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Movement Break Effects On Second Graders: An Action Research Study

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MOVEMENT BREAK EFFECTS ON SECOND GRADERS: AN ACTION RESEARCH STUDY

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DEDICATION

This dissertation is dedicated to my family who have helped me get to this point in my life and to get through this process. My loving husband has been supportive and understanding of the time and effort I have needed to complete this program. To my children who make me want to be a better person and who always express how proud of me they are. To my mom who has been my biggest cheerleader in everything I have ever endeavored to do, you have always believed in me. To my aunt who has supported me through the program and been such a wonderful example of a strong woman all my life. To my step-mom who planted the seed many years ago that led me to this place now. To my friends that have listened to me when I did not think I could go on and have believed in me all along.

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ABSTRACT

This paper describes an action research study regarding the amount of time elementary school children have to engage in movement and play during the school day. The teacher-researcher focused on using transitional movement breaks before math whole group instruction in an effort to answer the question: How do various types of movement breaks during instructional transitions impact off-task behaviors among second grade students during classroom instruction? The data results showed that physical activity related to students' abilities to stay on-task during instruction when regularly scheduled movement breaks have been implemented as transitions. Student off-task behaviors decreased after using a physical activity movement break for transitions.

Keywords: time-on-task, instructional breaks, inattentiveness, movement breaks, disruptive behavior, off-task behaviors, self-regulation, transitions

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CHAPTER 1: INTRODUCTION

Problem of Practice

It has often been said that teachers must bring their best “dog and pony show” to the classroom if they are going to keep students engaged in learning. Having spent 17 years in the elementary classroom, I have found it to be increasingly harder to keep students focused on necessary tasks. In my second-grade classroom, the seven- and eight-year-old students are engaged in instruction for almost four hours without leaving the classroom. For that reason, and keeping in line with best practices in education, students are immersed in a learning environment which uses songs, call backs, small cooperative groups, individualized instruction, partner work, videos, and other technological methods in an effort to allow children choice and movement as they learn. Even with these methods, I have seen an increase in off-task behaviors which are disruptive during instruction and distract other students from learning.

The identified Problem of Practice (PoP) for the present action research study was the number of off-task behaviors during instructional time and how that is connected to the amount of time elementary students are engaged in movement and play during the average school day. Becker, McClelland, Loprinzi, and Trost (2014) found multiple studies in which physical activity has been shown to increase both working memory and attention in students. Furthermore, Becker et al. describe the “growing

evidence to support the links between physical activity, self-regulation, and school achievement” with self-regulation defined as “the complex interaction between inhibitory control, attentional control, and working memory” (2014, p. 58). Yet, play time, or recess, in the United States has been increasingly replaced with academic time as educational reform searches for ways to increase academic achievement (Chang & Coward, 2015).

In 2007 data showed that recess in schools had decreased by an average of 20%, or 50 minutes in all schools since the inception of No Child Left Behind (NCLB) in 2001 (McMurrer, 2007). This decrease in recess is in spite of growing evidence, as shown by Skoning (2010), that students who were active throughout the day “demonstrated increased understanding, improved behavior in the classroom, and better attitudes towards school” (p. 171), thus leading to a positive learning environment. Not only has recess been effected, but physical activity in general. “In the United States, only 42% of children aged 6 to 11 years and 8% of adolescents obtained the recommended 60 minutes per day of moderate intensity or greater physical activity” (Goh, 2017, p. 177). According to Goh (2017), spending prolonged periods of time engaged in “academic instruction can lead to restlessness and reduced concentration” (p. 178). In this action research study, I have changed the curriculum and pedagogy to enable students to have “movement breaks” before teacher-centered instructional time in an effort to determine if student off-task behaviors are decreased when students are engaged in the regularly scheduled periods of play or physical activity before instructional lessons as the literature and research suggested.

