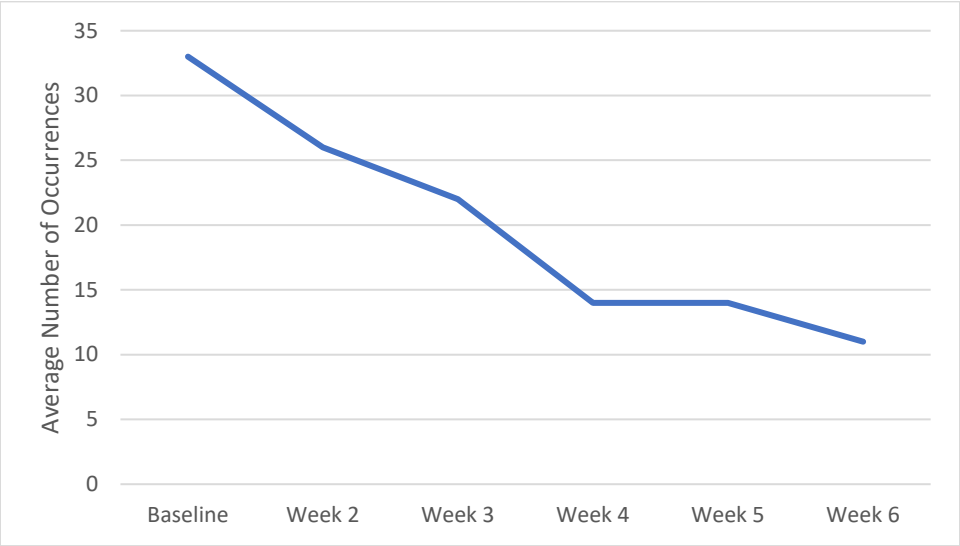

Figure 5. Subgroup behavioral events over time

In analyzing the subgroup of eight students, I separated the behaviors out into two categories (Figure 6). Talking out, wandering, materials misuse, defiance, chatty, uncontrolled movement, not listening, playing around, and unsafe behavior were coded as externalizing behaviors. Whereas, emotional, moody, not focused, and peer conflict were coded as internalizing behaviors. Overtime, externalizing behaviors significantly lessened by an average of 17 occurrences with week six being the lowest recorded observations. Internalizing behaviors did not show as significant of a change, rather stayed in a consistent hold. These findings might suggest that internalizing behaviors are harder to overcome and take longer to show improvements. These findings also coincide with other observations that external behaviors play a big part in the class dynamics, but internalizing behaviors are more at an individual level, or do not have an effect the class as a whole as much.

