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IMPACTING STUDENT ON-TASK BEHAVIORS THROUGH CLASSROOM BASED PHYSICAL ACTIVITY AND MOVEMENT

Katelyn Allen

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by

Katelyn Allen

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Primary Advisor: Jeffrey Fink
Content Reviewer: Rebecca Sjolander
Peer Reviewer: Tracy Boyum

To my family and friends who were always there with encouragement, support, and patience throughout this research process. To my Capstone Committee for their guidance, determination, and dedication in helping me complete this thesis. To my students who made this capstone possible. You are all truly amazing and I am forever grateful for the positive impact you all had on me and this research study.

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Introduction

Educators need an adequate amount of days and hours to deliver quality lessons and instruction so that students are engaged and learning at their maximum capacity. There are different factors that can negatively impact the time allowed in a day, or even a week, for instruction, but the most evident challenge is classroom off-task behaviors. "Prior research examining the frequency of off-task behavior has estimated that children spend between 10% and 50% of their time off-task in regular education classrooms" (Godwin, 2013, p. 2428). Many preventions and interventions have been implemented into classrooms, usually taking the form of a classroom management plan, yet there are many different styles and approaches to these interventions. Different options, styles, and approaches can become overwhelming for an educator as they try navigating through which ones will be beneficial and effective for students in their own classroom. With the understanding that approaches to discipline and classroom management have been shaped and influenced by changes in society over the years, educators can better prepare themselves for the changes that will occur within their own classrooms. Educators must be ready and willing to change or adapt classroom management strategies that they are already using to better meet the needs of all students (Scarlett, 2009).

I am studying different amounts of physical activity and movement implemented into a Midwest suburban kindergarten classroom setting because I want to find out the impact these classroom-oriented movements have in regards to kindergarten students' on-task behaviors. This will be monitored throughout given days and weeks in order to help educators understand whether or not physical activity and movement can be used as a

form, or tool, of proactive classroom management when it comes to on-task behaviors during instruction time.

Throughout this chapter, I will be explaining my personal journey and passion towards this research topic, explain the rationale behind the desire to study this topic, and the importance this topic has in the present educational world. It is my hope that by the end of this chapter, the reader will have made a comprehensive connection between physical activity in the classroom setting and classroom behavior outcomes, and will continue on with me throughout this thesis study.

My Journey

During the last two years of my undergraduate time at college, I started to get more involved in exercising, eating healthy, and changing my overall health lifestyle and mindsets. This involvement was first influenced by my chiropractor to help with a short-term health concern but eventually continued on due to the positive impacts it was having on my overall health and daily life. I started walking to and from classes everyday instead of taking the bus, kept a five-day-a-week exercise plan, and always ended the day with some kind of physical activity that was fun and/or relaxing. I started to have a happier and more positive mindset, felt so much more focused in my classes and with homework, was retaining information better, and became way more energized and less lazy. I had also started eating wheat and grain free, which also helped alongside the physically active part of my daily schedule. This kind of lifestyle was helping with the different stresses and anxieties that most people can relate to, and I became way more open to changes and challenges that came my way. This personal choice was the beginning in motivating

others to use movement, diet, and mindsets in their daily lives to gain a healthier and well-rounded life.

In my undergraduate studies, I took a course in which we learned how to teach elementary students social studies. The professor of this course happened to be new to the university that semester so no one knew her style of instruction. Every day in her class, the focus was not only on how and what to teach in regards to the social studies subject, but how to keep our students engaged in what we were teaching. She was so creative in the many different ways she taught us and made sure to have a good amount of transition times to her different lectures or activities. My favorite part about her class was that we got up at least once, sometimes more, to do a quick movement break. It seemed so silly at the time that college students would have to get up and do some kind of movement exercise, but it helped us all take a break from the instruction and come back focused again. She knew right when to have these breaks and they weren't always at the same times. Usually they were done at the halfway point, but sometimes we would do them sooner or later depending on where we were in our focus and attention to her lesson. She had made such a positive impact on me and my views of teaching that by the end of this course, and through the rest of my undergraduate journey, I carried with me the motivation to teach this way. Thus, began my professional goal to be a teacher who incorporates movement into my future classroom.

New goals are amazing in the sense that it is so uplifting to set them and then accomplish them. The hard part with goals, though, is that you sometimes set goals too high and feel disheartened when you don't reach them. That's how I felt during my time student teaching when it came to movement implementation. I couldn't wait to get into

that fourth-grade classroom and turn their worlds right side up. But I forgot to account for one detail that most educators in every district struggle with: time. At first, I let the guilty feeling of not incorporating movement in their day be pushed aside. However, as my students started to review for the MCA reading and math standardized tests, the guilty feeling come back and I decided to fix it. In the last part of my student teaching, I was able to incorporate more movement through review games and activities, and the students seemed to be very engaged and more motivated throughout these entire lessons. It still wasn't exactly what I envisioned, but it was a goal that I could keep striving to accomplish. This first-hand observation of the positive effect movement during the school day can have on student on-task engagement, motivated me to develop and strengthen my goal for a movement-based classroom.

Upon completing student-teaching, I had the great opportunity to accept a kindergarten position. One thing to be aware of when it comes to kindergarteners and their attention spans is that they are very short, especially at the beginning of the year. My newly developed goal for my first year of teaching was to have two specific times in the day dedicated to Brain Breaks, where physical activity and movement would be intentionally implemented. I also kept in mind that there might be more than that allotted time needed in a day depending on the level of focus, attention, and engagement that was happening in the classroom. These specific times allowed my students, and myself, time to be active and take a break from our learning. I stuck to this goal and implemented it right away at the beginning of the school year. Participation was one area I knew could be a challenge, depending on whether or not my students would want to actually participate. Because of this, I made sure to participate alongside them as much as I could,

to show them that even I wanted to do this because it was so much fun and so good for my body. The best part of all of this was the fact that my students with challenging behaviors seemed to not only love participating in these movements, but they seemed more focused and on task during the times after the movements. This observation has pushed me to investigate the potential connection between movement and on-task behaviors.

During my first year of teaching, there was a big development in the research world revolving around movement in the daily classroom schedule and the positive impacts it was having on student academic retention. There are numerous studies conducted around different aged and demographic students to see what kind of impact these movements were having on the development and learning of students, and the results showed great benefits of it. However, there was little research that specifically explained the impact that these movements had on student behaviors in the classroom. Some studies mentioned that it *seemed* to have a positive impact, but there wasn't a lot of observational or measurable evidence to back that thought (Carlson, 2015). I want to know if movement increases kindergarten students' ability to stay on task.

Rationale and Importance

In my four years of teaching kindergarten, I have witnessed many different levels of behavior problems; some minor behaviors and some major behaviors. The interesting thing about students is that they are all different and with that, have different levels of achievement and behaviors. Keeping that in mind, I implemented differentiated behavioral plans in order to meet the varying needs of my students with difficult behaviors. I had an overall classroom management plan that was driven by the school's

discipline and expectation policy. But, in order to keep my students with challenging behaviors on task and successfully educated, there were other plans that had to be implemented. At times it became overwhelming to keep track of all of the behavior sheets, observation notes, and goals for my students. Consider this example of different behavioral goals for an educator: for one student, their goal was to listen by the second time they were asked; for another student, their goal was to not hit others; and for yet another student, their goal was to not lie more than three times a week about a problem. These were three very different goals with different leniencies to them. But one area that seemed to lessen their different behavioral tendencies was movement in the classroom. Not always, but a good portion of the time, after any physical activity in the classroom, the behaviors seemed to dampen down, or dissipate, for a good portion of the day. This created additional motivation for studying the proactive connection between classroom oriented physical activity and on-task behaviors.

There are many classroom plans out there for educators to choose, and yet it can be hard to find one that fits every classroom or district perfectly from year to year. There is an understanding that your classroom management plan will incorporate the different policies and guidelines enforced and implemented by the school district in which you work as a way to create common language and procedures across all classrooms in different grade levels. I want to create an environment that encourages and enables on-task behaviors through age appropriate physical activity and movement. The benefits of physical activity and movement in a classroom are many. It is beneficial to the district and classroom behavioral structure goals, it creates opportunities for modeling a healthy lifestyle for students, and it helps actively regulate student behaviors in a healthy and

positive way. Now movement and physical activity won't be the defining classroom management plan that fixes all, but it could be used as a tool in your classroom management plan.

When you create and implement a proactive classroom management model that works for all students, you have less wasted classroom instruction time and more focused and engaged students. "Schools should dedicate an adequate amount of time to teaching and learning - between 850 to 1,000 instructional hours spread across 180 to 220 days per school year at the primary level…" (Instructional, 2018, para 2). Consciously creating time for physical activities and movements in the daily classroom schedule can help incorporate it as a daily routine. It creates healthier bodies and minds, as well as potentially producing fewer behavioral interruptions during learning time.

Implementing times of physical activity and movement every day in the classroom setting has an important impact on educators, students, and families. Educators who can use physical activity as a tool for classroom management can also reap the benefits it brings for more focused, engaged, and healthy learners (Carlson, 2015). Also, educators can apply for and receive grants for different movement tools, objects, and activities that they might not have been able to get, or afford, on their own. When it comes to students, there are so many important and beneficial impacts physical activity can have on them. With daily physical activity, students can become healthier physically and mentally, more focused and on-task, better at retaining the information and instruction, more energized and confident for challenges and obstacles that come their way, and they can become better independent learners. Educators who implement these activities and movements, and students who engage in it, can also communicate these

benefits to the students' families. Creating common health language between school and home is a great way to create a stronger partnership in not only the healthy lifestyle area, but in the way we go about deterring behavioral problems all around. It's important for parents to understand the significance physical activity has on student development and health, especially in the classroom. Creating a relationship between parent, educator, and student through the values of a healthy lifestyle can create learning environments that are safe, healthy, and positive.

Summary

Throughout this chapter, I have explained my personal journey and passion towards my research question, revealed the reasoning and rationale behind the inquiry of this topic, and showcased the importance this topic has in relation to the present world of education and the students, educators, and families within. I believe that by studying the effect physical activity and movement, implemented into a kindergarten classroom setting, might have on student on-task behaviors, I will be able to gain a better understanding of the impact those physical activities have in helping increase student on-task behaviors and share these findings with other educators.

In the next chapter, I will walk you through the different researchers and their data surrounding the concepts of physical activity and behaviors in the classroom setting. Chapter three will explain the different methods I have chosen to use in my own research and the action plan that will be put into place to collect accurate data. The findings from my study will be presented and analyzed in chapter four. Lastly, in chapter five, I will conclude my findings and highlight what was learned, how it compared to the research in

the literature review, the limitations of the study, reflection on my own growth, and recommendations for future research projects around this research topic.

CHAPTER TWO

Literature Review

The goal of this chapter is to examine previous research on physical activity and movement in the classroom setting, as well as classroom behaviors. A range of studies and research surrounding this question will be gathered and analyzed to further inform the readers of different findings that were investigated by previous researchers. The guiding question for this systematic literature review is: How do different amounts of physical activity and movement implemented into a suburban kindergarten classroom setting impact student on-task behaviors?

Though most, if not all, educators and administrators can agree that physical activity is an important part of a child's development, it still seems to be somewhat forgotten or set aside in favor of academic pushes. In a 2007 report done by Jennifer McMurrer, data showed that between physical education and recess times, there was a 29% decrease across multiple school districts in order to create more time for academics. This decrease in physical activity time seems to not only be continuing but for many, it is decreasing in size even more. Mahar, Murphy, Rowe, Golden, Shields, and Raedeke (2006) writes, “Research examining the impact of school physical activity programs on physical activity levels and on classroom behavior is needed to justify the incorporation of physical activity in school settings, especially to teachers and administrators” (p. 2086). Throughout this chapter, the research collected revolving around the history and importance of physical activity itself, the history of classroom management, the struggles and impacts of off-task behaviors, and the history of classroom physical activity and programs that can be used will be presented to the reader as a way to give background

information and be a guide through the current research involving movement in the classroom.