Theoretical Framework

John Dewey (1938) also saw the consequences of students not getting enough time to play and exercise at a young age. He argued that the constraints of keeping quiet and maintaining acquiescence in the classroom keep students from exhibiting their true selves. The amount of time students are expected to spend in the classroom receiving direct instruction or being engaged in activities which demand high-functioning cognition, has steadily increased with high-stakes testing of standards, thus shortening the amount of time students are able to participate in recess or free time. Along with increased time in the classroom, students are also now coming to the public school younger than before. Whereas five-year-old kindergarten was once optional, it is now mandatory and four-year-old kindergarten is often expected. The structure of those classes has changed as well, foregoing center and creative play time for paper and pencil seat work. “Where something approaching drudgery or the need of fulfilling externally imposed tasks exists, the demand for play persists” says Dewey, “The ordinary course of action fails to give adequate stimulus to emotion and imagination” (1916, p. 240).

More currently, Pellegrini and Davis (1993) have found in experimental studies that elementary students became increasingly inattentive when movement breaks were delayed (Jarrett, 2002), thus supporting the need for transitional movement breaks during classroom instruction. Students who are inattentive become restless, they miss valuable academic instruction, and they distract other students (Goh, 2017). Yet, Schachter (2005) states “As State and Federal standards have been ratcheted up, the

minutes allotted to the traditional practice of recess has shrunk in 40 percent of districts around the country, according to recent studies” (p. 37). Reduced recess and reduced time for physical activity in the classroom means teachers must find ways to integrate physical movement activities in the instructional day. Having short bursts of physical activity before the school day or during the school day has been shown an improvement in student on-task behaviors in multiple studies (Goh, 2017). Webster et al. (2013) give several examples of how this can be accomplished: “planning active classroom lessons, collaborating with other classroom teachers about movement integration, or managing an active classroom environment” (p. 318).

I teach all subjects in a second grade classroom where students receive a maximum 20 minutes of recess, which includes leaving the room and returning, in an effort to maximize instructional time per the school handbook. Essentially, students are engaged in free play for approximately 10 minutes of that given time. Each minute of the day is planned out and organized to minimize downtime and increase time spent engaged in academic instruction while in the classroom. This trend of lessening recess time, in an effort to increase academic instructional time, has become so influential in our society that new elementary schools in Atlanta Georgia have recently been built without playgrounds on school grounds (Dills, Morgan, & Rotthoff, 2011).

The beginning of the 21st century has brought with it a heavy emphasis on standardized testing, a trend Social Reconstructionists view with great alarm (Schiro, 2013). This emphasis on standardized testing has made it difficult to include physical activity into the school day that does not “directly support academic instruction” (Goh,

2017, p. 177). In my second grade class, we give different types of standardized assessments ten times a year in an effort to assess student progress and compare that progress across the school, district, and national levels. Not only is the progress of the students assessed, but teacher effectiveness is also assessed with these same student scores. Schiro (2013) describes the assessment requirements, which No Child Left Behind and Race to the Top mandates initiated, as having “subversive underpinnings that are leading to a crisis in education” (p. 193). Furthermore, Schiro points to teaching to the test policies as being one of the culprits leading to this crisis. Social Reconstructionists see this as a capitalistic way for government to control what students are learning through mandated testing, where the school is a business, the teacher merely a worker, and the student a product.

Research Question

The purpose of this action research study was to examine the effect movement break transitions have on behavioral interruptions and off-task learning behaviors in my rural South Carolina second grade classroom. This action research study was in accordance with the identified Problem of Practice (PoP) for this Dissertation in Practice (DP): the amount of time elementary age students are engaged in movement and play daily and how that directly impacts student behaviors. Behavioral disruptions are defined by Landrum and Sweigart (2014) as noncompliance, inattentiveness and disruptive to the classroom. Time-on-task is described as maintaining “effortful engagement with appropriate tasks” (Landrum & Sweigart, 2014, p. 3). Off-task behaviors are behaviors such as playing with objects, not being with the group and

laying the head down. These behaviors only keep the person doing the behavior from learning. Disruptive behaviors are behaviors that involve impeding the learning of other students. For the purpose of this study, off-task and disruptive behaviors were all coded as off-task.

With an increased focus on academic achievement based upon standardized testing scores in the elementary classroom, the opportunities for student movement have steadily decreased, seemingly resulting in students who are less attentive and more involved in behavioral disruptions. The following Research Question (RQ) will guide my study:

RQ1: How do various types of movement breaks during instructional transitions impact off-task behaviors among second grade students during classroom instruction?