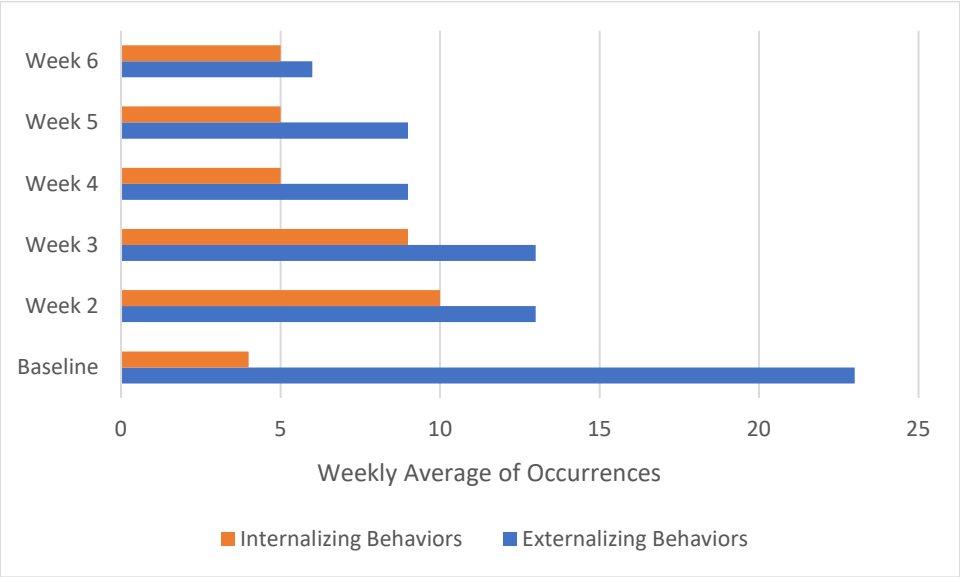

Figure 6. Comparison of subgroup specific behaviors over time

Student feedback tools allowed for the analysis of feelings pre and post intervention (Figure 7). The findings show that nine students or 37% of students during week two, or the first week of the intervention had a positive change in their feelings. In the third week, six (25%) of students went from a negative feeling to a positive feeling after mindfulness. Week four mirrored week six with the highest change with twelve (50%) of students experiencing a better mood post intervention. This discrepancy could be related to the activity chosen, lack of participation for one reason or another. I did conclude that students who needed this intervention most fought it the most. They did not want to close their eyes or sit still or to try to calm their mind. A few participants indicated feelings of anger after they started as happy. This can be indicative of starting to process those feelings and is a normal reaction for many. After the third week these participants started indicating positive changes post intervention.

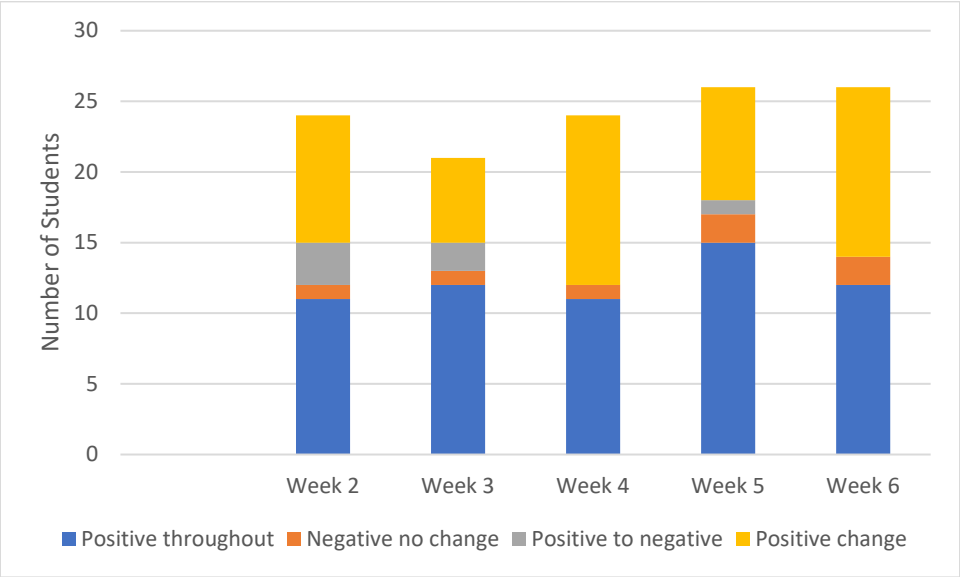

Figure 7. Comparison of feelings before and after mindfulness activities

The student feedback tool also offered insight as to how students perceived the intervention. For instance, if they thought mindfulness helps them (Figure 8). Since this data collection was weekly, each student had five times to answer, so the results were averaged. 95% of students answered that mindfulness helps them, while 4% state that it does not and 1% answered not sure. After analyzing this more clearly, not one student consistently stated that they did not think it helped them. Similarly, students answered the question "do you enjoy mindfulness" (Figure 9). This was asked five times and 90% answered yes, 8% answered no, and 2% were not sure. None of the students consistently answered no or not sure, in which the differences could have been the result of not liking the activity we completed, or from being in a bad mood and not wanting to take part. My observational notes also reflect these findings. It can be concluded that students who enjoy mindfulness and think it helps will be more willing to use and try methods to help them cope with stressors.