Physical Activity and Movement

The concept of physical activity has been around for many years, yet the understanding of its impact on the body has not always been fully grasped. Blair and Powell (2014) explain that although research of physical activity is less than 100 years old, ancient philosophers were able to recognize the importance of being regularly physically active many centuries ago. Though it was seen to have importance and benefits, there was not enough research to validate those claimed beliefs that physical activity was beneficial for people's health. In the early 20th century in the United States, exercise physiology research started to develop and spread. The main focus of this development was to distinguish a connection between heart disease and regular physical activity. Jeremy Morris, one of the first scientists to study the relationship between physical activity and heart disease, made a discovery in 1953 when he found that bus drivers for a transport company had higher heart-disease rates than the ticket collectors on that bus who walked up, down, and around the bus all day (as cited in Blair, 2014, p. 9). Morris's work pushed other epidemiologists to look further into the different effects physical activity could have on one's body. "By the early 21st century regular physical activity had been shown to produce reductions in all-cause mortality and in the incidence…" (Blair, 2014, pp. 9-10). With the increase in obesity and being overweight among youth and adults in the 21st Century, there was a focus placed on the promotion of physical activity for the public.

In today's world, it is widely understood that physical activity and exercise are important in establishing an overall healthy body; however, it is also widely known that the specific amount of physical activity one should participate in is still unclear. Blair (2004) states that there is a continuous debate on what type of physical activity should be participated in, how long, how often, to what intensity level should it be done, and how is the dose quantified. In 1975, the first guidelines for physical activity and exercise were introduced to the medical field, specifically the cardiovascular department, before they were published to the public. The American Heart Association released a report in 1992 that recognized the value of moderate amounts and intensities of exercise (Blair, 2004). Similar reports began to appear year after year with new modifications and additions including minimum time requirements, types of activities, and intensities; however, there were flaws and limitations found as one guideline doesn't fit all persons. Blair and Powell (2014) stated that as of 2008, stronger guidelines were presented to the adults that they should be participating in 150 minutes of moderate-intensity activities per week, 75 minutes of vigorous activity per week, or a combination of the two along with a day or two of resistance training. The same goes for children; however, they are expected to participate in physical activity 60 minutes per day. Children need to meet this activity level every day to gain health benefits, focus benefits, and much more.

There is a common perception of physical activity and its significance in creating a healthy lifestyle for children. Most researchers and practitioners agree that physical activity plays a highly important part in a child's overall development. However, even with this knowledge, a majority of the children in our nation today struggle to meet the 60 minutes of physical activity a day recommended by public health authorities and the

question has changed from *HOW can children participate in physical activity,* to *WHEN can children participate in physical activity*. Benes (2016) states, “Schools have been identified as ideal settings to help young people improve and maintain healthy eating and physical activity…” (p. 111). Schools, after the family, are one of the most influential establishments on children's cognitive, emotional, and social developments. Creating opportunities for physical activities and movements in schools can help establish lifelong healthy habits for students.

Before administrators and educators can get on board with a change or addition in their curriculum and instruction, preparatory work needs to be completed to analyze the proposed changes and the impact it will have on student learning and development. First, districts have to be given a run-through of what physical activity implementations are being requested and the ’why’ for incorporation. Next, the district needs to be given the purpose for implementing physical activity and movement throughout its building; who benefits, where can it be fit, and what other similar programs or instructions are already in place. This needs to be backed up with research as a way to create validity in the proposed change or addition. After giving this information to administrators and educators alike, most will follow along because they will come to realize that this is beneficial for the students and their learning.

Outside of the home life, schools are one of the most influential institutions for cognitive, social, and emotional development in children. Schools, however, are also where children experience most of their sedentary behaviors, leaving the children physically inactive for most of the school day. Research states that physical activity has positive benefits for students. Schools should be addressing the topic of student

inactivity, because of the amount of time students spend in school. In a study conducted by Benes (2016) focusing on educator perceptions of using movement in their classrooms, it was identified that there were a few different factors that gave purpose for incorporating those physical activities: it reinforced or improved learning outcomes, prevented behavioral problems, and supported physical and mental health in students.

The effects of the incorporation of physical activity and movement in the classroom on academic performances and outcomes in previous studies have primarily been found to be neutral or positive. In an article found from the CDC (2010), the majority of those studies found that when physical activity breaks were offered in the classroom instruction time, there was favorable outcomes pertaining to academic achievement. Cruz (2017) notes that "...programs that incorporate physical activity into academic instruction may have more beneficial impacts on academic performance" (p. 123). Cruz (2017) continues on to explain that incorporating physical activity and movement into instruction is more effective and cuts down on the time taken away from that instruction.

Children are more often observed to be more attentive, on-task, and behave better after participating in physical activity or movement through different formats in a classroom. Mahar et al. (2006) explained that in their research, they found that inappropriate behaviors were reduced after physical activity had been systematically implemented when comparing that data to the baseline period when they didn't receive that implementation prior. In this study, as well as others, there was an underlying observation of a higher impact of on-task behaviors apparent in the least on-task students than the generally behaved students.

Professionals and the lay public alike have generally understood that young children need physical activity to help with their development and keep them healthy; physically and mentally. “It is generally understood and accepted that normal musculoskeletal development and development of normal fundamental movement pattern depend on children's engagement in substantial amounts of physical activity,” (Pate, 2013, p. 450). Students who participate in regular physical activity show improvements in physical fitness, attitudes, and mental functions. Commonly found improvements on physical health areas in students, who participate in daily physical activities, are as follows: weight, cardiovascular health, asthma, and musculoskeletal fitness (Strong, 2005). When it comes to mental health benefits, physical activity and movement, especially in such formats as yoga and meditation, can help students with reaching healthy levels of relaxation, calmness, and perseverance (Finnan, 2015) It can also teach techniques such as breathing, concentration, and positive self-talk.

All of the different benefits that can come from regular physical activity of children is promising when we look at students being successful in the classroom. We need our students at their best to be able to learn all day long during the school day. Research has shown that healthier children learn better because their bodies are at their best functioning. This is also encouraging because if students are healthy, their focus and on-task behaviors are functioning higher and more effectively.

Classroom Management History

Classroom management plans are used to monitor and regulate classroom behaviors. Over the last hundred years, different behavior management strategies, methods, and ideas have been presented and implemented into classrooms. The need for

these classroom management plans is to not only create an environment of less present classroom behaviors, but to also create a learning environment set up to foster student success. To better understand how our behavior management plans are what they have become today, there is a need to go back through history and see how development and modifications to the original ideas were made over time.

In the first half of the 19th century, corporal punishment was the leading classroom management tool for keeping students' behaviors in line. This use of punishment came from the view that children were prone to be naughty and untrustworthy, hence the need to be taught obedience in such harsh forms so that one day, they could enter the real world as upstanding citizens. Scarlett, Ponte, and Singh (2009) explain that even today, 23 states still allow the use of corporal punishment in their schools with the understanding that some students need guidance through a rough hand. Horace Mann, who was trying to establish a public-school system in Massachusetts, presented his belief that children were innocent, yet vulnerable to temptation, and who needed moral persuasion and modeling of virtue (Scarlett et al., 2009). Mann believed that modeling duty, reason, and virtue would guide children into being, "...free men and women who can govern themselves while contributing to the common good," (Scarlett et al., 2009, p.4). These two different takes on the best practice of regulating behaviors of children started a debate that is still present today over the correct approach of school discipline.

Towards the end of the 19th century, with the influx of immigrants and new cultures becoming present among the mainstream American culture, a progressive education movement came about. This movement, as explained by Scarlett et al. (2009),

focused on four concepts: interests, activity, structure, and mentoring. All of these concepts were advocated because of their impact on student learning; however, the concept of structure and mentoring was tailored more towards how to approach and regulate behaviors in the classroom. In the structure concept, the older, authoritarian-coercive approach was to use directives, lectures, assignments, and punishments for rote learning, whereas the new movement pushed for structure in ways like building a learning environment, and organizing materials, space, and time. Mentoring brought out the characteristics of being a caring and professional guide who facilitated learning and stimulated deeper thinking while the older version was iron-fisted. John Dewey was associated with progressive education.

Shortly after the progressive movement came around, the kindergarten movement was enacted. This movement advocated for organizing classrooms that supported young student's productive self-activity and, eventually over time, self-discipline (Scarlet et al., 2009). This movement, though similar to the progressive education movement, had a different emphasis: that teachers needed to control, or manage, students by being the entity of their affection. J. S. Hart (1879), an educator during this movement, explained, "The fact that children love their teacher gives to the teacher almost unbounded influence over them…" (p. 99). With this in mind, the key distinction in the late 19th century was the goal that obedience was voluntary and prompted by a sense of civic duty, thus began the fostering of the development of a child's conscience.

In the first half of the 20th century, two new movements took the desire to integrate theory, testing, and practice into the school system in order to have better forward progress in educating children: child study and mental hygiene movement. G.

Stanley Hall (Scarlet et al., 2009) used Darwin's model to study children so as to reform educational practices by having the practices accommodate the nature and development of the child. Out of this study came many approaches to school discipline. This started the advanced arguments for school discipline that called for evidence and validity in previously claimed methods.

In the mental hygiene movement, a child's problem behavior was labeled as a symptom to an underlying mental problem. It was understood that not all of these problems could be solved by teachers but it created an awareness in educators when disciplining so as to try not to make it worse. Towards the end of the 20th century, most of the theories focused on specific mundane households with the assumption that all students are the same and the few behavior management strategies fit all. These discussions were forgetting the issue of culture and mainstreaming disabilities.

The second half of the 20th century, a new wave of constructivist thinking came to light through a cognitive revolution in Jean Piaget's work and later on in Lawrence Kohlberg's work. "Kohlberg's aim was to show that children and adolescents develop self-control, good behavior, and an understanding of right and wrong through the daily negotiations and problems they have to solve…" (Scarlet, 2009, p. 16). With this line of thinking, educators started to see that they needed to help students think of alternative points of view in deciding what is right, fair, and good. This helped create a more self-controlled, responsible, and well-behaved student. This was a great approach to behavioral management until other factors, such as inclusion of students with diverse backgrounds and diverse abilities, started to be introduced into the education system. By the 1970s, educators felt they were losing control of their students and there were two

very distinct behavioral approaches: behaviorist traditions, and clinical work and counseling. Along with these approaches came more medical theories of student problems and disorders, roles of the educator and students, and ecological and system approaches.

At the end of the 20th century, school discipline had made a full circle and new commitments to include and educate diverse populations lead us into the 21st century. Today there is a great commitment to managing student behaviors in the classroom settings, especially with the understanding that students can differ significantly from each other in ability and in culture. The ideology that one size does not fit all has helped guide educators in understanding how to implement classroom management plans that are effective and meet the needs of all students. There is unanimity among educators today that we must use what research has to offer: "...(1) build positive relationships, (2) teach so that children learn, (3) support children's long-term development, (4) create organized learning environments, and (5) accommodate diversity," (Scarlet, 2009, p. 20).

Classroom Behaviors

Classroom off-task behaviors can become a hindrance to both educators and students, and finding effective, easy, and accessible interventions has been a challenge for educators over the years. Godwin (2013) connects with most educators when she states, "Loss of instructional time due to off-task behaviors is a well-established problem in educational settings, recognized both by researchers and practitioners for over a hundred years" (para 1). Off-task behaviors have been proven to have a negative impact on learning, performance, and social outcomes in the school setting. Understanding the types of behaviors commonly found in classrooms, the causes of these behaviors, how the

behaviors impacts student success, and becoming familiar with outside factors will help educators better understand the behaviors present in their classrooms.

When it comes to negative behaviors that can be found in the classroom setting, there are many different types and many different ways to categorize them. Some examples of these misbehaviors are disruptions, not participating, irresponsibility, disrespect, defiance, and hostility. Not only do these different behaviors occur in the classroom, but they can occur at different intensities and frequencies, leaving an educator with less time to teach and less energy to manage the rest of the classroom (Sun, 2012). Research findings have showcased that these misbehaviors don't stay the same over time. In fact, the misbehaviors not only escalate over time, but they also lower academic achievement and success, along with an increase in delinquent behaviors that can spread across individuals (Sun, 2012). In order to lessen these gradual and immediate effects of misbehaviors, it is important to identify what exactly the behaviors are inside the classroom so as to help maintain and diminish them as quickly and effectively as possible.