This action research study was aligned with Vygotsky's social development theory that the premise of play is the initial building block to children controlling their behaviors and building their mental capacities. Bodrova and Leong (2015) describe Vygotsky's views in the following way, "In Vygotsky's view, it is one of the accomplishments of the preschool years that children overcome their impulsive, reactive behavior... and thus become capable of intentional behavior, an accomplishment critical for the development of higher mental functions" through play (p. 374). As students engage in transitional activities before moving to whole group instruction, they may become more aware of their own behaviors and how to control them. In addition, research studies have shown there is a link between activity breaks

and the cognitive benefits that contribute to a student's academic success (McNamara, 2013).

Regularly scheduled movement breaks were incorporated as transitions before math whole group instruction with the intention of increasing student attention and decreasing off-task behaviors which disrupt the learning environment. The expectations to be on-task were distributed through the day after movement breaks, not massed together, so students could become aware of and intentional in their behaviors as they began to develop their self-control (Pellegrini & Bjorklund, 1997). This study has the potential to influence the way educators acknowledge the cohesiveness of the mind and body when scheduling time for transitional movement breaks within the instructional day.

In previous years I have noted many second grade students having an inability to sustain focus on learning tasks or to practice self-control, thus leading to behavioral interruptions during instruction. There has been a steady increase in these behaviors, even as instructional practices have evolved to be more engaging and hands on. Goh (2017) found that short bursts of physical activity during the instructional school day did increase student on-task, therefore reducing the disruptions in classroom learning. These observations, combined with Vygotsky's social development theory which is based off the premise that play is the initial building block to children controlling their behaviors and building their mental capacities, has brought me to consider the possible association between a lack of time for physical active movement and off-task behaviors. Bodrova and Leong (2015) describe Vygotsky's views in the following way:

In Vygotsky's view, it is one of the accomplishments of the preschool years that children overcome their impulsive, reactive behavior (i.e., their "knee-jerk" response to the environment) and thus become capable of intentional behavior, an accomplishment critical for the development of higher mental functions. The other accomplishment of the early years involves children's growing ability to use a variety of signs and symbol systems—from gestures and words to drawing and written marks that prepares them for the increasingly complex symbol systems they will learn in school. Vygotsky's theory of higher mental functions and their development, therefore, provides the context for his views on play (p. 374).

With consideration of Vygotsky's social development theory, I believe the lack of physical movement second-grade students are allowed to engage in may be contributing to their inability to focus during instructional time and their inability to practice self-control. Therefore, the lack of focus and self-control leads to behavioral disruptions and lower achievement scores, both of which are detrimental to the learning environment. Evidence found by McNamara (2013) showed that after providing students—younger students in particular—with regular movement breaks, the students were focused on learning tasks and attentive to instruction.

Action Research Methodology

As the teacher-researcher, I followed the cyclical action research design stages as described by Mertler (2014) of planning, acting, developing and reflecting.

- Phase one of the study involves the teacher-researcher identifying the problem and developing a research plan.
- Phase two involves the teacher-researcher's collection of data and analysis of the data.
- In phase three, the teacher-researcher develops a plan of action to implement changes based upon the findings of the study.
- The fourth phase, focuses on sharing the findings with others while reflecting on the process. Reflections may lead to questions for further investigation related to off-task behaviors.

A mixed-methods sequential explanatory design approach to data collection was used in this action research study collecting quantitative and qualitative data.

Dobrovlny and Fuentes (2008) explains that a benefit of mixed methods data collection is allowing the researcher to improve the validity of results and give more credibility when making decisions concerning the research subject. Additionally, Dana and Yendol-Hoppy (2014) affirm the benefits of mixed-methods design as “enhance[ing] your inquiry as you gain different perspectives from different strategies” and “you are able to build a strong case for your findings” (p. 134).