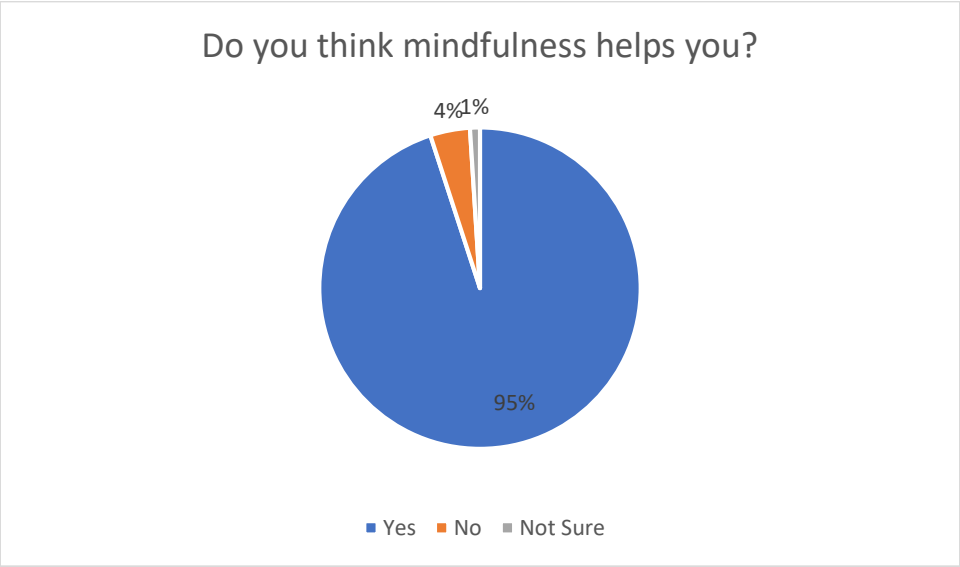

Figure 8. Perception of the effectiveness of mindfulness

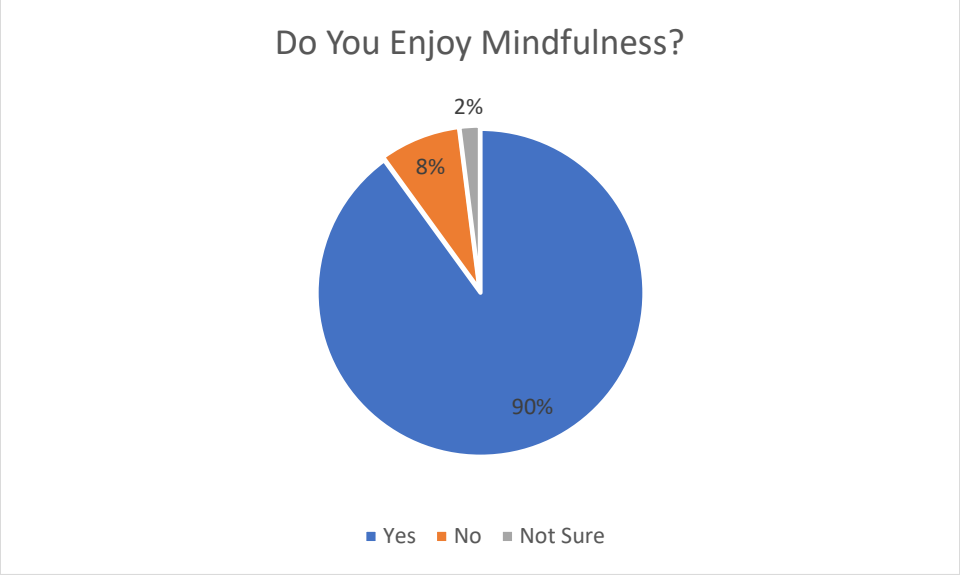

Figure 9. Perception of the likability of doing mindfulness activities

Action Plan

The results of this study indicate that listening and following directions, on task behavior, productivity, and social-emotional behavior improved as a result of the intervention. These improvements are indicative of increasing self-regulation and executive functioning skills. Since research suggests students are entering classrooms without self-regulatory skills, implementing mindfulness strategies may offer teachers the most promise at tackling multiple issues all at

once. With all the data collection tools utilized, a significant amount of data was gathered, in which I tried to cover all of the elements that research states mindfulness helps with. Moving forward, narrowing down the collection to specific ideas and extending the time frame of data collection would be beneficial.