There are many reasons that can contribute to the loss of instructional time in the classroom setting: weather, sudden or random onset interruptions, and special events. However, one of the biggest causes attributed to lost instruction time is student inattentiveness. This is a challenge that all educators will face, at different degrees, in their career life. There are many theories out there regarding what causes off-task behaviors in the classroom. Some theorists, like B. F. Skinner (1934), believed that changes in behaviors came from an individual's response to events that occur in their environment Reinforcement, or conducting anything that can strengthen the desired

response, is the key to changing behaviors. The intent of Skinner's work was to positively, in small amounts, reinforce behaviors repeatedly. Other professionals believe that students have specific needs that need to be met and when they are not being met, they seek to fulfill that need, ultimately creating a distraction or disturbance in the classroom (Glasser, 1990). And still others believe that off-task behaviors are portrayals of students' responses to difficult or easy levels of academic tasks (Roberts, 2002).

Kohn (1993) had other beliefs on what caused some classroom behaviors. He believed that competition and extrinsic motivation were the base causes in the development of student misbehaviors. Take positive feedback as the management tool, for example. Some students will only seek the positive feedback, thus not truly learning the material. With low academic understanding of the concepts, these students either start to fall behind and act out in frustration, or they lose the motivation to learn because they are no longer receiving that reward (Hussung, 2016). Using a more intrinsically based behavioral management plan can help nurture cooperation, curiosity, leaving no room or necessity for rewards and punishments. Kohn's approaches are used in many elementary classrooms today. The ultimate understanding from all of the theorists, researchers, and other professionals in the area of behaviors is the fact that there are many different variables that can influence behaviors in a classroom setting, and finding interventions to fit all students is difficult, if not almost unattainable. "...many existing interventions may be unsuccessful because they do not take into sufficient account the conditions that lead to off-task behavior" (Godwin, 2013, para 2.). These conditions could be struggles in home life, internal battles, bullying, self-confidence issues, attention seeking, trying to fit in, and especially if they are lacking skills, academically or socially.

Educators have a desire to obtain and keep control of the classroom as a way to limit behavioral problems via different kinds of reinforcements; however, educators also want students to have more self-control or self-discipline which is also an important part of learning and academic success. This can be a difficult dilemma to choose between one or the other so using them together can help bring down the potential negative impacts the misbehaviors can have on student success. Mahar et al. (2006) writes, "In a classroom setting, students who are least on task may cause the most disruption in learning" (p. 2093). Behavior problems are usually maintained by either positive or negative reinforcement and are usually conducted at the time of the behavior, which can be taking place during the prime instructional time. These disruptions and interruptions will have a negative impact on learning, performance, and achievement of not only the off-task student, but other students in that classroom setting. Between 10 percent and 50 percent of a student's time in the regular education classroom is spent off-task (Godwin, 2013). With the academic and standardized pressures educators are under to meet goals and expectations, this percentage of lost instruction needs to be addressed. Finding interventions and classroom management tools, such as physical activity and movement incorporation, can help decrease these off-task behavior percentages and increase learning.

Outside factors can sometimes be the hardest to control and can usually go undetected and unrealized by an educator for some time. Becoming aware of what outside factors can impact students' behaviors can only be successfully done by creating relationships with students as way to get to know them, their quirks, and their triggers better. Common, yet not widely known, factors that contribute to off-task behaviors are

instructional format, classroom environment designs and elements, home life discipline, and student demographics and maturity (Godwin, 2013).

Starting with instructional formatting, it is important to keep a mindset open to differentiation. Not one instruction technique works for all students. Teaching a concept using different formats (auditory, visual, sensory, etc.) can help all students have their instructional needs met and can lead to less frustration and misbehaviors. Becoming aware of how one sets up their classrooms and the different elements that make it up can help with misbehaviors tailored more towards the distraction category. For example, putting too many posters or objects on the walls and around the room can become distracting to students who lose focus easily or can become over stimulating, especially in students with learning or developmental disabilities. Keep things simple in the beginning before incorporating more later on based on how your students interact with their classroom environment (Godwin, 2013) Remembering that home- life discipline and expectations can be very different from those of school is key in patience and guidance. Changing home life isn't always possible, but getting to know students and understanding where their background in discipline and expectations come from can help prepare and guide the educator in the classroom setting. Lastly, every student is unique and brings different demographics and characteristics to the classroom. Learning these maturity levels and demographics can better prepare an educator on how to act, or react to different misbehaviors from each student individually. Keeping these outside factors in mind as the observations of students is conducted can help distinguish what kinds of behavioral interventions are working best for each of the students in that classroom.

Classroom Physical Activity

Teaching in a world where educators are feeling high levels of pressure to increase standardized testing and achievement scores, the quantity and quality of physical activity levels have dwindled. These pressures leave educators with little time and dedication to incorporate physical activity into their daily schedule. According to Donnelly (2011), "Physical activity in public schools has steadily declined since the 1970ies" (p. 36). Looking at the history of physical activity implementation shows that most research and experimentation wasn't observed or recorded until the late 60s to early 70s. Even then, most of these studies had many limitations in this era due to the neglected accountability for variables such as demographics, psychological, and physiological (Castelli, 2014). During the early part of the 1980s, physical education started to find a place in the education curriculum, but it was not until 1985 that the practice was truly implemented and started a lawful chain reaction across the nation. As the 1990s rolled in, more fitness and physical activity programs were implemented and made available to students; however, toward the end of this time period, programs started to dissipate due to times of recession. Thankfully, by the end of the 20th century and for the first time in history, physical activity guidelines were developed specifically for children based on research from the 1950s and pushed into schools.

In 2001, the No Child Left Behind Act was put into place as a way to make sure that all students were receiving the education they deserved and were being guided academically all the way to graduation. The objective of this act was to keep educators accountable for their teaching and the instruction to the students in their care. Though this Act was tailored to help all students be successful and reach graduation, it wasn't utilized

in the way that it was first designed. This was called out, among others, by Barros (2009) who stated, “Many schools responded to No Child Left Behind by reducing the time for recess, the creative arts, and physical education in an effort to focus on reading and mathematics,” (para 4). These cuts continued even after research was presented showing that physical activity promoted academic achievement. In 2006, only 3.8 percent of elementary schools offered daily physical education classes and only 75 percent of elementary schools in the United states provided regularly schedule recess of some sort (Ward, 2011). The number of sessions per day and the duration of those physical education classes and recess times continued to decline through the next few years. “Efforts to educate the public of the importance of school physical activity both in and out of physical education are needed,” (Corbin, 2012, p. 6).

Public health authorities recommend that children meet the 60 minutes of physical activity requirement every day to obtain and sustain good physical and mental health. For example, Carlson (2015) explained, “Elementary schools are recommended to provide children with > 30 min/day of moderate-to-vigorous physical activity (MVPA) through a comprehensive approach that includes physical education (PE), recess, and physical activity opportunities in the classroom and before-and-after school” (p. 67). Many schools today still provide an insufficient allotted time for physical activity opportunities, and despite the understanding of the importance and benefits of physical activity incorporation, education policies and practices still suggest that the current practices are not supporting the physical activity recommendations students should be meeting.

Today, less than 20 % of students in the world are meeting the recommended 60 minutes of moderate to vigorous physical activity each day (Martin, 2015). With children

spending between six and eight hours in academic instruction per day during the school year, schools are now being hailed as the best environments to incorporate physical activity interventions based on the fact that children spend the majority of their time in this location. Since there are only certain times allotted for recesses and physical education, it becomes part of the educators' job to implement different physical activity-based programs and strategies into their own classroom.

Classroom based programs, or implementations, of physical activity are another way outside of recess and gym class to give students more time to be active. Short, yet effective, physical activity breaks in the classroom are becoming an increasingly common intervention in schools because of their proven educational benefits (Carlson, 2015). Giving support to educators and the implementation of physical activity in their classrooms could guide those educators to notice the benefits that go beyond just the health proponent. If the educators can see those benefits, it will help with the improved uptake and sustainability of physical activity being incorporated on a regular basis in their classroom. Utilizing the classroom setting for physical activity breaks might come with challenges, but there are adaptations to solve those problems, and programs and interventions designed for that kind of setting.

There are challenges to not only implementing physical activity into the classroom setting, but getting educators on board with this implementation when it can be deemed as time away from educating. "Promoting classroom physical activity as a tool for improving students' behavior and academic performance may be a more effective approach than simply communicating the health benefits of physical activity, which are not as directly apparent or as relevant to teachers as they classroom benefits" (Carlson,

2015, p. 72). With the pressure to have students performing at levels deemed successful by standardized testing, educators find it hard to take time away from instruction to incorporate physical activity. Teachers have many demands and adding another "thing" to their plates can be a difficult adjustment. In a study on teacher's perspective of classroom physical activity (Benes, 2016), teachers described that to integrate this physical activity into their classrooms in a way that is meaningful, takes a significant shift in the way that they think about learning and teaching and their own practice. This can be hard for individuals who are set in the way they educate their students.

Moving beyond the traditional implementation techniques is a way to make sure that the physical activity is not only being incorporated in the classroom setting, but that is being incorporated in a meaningful way. Konukman, (2012) gives seven different ways to correctly incorporate physical activity in schools that are beneficial and meaningful for educators and students. A strategy Konukman promotes is to make the physical activity age and developmentally appropriate for your students. Choosing activities where students have opportunities to be successful can help create a better environment and more potential for active students (Konukman, 2012). One of his strategies is to pick activities where students aren't waiting for a turn. "Moderate-to-vigorous activity and optimal learning occur most often when each student has his or her own piece of equipment, space, and task," (Konukman, 2012, p. 9). Creating opportunities for all students to be involved, even using partner work, will keep students moving and help them not find disruptive ways to entertain themselves.

Along with the strategy of finding ways for students to be moving, Ward's concern for activities that have elimination, or sitting out, proponents. These activities

have the tendency to increase not only activity, but the feeling of motivation and success. Creating ways that students can rejoin the game, quicker than normal, can keep their hearts elevated and bodies active. Konukman (2012) explains the importance of maximizing students' participation for increased moderate-to-vigorous physical activity

Outside of the challenges of finding time and being open to change, comes the challenges of the environment space itself and the types of physical activity that can be effectively implemented in that classroom environment. Academic classroom settings are where students spend the most time at school are potentially the best place to promote physical activity (Goh, 2013). Classrooms, depending on their layout, can cause spatial constraints for physical activity and movement, which then can turn into safety concerns. Creating learning environments that are also tailored towards physical activity opportunities will help an educator create a well-rounded environment that encompasses multiple need bases. "Opportunities to be physically active at school are limited by pressure on scholastic performance, and classroom-based physical activity programs are a promising way to increase children's activity levels without sacrificing academic performance" (Mahar et al., 2006, p. 2093). Movement integration, which is the incorporation of lesson plans and physical activity, is a strategy where educators are able to naturally integrate academic concepts with physical activity and movement in the classroom setting (Goh, 2013). Another intervention of physical activity in the classroom setting include brief bouts of physical activity that are usually teacher-led or online-led. Programs and websites are being created for teachers with ideas for movement breaks. Educators are utilizing these opportunities as a way to support their own strategies for movement implementation. (Cruz, 2017, p. 121).

Summary

Throughout this chapter, collection and analysis of a range of previous research conducted on physical activity and movement in the classroom setting and classroom behaviors was presented. The question that guided this search was, *How do different amounts of physical activity and movement implemented into a suburban kindergarten classroom setting impact student on-task behaviors?* Readers were walked through the history and importance of physical activity, how classroom management has evolved over time, the causes and impacts of off-task classroom behaviors, and the challenges and solutions of classroom-based activity. The areas covered, provided a deeper understanding from which the research question evolved. They also connected the importance of movement in the classroom to individuals in the field of education. Physical activity and movement play an important part in a child's physical, social, and mental development, and though it has dwindled, physical activity in classrooms is needed, not only for its health and academic benefits, but also for the possible connection to classroom management interventions.

In the next chapter, the methodology chosen for this capstone investigation will be explained, along with the reasoning behind the choice. There will also be more information given on the participants and setting of the experiment, the different parts of the procedure and data collection methods, evidence of validity and reliability, and data analysis. Research will be used in this next chapter to solidify reasoning.