Data collection of student behaviors took place in the spring of 2018 with 24 second graders in my second-grade classroom. During this action research, I, the teacher-researcher and full participant, collected the data utilizing an observation behavior chart to record students' off-task and disruptive behaviors as observed while

viewing recorded lessons and by recording field notes of the videos. The lessons were video recorded beginning with the transitional activity, through the whole group math lesson, and ended as students moved to independent practice. Those off-task and disruptive behaviors recorded on the chart were behaviors seen as being noncompliance, distracting to other classmates, and inattention. Noncompliance included students not doing what was asked of them. Distracting, or disruptive, behaviors were categorized as behaviors which caused other students to stop learning; they included, but were not limited to making noises, talking, throwing items, playing in hair, getting up and moving around. Inattention was recognized as the student who was not following along, day dreaming, or not being engaged; this is different from disruptive behaviors in that the student is not bothering or distracting other students. Off-task and disruptive behaviors were calculated together for final results and were all referred to as off-task. I was a full participant in the process, acting as a “functioning member of the community” (Mertler, 2014, p. 94) while simultaneously being the researcher. My responsibilities included video recording the lesson, implementing movement transitions, recording observed behaviors on the behavior chart and recording field notes from the recorded lessons. Three specific transition activities were used: song for transition, running activity, and calming movement. Song for transition was light to no physical activity, the running was moderate to vigorous activity, and the calming movements were light activity. In the first transition, a song was sung as students moved to the whole group math area. At the end of the song, students were expected to be seated and ready. The physical activity transition had students running in

place for a 400-meter race. The calming movement involved students following along with stretching and breathing exercises. Each of the transitions were utilized before two whole group math lessons, for a total of six recordings in all. I reviewed the lessons on video playback and recorded the off-task and disruptive behavior instances on the behavior chart at that time while looking for any patterns in behaviors. All students were encouraged to participate in the movement activities, but were not forced to participate.

I led the students in song for transition as they came to the rug for whole group math instruction. The other two transitional movement activities were technology-led using GoNoodle for a time period of three to four minutes on the Promethean board. All students were asked to come and participate in the transitional activities. Video recordings began with the transitional movement, continued through whole group math instruction and concluded once students were moving into their independent work. I then utilized an observation chart to review video recordings to record off-task and disruptive behaviors which took place.

To maintain procedural fidelity, the movement breaks took place at the same time each day with all students being highly encouraged to participate. The data collection also took place at the same time each session using a chart to calculate the off-tasks and disruptive behaviors of students during the whole group math instruction. Furthermore, a checklist of movement activities were kept to ensure the length of time and type of movement activity used was consistent over the duration of the study.

In addition to the quantitative data gathered, I also analyzed qualitative data with information collected and coded from field notes of the video recordings. Student behaviors, along with teacher behaviors, were noted and coded during this time. A mixed-methods data collection approach allowed me, the teacher-researcher, to collect numerical data and observational data related to student off-task behaviors.

Significance and Limitations of the Study

This action research study has the potential to affect transition instructional routines and methods used by educators to increase time on-task in the elementary classroom. As society and our students change, it is critical teachers continue to question and study as they strive to use best practices in the classroom. The field of education must evolve, just as society evolves, with methods of instruction that are driven by research evidence. This study aimed to find a plausible solution to the problem of students being off-task during classroom instruction.

There are certain limitations that may have affected the outcome of the action research study. To begin with, as the teacher-researcher, I was collecting the data related to off-task behaviors by observing student behaviors from video of lessons. As a result, it would be fair to assume some behaviors might be missed in the data collection due to the camera not having every student in view. Therefore, I recorded several lessons before the study began to find a camera position with the greatest viewing potential. Furthermore, off-task and disruptive behaviors were identified at my, the teacher-researcher's, discretion. Secondly, due to the length of the study, some

participants were unavailable during part or all of the study. It was determined that any student missing two or more days would be left out of the study. The design of the research study attempted to reduce or eliminate these limitations in an effort to assure the results of this study were both reliable and valid.

Organization of the Dissertation

My problem of practice focused on the lack of opportunities elementary school students have for active movement during the school day which is, in part, due to increased instructional demands that were implemented with No Child Left Behind (NCLB) policies stating students as young as kindergarten age are to excel in academic subjects (Perera, Frei, Frei & Bobe, 2015) and the effects these decreases have had on classroom behaviors. My study endeavored to analyze the relationship between transition movement activities for elementary students and the occurrences of off-task and disruptive behaviors by answering the following question: How do various types of movement breaks during instructional transitions impact off-task behaviors among second grade students during classroom instruction?