A variety of mindfulness activities were presented including breathing techniques, reading stories dealing with meditation or mindfulness, yoga and stretching, journaling, mindful art/drawing, guided meditation, listening to music for purpose, using sensory objects, mindful videos, and other specific activities to understand mindfulness, such as mind in a jar, to show concrete examples for better comprehension. Through trial and error, I learned which types of exercises majority of students liked the best and liked the least, which helped guide my lessons and continuing with the Montessori way of following the child. For future research, surveying students would be beneficial to really pinpoint the right techniques to continue, since it is important to mix up types of activities and to keep it fun. Based on the fact that every class is different, a repeated study may offer different results. In the end, all students enjoyed partaking in mindfulness and reported positive associations with the intervention. The benefits outweigh the costs when determining if mindfulness should be taught to children. Advantages of individual circumstances would also be a determinant of how successful a child is with mindfulness-based practices. Not all children are the same. Therefore, not all interventions would work for all children.

The measures may have been affected by other means. Baseline data was collected prior to winter break, which is usually associated with students having higher energy, or misbehaving more, however, through my personal assumption, my class was no more dysregulated than normal during this time frame. Their behavior was indicative of any regular week within the

school year. Another factor was that two students left within the study and were replaced by two others. This school year alone I have had six new students. This revolving door definitely created a bit of chaos, which undoubtedly played into the class normalizing. Each time someone left and then joined changed our class dynamic significantly.

I will continue to make use of mindfulness activities and exercises within my classroom. Student interest level coupled with the positive outcomes associated with mindfulness activities and lessons constitutes maintaining such practices in the classroom in hopes that students will carry these with them at home and through life. Mindfulness will be an ongoing staple in the everyday routines of my classroom, especially since Montessori education already embeds the same kind of mindfulness-based approaches, even if they do not hold the same name. The idea of creating a routine in the classroom goes hand in hand with forming a habit. If children are in the habit of taking care of themselves and being in tune with their thoughts at an early age the more prepared they will be. Mindfulness will also continue to become a regular activity for me as I continue the process of personal transformation and with my journey as a Montessori guide.

Mindfulness has become popular among many, and it is no wonder why. How amazing to have a child use a breathing exercise when upset, or a movement to do when they feel antsy. How perfect for them to notice and be aware of surroundings, as well as other people's feelings. How incredible for them to take a break from the chaotic world and just be; to be able to shut out distractions and focus on an activity or assignment, to not react impulsively but to think about one's actions, and to be able to reason and be patient, and to not need instant gratifying results. These are real world situations that children can and are learning with mindfulness-based intervention practices. Researchers, Roeser and Eccles, "believe greater research focus on positive human qualities, and on socialization practices and interventions that support their

flowering, can enrich the scope of developmental science and provide practical knowledge that is needed in the world today" (2015, p. 5). As Lillard (2011) points out, "mindfulness intervention is worth considering for American education" (p. 84). The benefits from mindfulness practice not only help children but also, in turn, have a greater effect on the world as a whole.

This study contributes to the field of education by affirming the integration of mindfulness exercises and activities to improve self-regulation. It supports further research into incorporating mindfulness as a classroom intervention or as part of a daily routine. I believe mindfulness would be beneficial for teachers to implement in all classrooms or educational settings. The data shows that mindfulness can be included in classroom curriculum and procedures to support students with self-regulation and executive functioning skills, which in turn benefit children socially, emotionally and academically.