CHAPTER THREE

Methods

This study was designed to investigate how different amounts of physical activity and movement impact student on-task behaviors in the kindergarten classroom setting. Carlson (2015), among others, noted that because there has been evidence of an association between classroom physical activity and student behaviors, there should be a deeper look into whether or not physical activity breaks can be used as a behavioral tool. With this in mind, different time amounts of physical activity and movement were intentionally implemented into a suburban kindergarten classroom to show whether or not physical activity could create a potential proactive way to help increase on-task behaviors for students. There has been a perceived change in student on-task behaviors after physically activity, both positively and negatively, through the classroom years of the researcher. This has driven the desire to better understand how different amounts of that physically activity might be impacting student on-task behaviors more one way than another.

This chapter will focus on the methods that were used in collecting data related to the question: *How do different amounts of physical activity and movement implemented into a suburban kindergarten classroom setting impact student on-task behaviors?* The first section of this chapter will describe the methodology chosen for this action research study and the research evidence supporting that method. In the following section, a description of the setting and participants will be provided as well as how participants were chosen and consent was obtained. The third section will divulge deeper into the plan, including procedures, and methods that were used in order to collect valid and

useful data. In the fourth section, there will be a discussion of how the data collection was kept valid and reliable. Following this section comes the explanation on how the data and information collected will be analyzed and presented. In the last section, there will be a brief summarization of the major proponents of this chapter along with a preview into chapter four.

Methodology of Data Collection

There are a few different options when it comes to the methodology of data collection for action research. All of these avenues encompass either qualitative approaches, quantitative approaches, or both. Mixed methods data collection and inquiry helps integrate both data collection methods as a way to give additional insight that one collection method alone might not be able to provide. Creswell and Creswell (2018) noted it has been argued that using this methodology in research gives a stronger understanding of the questions or problems outside of what one or the other method can give by itself. For this reason, and after reflecting on the research question and desired data collection methods, the mixed methods research methodology was used in this research investigation.

The mixed methods approach was chosen as the foundation for the data collection in this study because it was an appealing option that includes both quantitative and qualitative data collection. The idea of having data collection via two different methods gives the data outcome results better strength and a more complete understanding of the actual research question. Creswell and Creswell (2018) explained that being able to compare the two different perspectives of collection and being able to use the different data to complement or contradict each other shows better validity and unbiasedness in the

data collection and analysis process. With the research question revolving around the correspondence between physical activity in the classroom and student on-task behaviors, having mixed methods as the data collection approach helps both the researcher and the reader to better see the changes and outcomes of students' on-task behaviors and make better connections between all of the variables.

There are numerous paths and methods to use inside of the mixed methodology. With the personal desire to have a more quantitative base for data collection, the mixed methods intervention design will be utilized for this action research. This research design adds qualitative data collection into an action research intervention, so that the personal perspectives and experiences of the participants can be included in the final data analysis (Creswell, 2018). With the add in of the qualitative data, it becomes the secondary source of data that is imbedded before and after the movement intervention set. An explanatory sequential design was the approach for the qualitative data as a way to follow up with the experimental and quantitative data outcomes. Katz (2010), Hoza (2015), Carlson (2015), Jarrett (2001), Roberts (2002), and other professionals implemented quantitative measuring tools to acquire data with a secondary qualitative measuring tool to preview or review personal experiences and thoughts in their research. Reflecting on these researchers and their data collection processes helps solidified the choice of this methodology approach.

Mixed Methods

As stated in the methodology subsection, the mixed methods approach to data collection was used in this study as a way to include data that involves both quantitative and qualitative data collections. Mixed methods research can be specifically defined as,

"...an approach to inquiry involving collecting both quantitative and qualitative data, integrating the two forms of data, and using distinct designs that may involve philosophical assumptions and theoretical frameworks" (Creswell, 2018, p. 4). In this study, the quantitative approach comes in the form of an on-task behavioral scale that was used to numerically measure on-task behaviors portrayed by students before and after the physical activity in the classroom. Along with this quantitative scale were video recordings of set times to help with the validity and accuracy in monitoring on-task behaviors and physical activity. In regards to the qualitative approach, student interviews and teacher observations were conducted. Interviews allowed the students who were participating to voice how they felt at different times throughout the intervention while teacher observations gave better detail to what was noticed throughout the study before and after the movement breaks.

Setting and Participants

This research was conducted in a suburban kindergarten classroom. The Elementary Building, where this kindergarten classroom is housed, holds around 550 students spread across preschool to second grade. Along with these students, there are 30 educators and 8 paraprofessionals. There are roughly 215 kindergarten students in the building with around 20 to 21 students in each classroom. In the kindergarten classroom, where this action research was implemented and observed, all students with parent consent participated and were observed in this research study. The parents of the general education students, as well as students with academic special education classification in the classroom, were given the consent form to decide whether they would allow their child to participate in the data collection part of this study or not. The total amount of

students, ages five to six, who had the chance to participate in the data collection of this study was 16. Students whose parents gave consent for them to take part in the study were considered participants of the study and were monitored through the entire research data collection time frame. Any students whose parents do not give consent were still participants in this intervention but were not monitored. Students on behavioral Special Education IEPs were not part of the data collection in this study as a way to maintain their IEP goals and continue supporting them through interventions already in place. Students who were pulled from the classroom regularly during the research study's intervention time were also not part of the data collection as a way to maintain valid data across all sets.

The first step in carrying out this research was to take the question, goals, action research plan, and methods to the thesis advisor and the district administrator(s) so they could review it. This process included filling out the proper forms that were necessary to begin the intervention process in the classroom setting. Once the review was completed and the go ahead was given, the researcher proceeded in gaining permission from the parents of the students who were eligible to participate in the study. Constructing a parental consent letter was the best option for this study as the students in this classroom were too young to give authentic permission. In this parental consent letter, there were five areas that needed to be covered in order to help the parents understand exactly what would be taking place. The first part of the letter included an introduction of the researcher as the child's teacher and a graduate student, the name of the university through which the researcher was pursuing a degree, and the purpose of the letter in relation to the research. The second area covered exactly what was being researched and

why this research was important to the researcher, the students, and the education community. In the third area, confidentiality and anonymity of the students with data collection on them was addressed, as well as the understanding that participation in the study was voluntary, and, at any time, parents had the right to pull their child from the research. The fourth part of the letter explained the approval granted from the university and an explanation of possible publications within a professional journal or report. Lastly, information on how to give or deny permission for their child and how to reach the researcher with questions or concerns completed the consent letter. All data and names were kept confidential and safe throughout the process and will continue that way into the future.

Procedures and Data Collection

As stated before, the mixed methods intervention design involves both the quantitative and qualitative approach in data collection. The approach to data collection for this thesis was to use a quantitative measuring tool as the primary collection method with a qualitative measuring tool as the secondary data collection method so as to create a follow-up format for the quantitative data. Using these two data types created a stronger collection and create enhanced opportunities for data connections and validity.

Baseline Data. To fully understand if different amounts of physical activity in the classroom setting has an impact on student on-task behaviors, baseline data was collected on all consented students. In the first two days of the research study, students were participating in the regular routine amount of physical activity. This regular routine is 12 to 15 minutes of activity in the morning and seven to ten minutes of activity in the

afternoon. All activity was conducted in the classroom setting so as to keep the environment the same throughout the study.

The Study. The hypothesis that different amounts of physical activity and movement in the classroom has an impact on student on-task behaviors will be tested in a kindergarten classroom. This research study took place over a five-week time period with little to no school break days. During this time, students were participating in physical activities and movements, or as they were called in the classroom, Brain Breaks. All students in the classroom participated in these delegated physical activities; however, as stated before, only students with parent consent were to monitored and had data collected on them.

Over the five-week study, all students participated in pre-determined allotted times of physical activity in the morning and/or in the afternoon (Figure 1). Only the students with parent consent were monitored for a half hour before and after each physical activity and movement break; again, known to the students as Brain Breaks. These Brain Breaks are a time for students to participate in different kinds of movement (workouts, guided dance, yoga, & meditation) that are not specifically tied to academics; it's a time for them to let their brain take a break and their bodies to move. Students would participate in two-day sets that allowed them to experience different time amounts of physical activity in their day. There are three different Brain Break "sets" of movement activities and times: Medium-level Set (12 minutes in the morning and 7 minutes in the afternoon), Low-level Set (7 minutes in the morning and 0 minutes in the afternoon), and High-level Set (20 minutes in the morning and 12 minutes in the afternoon). Using the first two days of the study as the baseline would allow the

researcher and reader to see how Brain Breaks were already being implemented, and the present impact it was having on student on-task behaviors. Moving on from the baseline collection, all students had differentiated amounts of movement and physical activity time for the next 18 days of this action research study. These three sets were designed to create opportunities for assessing how students' on-task behaviors are impacted by different amounts of physical activity and movement in the classroom setting. The sets are two days long to allow for adequate time to observe and yet not too much time that students are potentially stuck for too many days in a movement set that isn't beneficial to them and their on-task behaviors. The first set starts with the High-level physical activity (20 minutes in the morning, 12 minutes in the afternoon). The second set was the Low-level Brain Break (7 minutes in the morning and 0 minutes in the afternoon). The third set was the Middle-level physical activity (12 minutes in the morning, 7 minutes in the afternoon).

With these different movement amounts, consented students were monitored a half hour before and after each movement in the set for on-task behaviors. The quantitative Behavioral Measuring Scale was used by the researcher to help with monitoring and recording the students on-task behaviors. Since students would be moving to other classrooms or activities outside of the experimental classroom, students were only to be monitored during specific times of the day so as to keep the data collection and observations consistent. There could be added or subtracted minutes here or there depending on the unchangeable schedules put in place for that day, but ultimately the data collection times will stay consistent.

Quantitative Collection. Throughout this research, any student with parent consent was monitored and their on-task behavior was documented using a quantitative behavioral scale. This scale (Appendix B) helps the data collector monitor and score student on-task behaviors repeatedly. Students were measured on a scale of 1 to 4 with four being the highest score a student can achieve in the on-task behavioral area. Under each score was an area that had criteria to follow so as to make the scoring consistent for all individuals involved. All consented students were to be observed a half hour before and after the morning Brain Break and a half hour before and after the afternoon Brain Break. Along with this scaling system, video recordings of students before and after each allotted physical activity times were also used as a way to create better validity and accuracy in the quantitative data collection.

Qualitative Collection. As stated before, the qualitative aspect of this research is being used as a secondary method as a way to follow-up with the quantitative part of the study. This was in the form of an interview and researcher observation. On the first day of each set, consented students were interviewed with questions designed for that specific time in the study (Appendix C). On the last day of the set, consented students were then asked the next set of questions as a way to understand how they felt the Brain Breaks impacted them (Appendix D). All of the interview questions are open-ended so as to facilitate discussion, and their answers were recorded and presented collectively. The interview notes were kept together for later analysis. All throughout the research, observation notes were present for any student who was given a score of three or below on the behavioral scale as a way to create constant credibility and consistency in how students are scaled.

Data Analysis

With mixed methodology, both quantitative and qualitative data collection methods were used. These two data collections needed to be analyzed separately first before they were combined and reflected upon together. The reason these data collections were looked at differently and separately was to make sure that both sets of data could be analyzed without the other interfering or causing concern for valid results. The first data collection to be reviewed and analyzed was the qualitative results. This helped get a better understanding of how students were feeling about Brain Breaks, took a look at, and became aware of, different factors playing into the results, and it allowed the researcher to see the contexts that could have influenced the data collection outcomes. After reviewing the qualitative results, next would be the analysis of the quantitative data. While looking at these data collections, it would become apparent whether or not there were patterns emerging from the results, and if there were any connections between the different amounts of Brain Breaks and student on-task behaviors. Once finished with reviewing both of these collections separately, they were reviewed and reflected upon together to see what connections or contradictions can be found among them.

Validity and Reliability

Every researcher must be aware of how to keep their research as valid and reliable as it can be. Incorporating validity and reliability strategies is the best way to keep data collection and data analysis as accurate and unbiased as possible. Creswell & Creswell (2018) identified validity as being the determination of whether findings are accurate, while reliability focuses more on the consistency of the research. Though these terms can be used together to create credible research, they have very distinct definitions that differ

from each other and both have different threats that can raise questions regarding the conclusion of outcomes.