The remaining four chapters provide the groundwork and findings for the action research study completed. The literature review, which is found in chapter two of this document, served to communicate the importance and relevance of this research study, to provide a theoretical framework from which the research was built, and lastly to share relevant methodology which was employed during this study. Chapter three, methodology, provides details concerning the overall design of the study, along with a

description of where the study took place and the participants of the study. The findings, graphs displaying those findings and a discussion of those findings can be found in chapter four. Finally, chapter five contains action plan which was developed taking into account the study's findings, a reflection of the study itself, and recommendations for further research.

Glossary of Key Terms

Movement breaks or Instructional breaks: Classroom-based short physical activity breaks which are introduced to promote learning or to provide students with a pure physical activity break. These activity breaks are not physical education class or recess and are relatively easy to implement in the classroom (Rasberry, Lee, Robin, Laris, Russell, Coyle & Nihiser, 2011).

On-task behavior: Behaviors can be verbal or motor and “follow the class rules and was appropriate to the learning situation” (Mahar, Murphey, Rowe, Golden, Shields & Raedeke, 2006).

Self regulation: Uses the “integration of these three key actions (i.e. inhibitory control, working memory, attention) and assess connections between self-regulation and active play (Becker, McClelland, Loprinzi & Trost, 2014)

Inattentiveness: Behaviors which are not on task, but are passive and do not disrupt the learning of other students (Mahar et al., 2006).

Disruptive behavior: Behaviors which are not on-task and may disrupt the learning of others as they are movement or noise related (Mahar et al., 2006).

Off-task behaviors: Behaviors which are not on-task; and can be disruptive or passive (Mahar et al., 2006).

Transitions: Movements or actions used for the purpose of changing from one activity to another (Smythe, 2002).

CHAPTER 2: LITERATURE REVIEW

Introduction

The identified Problem of Practice (PoP) for this Dissertation in Practice (DP) was the number of off-task behaviors during instructional time and how that is related to the lack of time for elementary school students to participate in movement and play during the instructional day. The purpose of conducting the action research study was to examine the effects of regularly scheduled movement breaks on the off-task behaviors and academic achievement of second-grade students with the intent of improving student behaviors, and therefore the learning environment. The primary intent in action research, as noted by Ioannidou-Koutselini and Patsalidou (2015) is reflective learning in authentic environments for the intention of personal growth and improving the learning community.

Due to the overwhelming demands Read to Succeed (R2S) mandates have placed on educators to raise academic achievement on standardized tests, and the previous demands of No Child Left Behind (NCLB) which began this current trend, students are facing the school day with significantly less time engaged in play than students of the past (Perera, Frei, Frei & Bobe, 2015). Dagli (2012) reports, based on a 2006 School Health Policies and Program study, only seven states require recess, while thirteen states only recommend students participate in 30 minutes of recess a day and 30 states

lack any requirements or recommendations for recess time. Yet, the U.S. Department of Health and Human Services (2008) recommend students receive 60 minutes of moderate to vigorous physical activity a day (Goh, T. L., Hannon, J., Webster, C. A., Podlog, L. W., Brusseau, T., & Newton, M., 2014). Becker, McClelland, Loprinzi and Trost (2014) found time devoted to recess has declined since the inception of NCLB as more focus has been placed on maximizing instructional time-on-task in an effort to meet “standardized requirements for mathematics and reading” (p. 57). Students are in school for 7 to 8 hours daily, and 6 of those hours are spent in academic instruction resulting in students sitting sedentary for much of the school day (Goh et al., 2014). In addition, research by Dagli (2012) indicates the kindergarten experience has changed from children learning to play and develop their social skills to the bulk of time being devoted to developing academic skills. While the trend in decreasing time for physical activity has been gaining popularity, more research is also being conducted to study how the brain works and how those findings regarding brain function might be applied in the classroom (Jensen, 1998) and how physical activity contributes to student on-task behaviors in the classroom (Goh et al., 2014).