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Appendix A

NAME_____ DATE_____

BEHAVIORAL SELF—ASSESSMENT

Directions: Circle your response.

Yes Sometimes No

1. I follow directions	
2. I have good behavior	
3. I stay on task	
4. I try my best	
5. I can work without disturbing others	
6. I take care of materials and supplies	
7. I treat others with respect	

8. I get distracted easily	
9. I usually feel calm	
10. I take my time	
11. I pay attention	
12. I practice self-control	
13. I keep my hands to myself	
14. I finish my work on time	
15. I can sit still	
16. I learn from my mistakes	

17.	My teacher has to repeat directions for me many times	
18.	I think a lot about how I am doing	
19.	I set goals for myself	
20.	I want to be the best I can be	
21.	I worry a lot	
22.	Doing well is important to me	
23.	I have trouble making choices	
24.	Most of the time I don't pay attention to what I am doing	
25.	I give up quickly	

Appendix B

ON TASK BEHAVIOR TALLY SHEET M T ~~W~~ TH F DATE:_____

Time	Tally of on task behaviors	Total # of students present	# of on task /total # of students	% of students on task
9:15			/	%
9:45			/	%
10:15			/	%
10:45			/	%
11:15			/	%

ON TASK BEHAVIOR TALLY SHEET M T ~~W~~ TH F DATE:_____

Time	Tally of on task behaviors	Total # of students present	# of on task /total # of students	% of students on task
9:15			/	%
9:45			/	%
10:15			/	%
10:45			/	%
11:15			/	%

Appendix C

Observational Notes Date_____

Distractions: ____Phone call(s)#_____ ____Visitors#_____ ____Loud speaker#_____ ____Occurrence w/student (emotional, tooth lost, hurt, bloody nose, etc.) ____ Loud noise (knock on door, materials dropping, chair falling, weather, etc.) ____ Conflicts ____Other (insect in room, etc.)	Distraction Notes:
Normal Routine Variations: ____Due to weather, no outdoor morning walk ____Assembly ____Emergency Drill ____Different people in room (adult observer, child from buddy class, parent volunteer, etc.) ____ Field Trip ____ Testing ____Other (IA out, longer circle time, etc.)	Normal Routine Variation Notes:
Lesson Plan of Mindfulness Exercises and Activities 1. 2. 3.	Mindfulness Notes: Overall, how the lesson/activity or exercise went 1.  2.  3.  Notes:

Written notes about mindfulness activities and exercises such student responses, mood/ energy of room, requests for certain activities:	_____Classical Music CD played Title: My mood: Other Notes: 
Notes about specific students:	Conferencing notes:

Appendix D

listening and Following Directions Matrix

For use with written assignment: Fluttering Through First Grade Listen up! Auditory Listeners Assessments for K-3rd grade

Scoring	4 no errors	3 1-2 errors	2 3-4 errors	1 5+ errors

Student	Week 1 Baseline Pre-intervention	Week 2	Week 3	Week 4	Week 5	Week 6

Appendix E

Week of_____

Productivity Scoring Rubric

1	2	3	4
No work completed	Minimal work completed	Most work completed	All work completed
n/a=not applicable		ab-absent	

Student	M	T	W	Th	F	Notes

Appendix F

Behavior Log

Date_____

not focused	talking out	wandering	materials misuse	emotional	moody	peer conflict
1	2	3	4	5	6	7
defiance	chatty	uncontrolled movement	not listening	playing around	unsafe behavior	other
8	9	10	11	12	13	14

Student	Behavior code	Notes/Comments

Appendix G

Results from Behavior Log per individual student

Student:_____

Date	Time	Behavior

Appendix H

Name_____ Date_____

Student Feedback Tool

Directions: circle one face that shows how you are feeling

1. Before mindfulness, I am feeling

2. After mindfulness, I am feeling

3. Do you think mindfulness helps you?

Yes No

4. Do you enjoy doing mindfulness?

Yes No