Quantitative and qualitative validity share a similar meaning but have different threats that can create questions about the research accuracy. One way to maintain a valid quantitative data collection is through multiple participants. By allowing any parent consented student to be part of this research study, it allows for more data collection and less bias in what the data shows. Another way to maintain quantitative validity is through the number of students that will be participating in the research. Too many, or too few, students being monitored during this study has the potential of leading to interference of external factors, which could impact the validity of the data collected. With 16 students having data collected on them for this study, there will be a higher collection of data to analyze, as well as a better chance at alleviating any outside factors and variables that create inconsistencies in the findings. Video recordings also help with creating valid quantitative data collection as not all on-task behaviors might be seen through the researcher's eye as teaching and instruction were still happening at during this research time.

Qualitative validity can be attained through different kinds of strategies and create a better assessment of accuracy of data collection findings. One of the validity strategies chosen for this research is triangulation, which is the use of different data collection methods or sources. Using different data collection methods, like quantitative and qualitative, can help build a stronger justification towards potential data collection outcomes and their accuracy. Another way to create validity in this research was by clarifying the researcher's bias towards the research question in chapter one. Establishing

this personal reflection in this study generated an honest and open narrative that created an awareness for the reader. By incorporating this bias narrative in the beginning, and explaining how the researcher's interpretations could potentially be shaped by aspects of background experiences, it created better accountability for the researcher to logically think through the interpretations of the data collection.

Reliability can be found in action research when there is a consistency of an instrument, or tool as was seen in this study's procedures. One of the best ways to maintain reliability in this research is by keeping the quantitative scales, videos, and qualitative interviews consistent throughout the entire experiment. Creswell & Creswell (2018) emphasized the importance of assessing the same underlying construct so that they have a suitable intercorrelation. Sticking to the designated procedures and data collection methods kept consistency in how the data was collected and how it was analyzed.

Summary

Throughout this chapter there was a focus on the methods to be used throughout the research in order to gain effective and valid data collection and analysis for the research question. The methodology chosen for this research was mixed methods, due to the stronger and diverse data collection approaches that incorporated both quantitative and qualitative measuring. The mixed methods design of qualitative and quantitative data collection was implemented into a suburban kindergarten classroom where any parent consented students were monitored for on-task behaviors before and after their Brain Breaks. These Brain Breaks differ in amounts of times implemented, and the three Brain Break sets rotated every two days. A behavioral scale and video recordings were used as

the quantitative data collection, and the interview was used for the qualitative piece. Both data sets were analyzed separately before being combined and compared. In the next chapter, the data from the experiment will be presented in relation to the research question. There will be an analysis of all sets, individually and collectively, and the interpretation of what the quantitative and qualitative data reveals in relation to on-task behaviors and physical activity.

CHAPTER FOUR

Results

The purpose of this action research was to answer the question, *How do different amounts of physical activity and movement implemented into a suburban kindergarten classroom setting impact student on-task behaviors?* As stated in the previous chapter, the mixed methods data collection design was used throughout this research process with the quantitative data collection as the main component and qualitative as the secondary approach. Data collection techniques included teacher observations and videotaping of students a half hour before and after the physical activity intervention for quantitative scaling purposes, and pre-intervention set and post-intervention set student interview questions for qualitative purposes.

Over a five-week period, 16 students in a suburban kindergarten classroom participated and were observed before and after different sets of physical activity and movement breaks known as Brain Breaks. This five-week period took place from November 18, 2019 – December 18, 2019 with the last week of November off due to a holiday break. This chapter will discuss the research findings through the recap of the intervention and data collection process, the quantitative and qualitative data results, and the analysis and interpretation of the collected data as a whole.

Research Overview

All students in the kindergarten classroom had been participating in Brain Breaks since the beginning of the year and had the background knowledge of this concept and routines already in place. The desire to know how different amounts of physical activity and movement might be impacting student on-task behaviors lead to this study, which

was a specific intervention plan to see the effects that different physical activity times would have on the overall on-task behaviors of students. All students in the classroom would be participating in this intervention, however, out of the 20 students in the classroom, 16 students were asked to be participants in the data collection part of this intervention. The other four students have other interventions and special accommodations in place and were not asked to be monitored during this study as to make sure they remained successful in the ways best fit for them. These four students still participated in the Brain Breaks when present. All 16 students returned the parent consent form with parent permission to be observed quantitatively and qualitatively throughout the intervention research study. Parents were notified that they could withdraw their parent consent at any time.

Qualitative Results

Throughout this section, I will be addressing the timeline of this research, the data that was revealed of the three different Brain Break sets, and how they compared individually and collectively. By starting with the second emphasized data collection method, the reader will have a better understanding of the feelings and mindsets students had before and after each of the Brain Break sets. This will help in grasping the quantitative data later on in this chapter.

Baseline. With my students already experiencing Brain Breaks routines in our classroom, I wanted to give a baseline data point for starting purposes. As stated in chapter three, for the first two days of the intervention, students participated in their regular amount of physical activity routine, which was 12 to 15 minutes of physical activity in the morning and seven to ten minutes of physical activity in the afternoon. No

interview questions were asked during the Baseline data collection however it is important to know the routines already in place before the data collection started. Again, all of the Brain Breaks for this data collection were conducted in the classroom setting so as to keep the environment consistent.

Qualitative Interviews. After the baseline data was collected and before starting each set of the physical activity intervention, all of the 16 students were asked the Before-Set interview questions. These questions were tailored toward finding out how students were feeling at the time (physically and mentally), how they felt about Brain Breaks, and how many times they felt they should have Brain Breaks in a day. After each set, these 16 students were asked additional questions to gage their feelings on how the Brain Break intervention went for them. These questions asked for the likes and dislikes with the set, how they felt about the length, and their present feelings after their Brain Breaks. All pre and post interview question templates can be found in chapter three, Appendix B and Appendix C. The goal of the qualitative interview was to get a better perspective on how the students were feeling before and after the intervention sets as a secondary data collection point. These interview questions were designed to help understand why some of the different quantitative data results and scoring might have occurred, as all students are different.

When compiling the Before-Set Interview Questions, the common comments and feelings around questions three through five are found in Figure 1 to showcase an overall common feeling among the 16 students. The mutual comments were that students really liked Brain Breaks and felt that they helped them have fun in the classroom. There was also a lot of different ideas on how many Brain Breaks should be done in a day but for

the most part, all students commented that they would like to have Brain Breaks most, if not all days they are at school. These Before-Set answers maintained consistency among all three Brain Break sets.

Figure 1

Common and Collective Answers for Questions 3-5
3. How are you feeling right now? - I feel tired; I feel good - I feel like I need to play - I feel "meh" - I feel like I need to walk/move around
4. How do you feel about brain breaks? What do you like about them, what don't you? - I love Brain Breaks; they are so much fun; I like them but sometimes I can't always do the moves; I think they are amazing. - I like that we get to move and dance around; I like that we don't learn for a bit; I like that we can do fun moving; I just like it. - I don't like when we do videos that are long; I don't like videos that are hard; I don't like that we don't have space sometimes.
5. How many times do you think we should have brain breaks? Why? - All day long because they are so much fun. - I think we should have about five Brain Breaks a day because then we get to move around a lot. - I think we only need two a day because we still need to do our learning job. - I think we should do as many as we need because sometimes I don't want to do any and sometimes I want to do a lot.

Once each intervention set was completed, the 16 students were pulled aside to answer the After-Set Interview Questions. There were common themes in the students' answers consistently across the three different physical activity sets. With the High-level of physical activity, the majority of the students stated that they liked the activity and felt that it was just right, with just a few who felt the Brain Break was a bit too long. Across the board, students stated that after the High-Level Set, they felt good and "strong" (energized). A few commented on being tired or needing a rest and water. With the Low

level of physical activity there were many comments on how the Brain Break was too short or questioning why they did not get to have a second one in the afternoon. Along with this, there was a feeling of unsettledness from the students as their comments about how they were feeling resulted with them stating they felt okay or sad. These comments were in relation to the Brain Break not being longer, or the students not getting to do a Brain Break they wanted. A couple students said the movement was just right for the first part of the day. Finally, with the Medium physical activity, there was a common theme of positive comments. Students repeatedly said that the set was just right or could even be a bit more and they liked how much they got to move around. They also stated they felt good after the break and ready to "rock and roll", as some of the students put it. A couple students did say they felt tired and were ready to learn.

Figure 2

Common and Collective Answers for Questions 3-5

3. How were the Brain Breaks the last couple days? Likes? Dislikes?

- High: so fun; I liked it; it was kind of long; we should do it all day
- Low: I liked them; it went really quick; can we do more?
- Medium: I loved them; it was so fun; I wish we did it longer

4. Do you think the Brain Breaks were too short, too long, or just right? Why?

- High:
  - (just right) we got to do a lot of movement; I had to get water; it just was; it made me feel good; I got to do my favorite songs.
  - (too long) it kind of went on forever, it just was.
- Low:
  - (too short) we only did one; it was only two songs; we didn't get to move very much; I didn't even get a drink of water; it just was; we didn't even have Brain Breaks sometimes.
  - (just right) the morning brain breaks were good; maybe more in the afternoon; the workouts tired me out.
- Medium:
  - (just right) I love it; we got to do it a lot; because we moved a lot and it felt good; I needed water; it just was; we got two Brain Breaks each day.
  - (too short) we should move all day; I like when we do yoga, its longer; we didn't get to do lots of songs.

5. How do you feel after the Brain Breaks?
- High: I feel good; I feel tired; I feel fast (excited); I'm happy
- Low: I want more; I feel good; I feel sad we didn't do more songs; I don't know.
- Medium: I feel good; I'm ready to rock and roll, I am wishing we could do another Brain Break.

Quantitative Individual Results

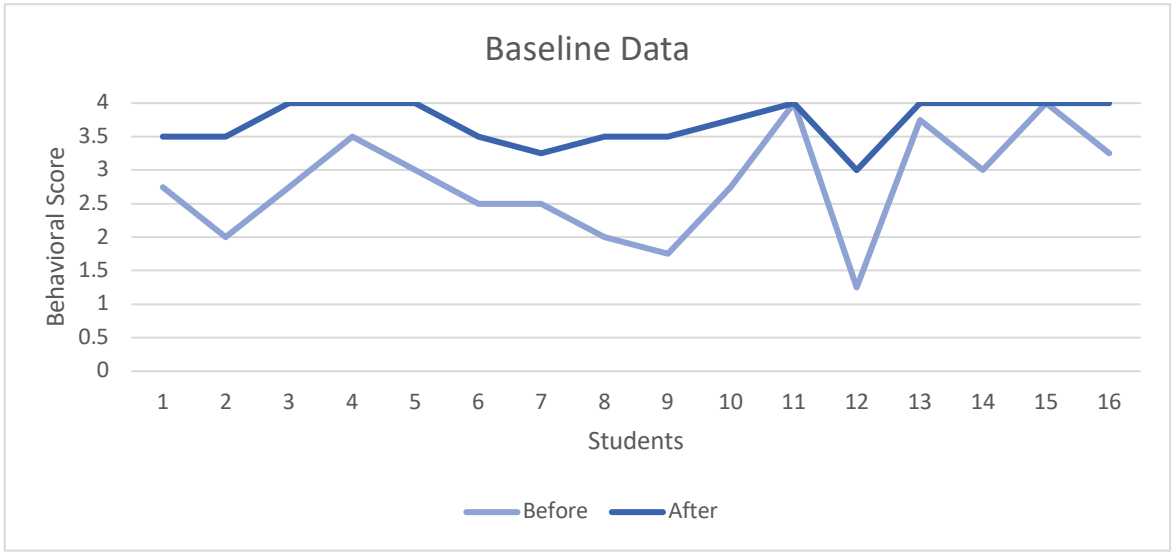
In the next part of this chapter, the reader will be walked through the three different sets individually. This section will examine how the 16 students compared to themselves and their peers in each set. Common and uncommon themes across students within that set before and after the physical activity will be observed.

Behavioral Scaling. In the previous chapter, it was stated that students were to be monitored over the five-week period using an On-Task Behavioral Scaling system developed specifically for this research study. This scale was designed to be an efficient and yet effective way to "score" student on-task behaviors a half hour before the Brain Break time and a half hour after. Students were measured using a 4 to 1 scale with four being the highest score with consistent on-task behaviors and one being the lowest score with many interruptions to on-task behaviors (see Appendix C). To help with the validity and equity of the scaling system, video recordings were used to help monitor students and their on-task behaviors. Since the scaling was happening during the regular teaching hours, on-task behaviors and interruptions could have been missed or misunderstood. With the video recordings, the on-task behaviors for all 16 students could be as justified and pure as any human data collection process can be.

When looking at what was categorized as on-task behaviors, there was a need to remain consistent in how students were scored. Students were only monitored and scaled during their work time, or learning time, as a way to help keep consistency through the

data collection piece in regards to on-task behaviors. No behaviors were documented during any unexpected interruptions, changes, or transitions. Off-task behaviors included, but were not limited to, talking with friends, playing with materials, getting up from their seat and walking around, not working on their learning or job, and distracting or being distracting with classmates. In Appendix B, it explains that to gain a score of 4, the student had to be on-task for the entire half hour before and/or after the Brain Break time. This meant that the students were able to continue their jobs throughout this time (no off-task behaviors present). For a score of 3, students had to be verbally or non-verbally reminded to return to their learning task one to two times during the monitoring period. Next, with a score of 2, students had to be verbally or non-verbally reminded three to four times to return to their learning task. A score of 1 was the lowest score and it was given if a student was off-task more than five times during the monitoring period. As stated in the beginning of the qualitative data section in this chapter, baseline data was collected to show the already in place Brain Break routines and how students scaled within that set system. Baseline data results can be viewed via graph format in Figure 3.

Figure 3



High Physical Activity Data. The first set to start after the baseline testing was the High Physical Activity set. This set would start with a 20-minute Brain Break in the morning and a 12-minute Brain Break in the afternoon. During this set's Brain Break, most of the physical activity students participated in was categorized as guided dance, workout, and yoga. As stated before, quantitative data via the scaling system was collected for a half hour before each Brain Break time and a half hour after. In Figure 4, you will see the averaged on-task scores from the Behavioral Scale of the 16 students being monitored. This data shows each students' Before Brain Break scores and After Brian Break scores averaged out to better show the overall data for this set with the students individually.

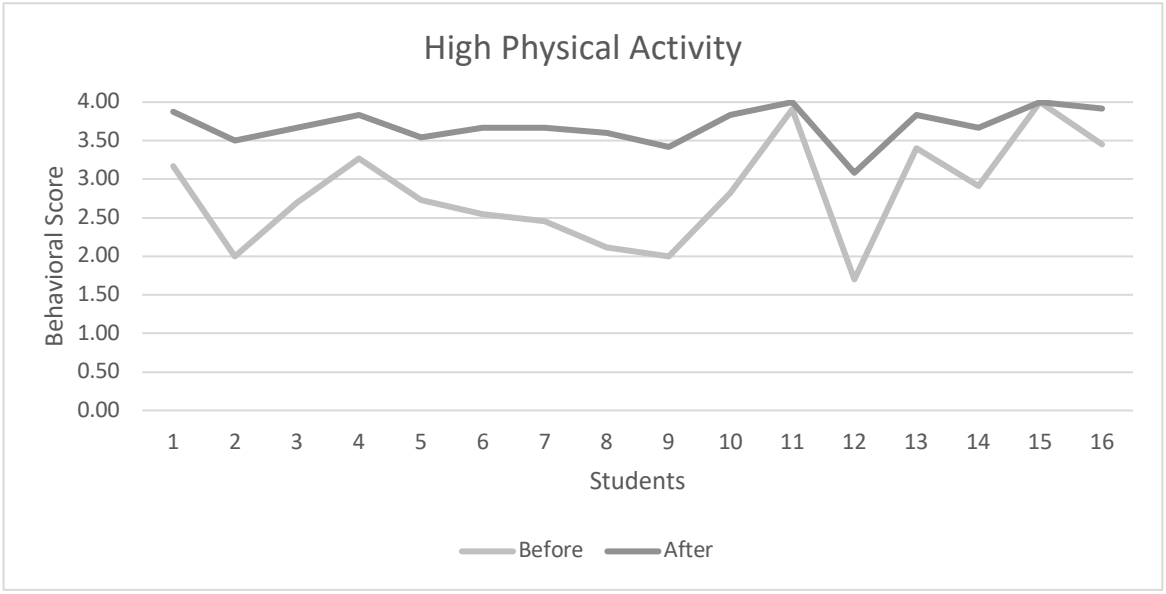
After compiling this data, there was a common theme of the After Brain Break scores being higher than the Before Brain Break scores. With 15 of the students, their Before data was lower, averaging altogether at 2.82 on the scale, with one student staying consistently at the top number on the scale, four. Each student was able to grow from their Before Data to their After date, or at least maintain the highest score on the scaling system. The On-Task row in this figure shows the positive or negative difference between the After score and the Before score. This was found by taking the After Brain Break score and subtracting the Before Brain Break score from it. The average increase of scoring for most of the students from their Before score to their After score was 0.87. To view the data points in a wholistic sense, Figure 5 shows the comparison for each student during the High Set and their Before and After on-task behavior scores in graph form. After reviewing this data, my analysis of the High-level set of physical activity and its impact on student on-task behaviors in a classroom setting is a positive one. The data

shows there is an averaged growth in on-task behaviors for all students from the Before Brian Break data to the After Brain Break data.

Figure 4

Student	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Before	3.17	2.00	2.70	3.27	2.73	2.55	2.45	2.11	2.00	2.82	3.91	1.70	3.40	2.91	4.00	3.45
After	3.88	3.50	3.67	3.83	3.55	3.67	3.67	3.60	3.42	3.83	4.00	3.08	3.83	3.67	4.00	3.92
On-task	0.71	1.50	0.97	0.56	0.82	1.12	1.21	1.49	1.42	1.02	0.09	1.38	0.43	0.76	0.00	0.46

Figure 5



Low Physical Activity Data. The second set of physical activity and movement in the classroom was the Low-level Brain Break. In this level, the set started with a seven-minute Brain Break in the morning and no Brain Break in the afternoon. Most of the physical activity students participated in was categorized as guided dance and meditation. During the afternoon times of this set where no Brain Break occurred, students were still monitored a half hour before the would-be Brain Break time and a half hour after. Below in Figure 6, the averaged on-task scores from the scaling system for the 16 students were compiled in the same way as the High set. This data shows the before and after scores averaged for an overall understanding of how each student individually

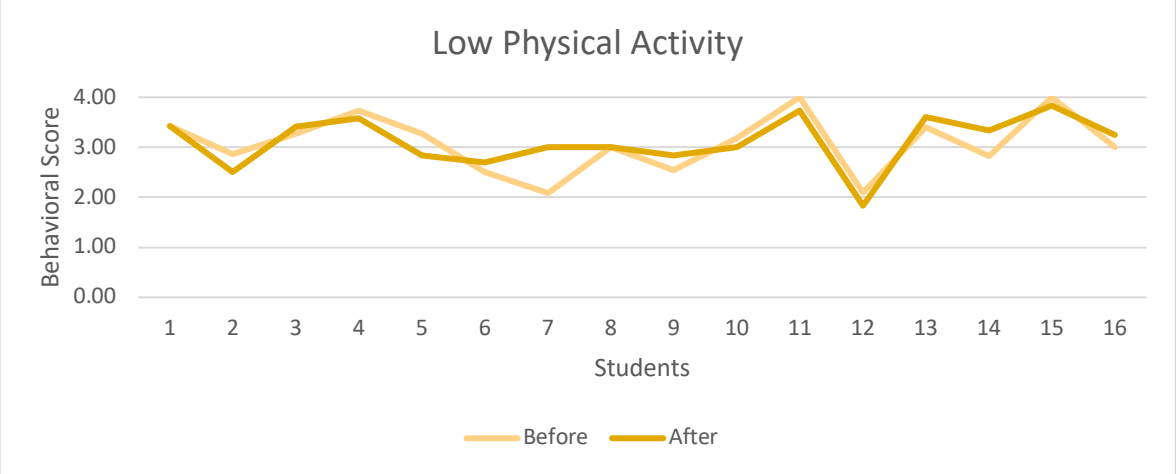
scored and how they compared altogether. Again, the On-Task row in this figure shows the positive or negative difference between the after score and the before score.

Once these two data points for the Low-level Brain Breaks were pulled together for comparison, it was evident that these scores stayed close to each other. These 16 students had the Before data average of 3.07 and the After data average of 3.12 as a whole based off of the Behavioral scale. This data showed there was a 0.04 increase in the overall on-task average score from before to after with most of the increase coming from the morning Brain Break time. Figure 7 showcases the comparison for each student during the Low set and their Before and After Brain Break on-task behavior scores in a graph format. My analysis after examining the Low-level physical activity and its impact on student on-task behaviors is a neutral and/or negative one. The data in Figure 6 and 7 show that there is little increase in on-task scores across all students with two students' on-task behaviors staying the same and seven students on-task behaviors decreasing.

Figure 6

Student	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Before	3.43	2.86	3.27	3.73	3.27	2.50	2.08	3.00	2.55	3.18	4.00	2.10	3.40	2.82	4.00	3.00
After	3.43	2.50	3.42	3.58	2.83	2.70	3.00	3.00	2.83	3.00	3.73	1.83	3.60	3.33	3.83	3.25
On-task	0.00	-0.36	0.14	-0.14	-0.44	0.20	0.92	0.00	0.29	-0.18	-0.27	-0.27	0.20	0.52	-0.17	0.25

Figure 7



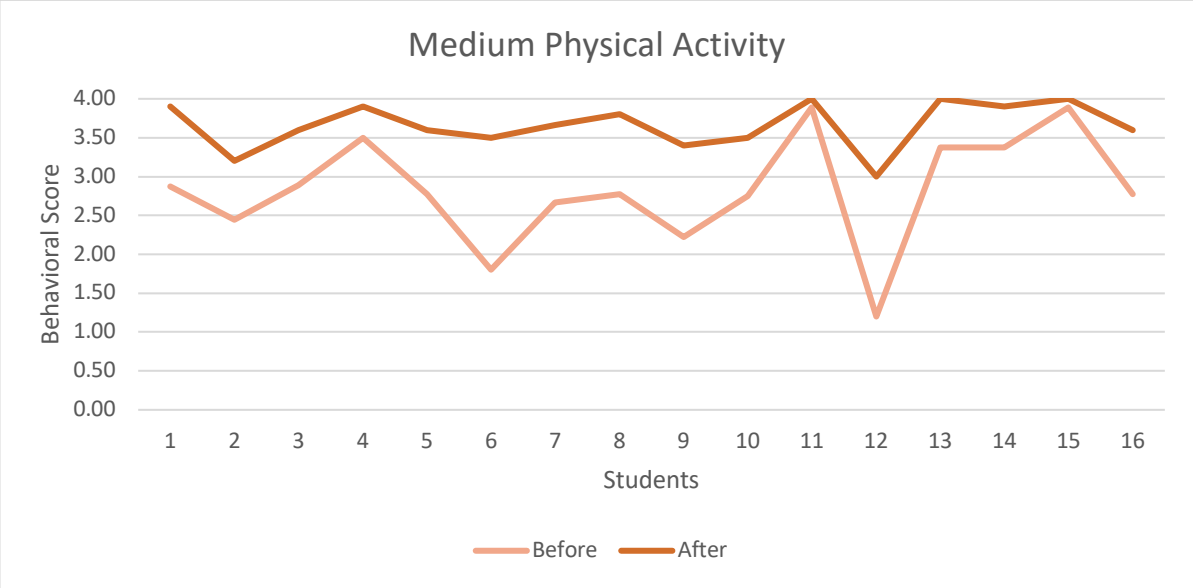
Medium Physical Activity Data. This data set is the final physical activity data set that was collected and is similar to the baseline time amounts. The Medium-level set started with a 12-minute Brain Break in the morning and a seven-minute Brain Break in the afternoon. The physical activity style that was most used during this set was categorized as workouts, guided dance, and meditation. Similar to the other sets, students were monitored before and after the Brain Break times and had quantitative data collected on them via the behavioral scaling system. In Figure 8, on-task behavior scores for the 16 students was averaged and organized in the same manner as the previous sets. Again, this data gives the average scores of both the Before and After scores as a way for the reader to see the changes in a student individually, as well as altogether. In the On-Task row, the Before scores were subtracted from the After scores to see the positive or negative differences for each student.

Looking at the data points, there was a commonality in students' After Brain Break scores being higher than their Before Brain Break scores. The 16 students being monitored had the Before average of 2.83 and the After average of 3.66 as a combined total via the Behavioral scale. The data shows there was an overall increase of 0.83 in their on-task scores in relation to the Before and After scaling. Like in the previous sets' findings, Figure 9 shows the comparison in the Medium-level Before and After data in a graph format. After reviewing both the individual data and collective data for the Medium-level physical activity in the classroom setting, there is an evident positive impact on the students' on-task behaviors. The data found in Figure 8 and 9 reveal the increase in the on-task scores across all 16 students from their Before activity scoring to their After.

Figure 8

Student	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Before	288	2.44	2.89	3.50	2.78	1.80	2.67	2.78	2.22	2.75	3.89	1.20	3.38	3.38	3.89	2.78
After	3.90	3.20	3.60	3.90	3.60	3.50	3.67	3.80	3.40	3.50	4.00	3.00	4.00	3.90	4.00	3.60
On-task	1.03	0.76	0.71	0.40	0.82	1.70	1.00	1.02	1.18	0.75	0.11	1.80	0.63	0.53	0.11	0.82

Figure 9



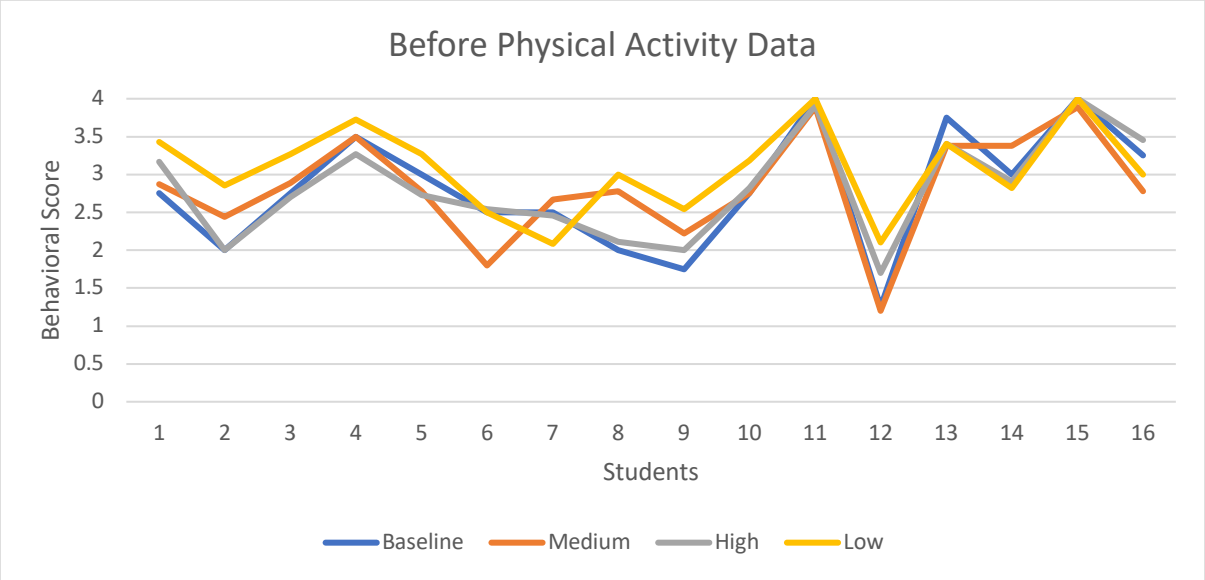
Quantitative Overall Results

In this section of the chapter, the reader will get the final walkthrough of all three sets and how they compared to each other. Any commonalities will be revealed along with any uncommon themes. By the end of this section, there should be a better understanding about the correlation between physical activity and movement in the classroom setting and the most effective physical activity set for student on-task behaviors in a kindergarten classroom setting.

As the different sets were discussed individually in the sections above, it was noted that there was an increase in all of the sets, however there was higher scores in both the High and Medium level sets than in the Low-level set. In Figure 10, the Before levels for all three sets and the baseline were compiled in graph form. This shows that across all

three sets, students' individual Before scores were in similar scoring points to each other. There are some differences but most scores stayed within the same individual wholistic number score (i.e. Student #4's scores stayed between scores 3 and 4). This helps with consistency in where students started in each of the sets and baseline to see growth and regression in on-task behaviors.

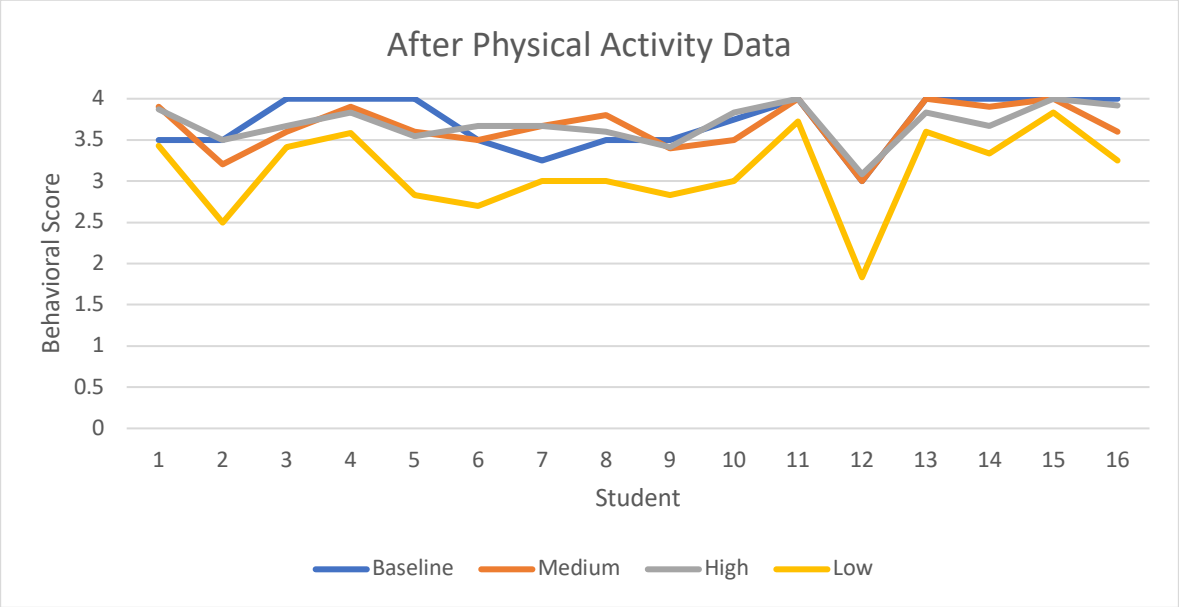
Figure 10



Moving on to the After scores for the different sets and the baseline, Figure 11 showcases the data collectively in graph form as a more effective way to show the discrepancies or similarities best. Looking at this graph, it is clear that the Medium, High, and Baseline have similar numbers on the chart and follow similar paths in student scores. All of these scores are ranging from 3 to 4. The Baseline set has more completed scores of 4 than the Medium and High set, however, with some students, it does go lower than those two sets as well. Again, the Baseline was the common Brain Break set before the research study started with a mixture of both the Medium and High set time amounts. The Medium set stays consistent with 13 out of the 16 students achieving a score of 3.5

or higher and the High-level set with 14 out of 16. These two sets are similar in their on-task behavioral impact, however the High-level shows slightly more consistency in higher averages per the graph's viewpoint. Looking over at the Low-level data, it is evident that the students' scores in on-task behaviors are lower than the other sets. Most of the students' scores range between 2.5 and 3.5 on the behavioral scale.

Figure 11



Final Data Analysis

Physical activity and movement breaks in the kindergarten classroom setting did have an impact on student on-task behaviors. The quantitative data collected throughout this research study portrayed that the Medium and High levels of Brain Breaks had a positive impact with on-task behaviors whereas the Low-level Brain Break had a neutral and/or negative impact on student on-task behaviors. In the qualitative data collection, the interview answers shed some higher understandings of how students were feeling before and after each set. The majority of these responses were accurately reflected in the quantitative data collection. The overall feel from students, in response to the interviews

on Brain Breaks, were that most students really enjoy the Brain Breaks and want medium to higher time amounts. The most effective Brain Break sets in positively influencing on-task behaviors was the High and Medium sets. Both sets showed higher gains in students' on-task scores after each Brain Break. Every child is different and can be impacted differently by the Brain Breaks, but these two sets equally showed the most positivity in their impact on student on-task behaviors. All in all, both the quantitative and qualitative data showed how impactful Brain Breaks were on students and their on-task behaviors, both positively, negatively, and neutrally.

Summary

Within this chapter, the results of the quantitative and qualitative data collection were presented and analyzed to find the impact physical activity and movement in the classroom setting had on student on-task behaviors. The results showed that Medium to High levels of physical activity had an overall positive impact on student on-task behaviors while Low-level of physical activity had a neutral or negative impact on student on-task behaviors. The following chapter will conclude this research study. Chapter five will walk the reader through the personal learning and reflection of the researcher, revisit and connect the literature review from chapter two to the data, discuss the limitations and implications from the study, and express how this study can impact present teaching strategies today.

CHAPTER FIVE

Conclusion

Educators are driven to help their students learn and thrive in a classroom setting every single day. We understand that our students are different and unique, which means they learn and thrive in their own individual ways. It can be difficult to find common ground when it comes to motivation and engagement for all students in academic lessons. Creating movement breaks in the classroom is my way of helping students detach from the rigorous academic life so that when they come back, they remain focused and on-task in their learning.

The goal of this action research study was to determine the correlation between physical activity and movement in a classroom setting and student on-task behaviors. In this chapter, my personal learning and reflection from the study will be presented, the literature review from chapter two will be revisited, limitations and recommendations for future studies will be touched upon, and finally, how this research will impact present teaching strategies in classrooms today.

Personal Reflection

Throughout my personal life, I have seen the benefits of having physical activity and movement intertwined in my day to day living. There was more motivation and focus, better positive mindsets and attitudes, a willingness to take on challenges and problem solve, and a wholesome feeling of wellness. This physical activity positivity contributed to a lifestyle that was thriving and it was in my control to do so. As I started getting into the field of education, I wanted to use those movements in the classroom setting as a way to help my students thrive in how they functioned both academically and

behaviorally. I started looking through research to see what was out there in relation to student academics and physical activity. At this time, research was just beginning to be conducted on physical activity and student academic learning and retention. These research studies were showing that there were positive impacts from having students move and the amount of knowledge they were able to retain because of it. As I continued looking through, I noticed there was not very much data collected on behavioral aspects in relation to physical activity. Thus, began the desire to know the impact that physical activity and movement have on student on-task behaviors.

Going into this study, I had an inkling of what the data might show based on what I have seen in my own classroom throughout the last four years. However, I wanted to make sure that it was not my own bias playing into the realistic results of how physical activity was impacting my students' on-task behaviors. No matter what the results showed, I would share my experiences and the data that I collected to motivate other educators in my building and district to reflect on the impact movement implementation could have in their own classrooms. Physical activity is fundamentally important for everyone, no matter your age, especially for students who are spending many hours in a classroom setting with little movement throughout their day.

Before starting the study, I wrote down my personal thoughts of how I thought the qualitative and quantitative data would go. I felt that by doing this, it would help me be better aware of where my personal bias might lie and help me be accountable to set that bias aside and only use the results of the data accurately. My personal thought was that the Low and High levels of Brain Breaks would have a neutral and/or negative impact on student on-task behaviors while the Medium-level Brain Breaks would have a positive

impact. I felt that the Low-level of movement would result in more off-task behaviors than any of the levels with the High-level not far behind. I had believed that when it came to higher levels of Brain Breaks, there would maybe be a student or two who would be slightly positively impacted while the rest of the students would have a neutral or negative impact. Personally, I believed that too little movement and too much movement would negatively impact students' on-task behaviors, but I was not sure where the line was for either end of the scale.

After the study was conducted and the results were finalized, I was both surprised and not surprised at the outcomes. My personal beliefs had been right when it came to the Low-level Brain Breaks, but they had also been wrong when it came to the High-level Brain Breaks. I was surprised to see that this higher amount of movement was not only positive, but was pretty level with the Medium-level Brain Breaks, which I thought would be the best impact when it came to student on-task behaviors. I had also believed that most, if not all, of my students liked to move around, but I found during their interviews that some students were good either way with or without movement. This was evident in the rise or fall in their before and after scores in each set. Most of the feelings were positive feelings about Brain Breaks, which is what I had hoped. Seeing this research data align with my belief that physical activity and movement has a positive impact on students' behaviors was rewarding and motivating. I truly believe, like most educators, that students thrive better when they are given the necessary tools to be successful in the classroom environment. Through this study, I have proof that physical activity at medium to high levels has a positive impact on student on-task behaviors.

Revisiting the Literature Review

The biggest push to conduct this research study on the impact physical activity has on students' behaviors was driven by the data and research, or the lack thereof, already presented by others in the education and medical fields on this topic. There is an abundant of research on how movement, or physical activity, can positively impact student academic gains, but I wanted to see if the reasoning behind that was based on the regulation of on-task behaviors from the physical activity. There are many different kinds of factors that play into creating a loss for instructional time, however the biggest one is student inattentiveness, or off-task behaviors (Godwin, 2013). It has been shown, both in research and in my own classroom, that when students' behaviors are more on-task than not, there is a higher degree and retention of learning, which leads to more successes in academic and social emotional areas. Consistent participation in movement and physical activity is essential for well-rounded wellness in children and yet there are many districts across the nation that are lacking in providing students with the recommended 60 minutes of moderate to vigorous motion every day (Dinkel, 2017).

Physical and mental health are important factors to ensure students are achieving their full potential in all facets of their life – mental, physical, and emotional. I believed that teachers who implemented physical activity breaks in their classroom would see more on-task behaviors, which would lead to more instructional time and higher retention gains both academically and socially. I had seen this with my own classroom and the research on the topic backed this thought process. The main goal of conducting this research study was to see if there was a discrepancy in how different time amounts of movement in a classroom setting impacted those on-task behaviors. Many teachers in

research studies on the connection between physical activity and student behaviors found positive impacts on students and having multiple movement opportunities seemed to have a more meaningful impact on student benefits from that physical activity (Carlson, 2015). The data in my research study connected with previous studies done in presenting that medium to higher levels of physical activity and movement in the classroom had a positive impact when it came to on-task behaviors.

Limitations and Future Studies

Limitations. There were a few limitations present during this action research study that need to be addressed and touched on for future studies being conducted on this topic. The first and biggest limitation present during the time of the study was participation in the Brain Breaks. Though I strongly encouraged all students to participate in every Brain Break, I did not feel that it was ethically sound to make students participate if they did not want to. I allowed the students the freedom to move differently than the way the video was instructing, but I did ask them to at least stand and step from side to side as a way to create some kind of movement with their bodies. Most all students participated in the movements on Medium and Low days, however by the end of a few High-level Brain Breaks, a couple students would express that they were tired and did not want to continue. Again, when this occurred, it was documented but not used in scoring them.

Another limitation present during the data collection time was the absences of students on more than one day. The reason this is considered a limitation is because two students who were absent due to different reasons missed days in one or two sets. This tentatively created the collection of less data point(s) in specific sets. This was noted

during the collection phase and was reflected upon during the analyzing stage. These students had individual consistency in their Before Brain Break scores and similar After Brain Break scores in specific sets. With that knowledge, these missed data points were not used against the students in their overall results.

A third limitation present in this study was the timing of data collection. This study was conducted from mid-November to December. With conducting at this time, there were two major holidays and district breaks happening at this time. In most Kindergarten classrooms, when the countdown to Thanksgiving and Christmas break is upon them, excitement levels are high and focus levels are very low. This shift in mentality for young children could have impacted the level of off-task behaviors present in the classroom and, theoretically, may not completely represent this specific kindergarten classroom as a whole when it comes to year-round on-task behaviors.

Future Studies. Creating the foundations for this study, finding the data, and analyzing it, gave me a better understanding of the influence physical activity implemented in a kindergarten classroom specifically had in connection to on-task behaviors. There is research in the education world that promotes the positive findings of incorporating physical activity in the classroom setting, but not a lot of the data walks readers and educators through how different amounts of that physical activity might be impacting students. After looking at the data and going through the limitations and positive results, there are a few components for myself and future researchers to keep in mind when conducting future studies on this topic.

One component to look into in future studies would be the different time frame amounts of physical activity implemented in the classroom. I used Low, Medium and

High leveled Brain Breaks; however, it would be interesting to see if going higher with the time amounts would have any changes in student on-task behaviors. I was surprised to see that the High-level stayed consistent in positive growth as the Medium, as I felt it could do the opposite. It would be interesting to see if more time would prove that or not. Along with this would be the idea of the study being conducted over a longer period of time. My research study was only able to take place over a five-week period, but the data could be more valid and solid if it was done starting at two months and going up from there.

Another area for future studies to consider is the amount of physical activity and movement carved out time in a day. By this I mean, in my study, I had only allotted two times a day for Brain Breaks, it would be interesting to see if there were any changes in the Low, Medium, and High levels if there were three or more times in the day to conduct the Brain Breaks. Our schedule during the time of the study had only two spots a day that could be consistently used for Brain Breaks with little to no changes or interruptions. I would like to see future research conducted around the question of whether or not having more physical activity break times through the day, even if they have the same time amounts as I did, would keep the data the same or change it. I usually am able to get two to four Brain Breaks a day in my own schedule, however that can change with different scheduling conflicts that arise.

The final area that would be great for future studies would be the idea of more than one classroom participating in the study. This could be done grade wide or district wide. I feel it would be very informative to see how different ages and their on-task behaviors are impacted by physical activity and movement in the classroom setting. My

study was a great start to finding results on the impacts, but it could be so much more if different classes were involved in the same data collection piece. I think this would also be a great chance to see if different demographic of schools finds similar or different data results from physical activity implementation.

Impact on Classrooms Today

I truly believe that my research study can start the process of educators incorporating more movement breaks into their classrooms, as well as open the door further for future studies on different amounts of physical activity and its impact on student on-task behaviors. This implementation of physical activity is not a cure all for classroom management. It is, however, proof that there is validity in the connection between movement in a classroom setting and on-task student behaviors, which means it can be used as a classroom management tool. Having a movement mindset in any classroom helps students be more attentive, have higher performance levels and successes, feel more motivated and engaged, and overall have better behavior (Mahar 2006). These benefits are just what educators need to create a learning environment that is designed for what students need and desire in their day to day classroom life. My class has shown me these benefits, and after looking at the data of this research study and seeing the different types of impacts physical activity has, I believe that it is mainly because of this movement mindset in our classroom that they are able to thrive at their full potential most days. And the days they don't, I know it aligns with the lack of movement they were given.

As I have stated earlier, physical activity is extremely important for physical and mental health for students, and though educators know of its importance, it doesn't

always justify giving up instructional time to allow movement and physical activity incorporation when there are many different academic and standard pressures on educators. This data shows that students' on-task behaviors are positivity impacted, and when students are on-task, they are learning and retaining at higher levels. This is what will motivate educators to incorporate physical activity and movement in their classroom. Promoting physical activity and movement in the classroom as a tool for improving students' behaviors, along with their academic performance, will be a more effective method in convincing educators to implement movement than simply communicating health benefits for students, which are not as openly apparent or as relevant for teachers when it comes to classroom benefit (Carlson, 2015).

Final Summary

This action research study was based on the question, *How do different amounts of physical activity and movement implemented into a suburban kindergarten classroom setting impact student on-task behaviors?* I truly believe that this study has opened my eyes even further to the classroom benefits of student physical activity and the lack of on-task growth when there is too little of it. I was very excited to see the results as they both confirmed and surprised me. The time and effort it took to put this study together was immense but it was worth all the time and effort to be able to see the final results. I plan and hope to use this action research study, and other research, as a way to prove and guide my coworkers to see the benefits that come from having physically active students in their classrooms. No matter the amount we are able to give, implementing any kind of physical activity is beneficial. I am proud of the work done in this study and proud of my students for taking part in the differentiation of physical activity, even when it was not

fun. I will continue to implement physical activity and movement breaks into my classroom schedule and encourage others to follow my lead. By doing this, we will be creating classroom environments that are ready to help our students thrive in all areas and become as successful as they can be.

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APPENDIX A

Physical Activity and Movement Sets & Timeline

Physical activity abbreviations: Workout (WO), Guided Dance (GD), Yoga (Y), Meditation (M)				
Physical Activity Sets	**Morning**	**Activity**	**Afternoon**	**Activity**
Baseline Week (2 days)	12 min	WO, GD, M	7 min	GD, M
Days 1 – 2 (High)	20 min	WO , Y	12 min	WO, GD
Days 3 – 4 (Low)	7 min	GD, M	0 min	-
Days 5 – 6 (Medium)	12 min	WO, GD, M	7 min	GD, M
Days 7 – 8 (High)	20 min	WO , Y	12 min	WO, GD
Days 9 – 10 (Low)	7 min	GD, M	0 min	-
Days 11 – 12 (Medium)	12 min	WO, GD, M	7 min	GD, M
Days 13 – 14 (High)	20 min	WO , Y	12 min	WO, GD
Days 15 – 16 (Low)	7 min	GD, M	0 min	-
Days 17 – 18 (Medium)	12 min	WO, GD, M	7 min	GD, M

APPENDIX B

Quantitative Behavioral Scale

Code Name:			**Date:**	
AM Before Brain Break Observations				
Behavioral Area	**1**	**2**	**3**	**4**
On-Task Behaviors *Is the student on task?*	Student stayed on-task for little or none of the observation time (5 or more times off-task)	Student stayed on-task for some of the observation time (3-4 times off-task)	Student stayed on-task for most of the observation time (1-2 times off-task)	Student stayed on-task throughout all of the observation time (0 times off-task)
Notes:				

Code Name:			**Date:**	
AM After Brain Break Observations				
Behavioral Area	**1**	**2**	**3**	**4**
On-Task Behaviors *Is the student on task?*	Student stayed on-task for little or none of the observation time (5 or more times off-task)	Student stayed on-task for some of the observation time (3-4 times off-task)	Student stayed on-task for most of the observation time (1-2 times off-task)	Student stayed on-task throughout all of the observation time (0 times off-task)
Notes:				

Code Name:			**Date:**	
PM Before Brain Break Observations				
Behavioral Area	**1**	**2**	**3**	**4**
On-Task Behaviors *Is the student on task?*	Student stayed on-task for little or none of the observation time (5 or more times off-task)	Student stayed on-task for some of the observation time (3-4 times off-task)	Student stayed on-task for most of the observation time (1-2 times off-task)	Student stayed on-task throughout all of the observation time (0 times off-task)
Notes:				

Code Name:			**Date:**	
PM After Brain Break Observations				
Behavioral Area	**1**	**2**	**3**	**4**
On-Task Behaviors *Is the student on task?*	Student stayed on-task for little or none of the observation time (5 or more times off-task)	Student stayed on-task for some of the observation time (3-4 times off-task)	Student stayed on-task for most of the observation time (1-2 times off-task)	Student stayed on-task throughout all of the observation time (0 times off-task)
Notes:				

APPENDIX C

Before-Set Interview Questions

1. What is your name?	
2. How old are you?	
3. How are you feeling right now?	
4. How do you feel about Brain Breaks? What do you like or not like about them?	
5. How many times do you think we should have Brain Breaks? Why?	

APPENDIX D

After-Set Interview Questions

1. What is your name?	
2. How old are you?	
3. How were the Brain Breaks the last couple days? Likes? Dislikes?	
4. Do you think the Brain Breaks were too short, just right, or too long? Why?	
5. How are you feeling after the Brain Breaks?	