Over the course of several years, I have noted an increase in disruptive off-task behaviors during instructional time in the second-grade classroom and believe this impacts the overall learning environment and student achievement. Participating in prolonged periods of academic instruction leads to reduced concentration in students, therefore students become off-task (Goh, 2017). It has been found that, “Disruptive behaviors hamper the ability of teachers to teach and students to learn and have

negative effects on the broader classroom management and organization” (McCormick, Turbeville, Barnes & McClowry, 2014, p. 1198).

As a result of the identification of a need for improvement of the learning environment in the second-grade classroom, I proposed and implemented this action research study to answer the question: What is the perceived impact of movement breaks during instructional transitions on off-task behaviors among second grade students during classroom instruction? The role of the teacher to implement research and participate in educational reform is significant (Morales, Abulon, Soriano, David, Hermosisima & Gerundio, 2016). In particular, action research aims to change “practitioners’ practices, their understandings of their practices, and the conditions in which they practice” (Kemmis, 2009, p. 463). This action research study has the potential to deepen the understanding of how children learn and to change the structure of the learning environment.

A multitude of studies have been explored concerning the need for students to have periods of active movement in order for them to perform their best behaviorally and academically. As Pellegrini (2008) points out, the recess debate has been taking place since around the early 1980’s and has resulted in many arguments for and against the role play time, or recess, should have in the school setting. To move forward with the present action research study, it is essential to review literature describing previous research on the topic. “Without a shared understanding of what we mean by quality instruction, we have no basis from which to mount an improvement effort” (Fink & Markholt, 2014, 319).

The information shared in this literature review provides a foundation of understanding to design and conduct the present action research. In addition, “the literature review may also help to establish a connection between [my] action research project and what others have said, done, and discovered before” (Mertler, 2014, p. 61) this current research study. Following the previous findings from scholarly educators and researchers, information was gathered and analyzed during the action research study process to discern the effects of regularly scheduled student movement breaks on student behavior during instructional periods of time and to potentially make a positive change in classroom management.

Historical Context

During the seventeenth century children began to be recognized not as small adults, but as being in a life stage that required specific educational and developmental needs (Platz & Arellano, 2011). The authors describe early childhood as a time when children were mostly ignored until they were old enough to contribute to the family by working in some capacity. One of the first scholars to advocate for children and their capacity for learning was John Locke. Locke argued that the experiences children encounter “shape their nature and learning” (Platz & Arellano, 2011, p. 56). Locke strongly believed children would learn best through play interactions and he also conclude that there was a connection between a healthy body and healthy mental development which led him to advocate for physical activity to be a part of school curriculum (Platz & Arellano, 2011).

Contrary to Locke's educational system beliefs, and in an effort to end crime and the problems associated with street children who had been failed by their parents, charity schools and reformatories were developed. These schools could be a place where different social classes would mix and all students would receive the same education. Education would provide children with the tools needed to become functioning members of society (Spring, 2014). "Mann put his hope in the school teacher, who, by educating children so they would not transgress the law, would replace the police" (Spring, 2014, p. 83). Essentially, Mann is claiming it is public education's job to take these students and provide them with an education that promotes them to a higher status and creates functioning, contributing members of society, regardless of how meager their beginnings may have been.

With the insurgence of students into the charity schools came a new instructional system, the Lancasterian system (Spring, 2014). This system was a very orderly and obedient structure by which the "pauper child [could] escape poverty and crime by imparting formal knowledge and instilling the virtues needed in the world of work" (Spring, 2014, pgs. 64-65). The system was designed so that up to 450 students could efficiently and effectively be instructed at a time. "The development of charity schools, the Lancasterian system, and the houses of refuge reflected a growing faith in the power of schooling to solve the problems of society" (Spring, 2014, p. 66), a faith in the power of public school which is very much alive today.

Piaget is another scholar who believed movement was an essential part of the learning experience to teach the whole child. Central to Piagetian theory is the belief

that thought itself is derived from an action (Becker, 2006). Piaget believed the building of schema for cognitive development began with sensorimotor actions; essentially thought comes out of a movement. Early childhood is the optimal time for acquisition of foundational motor skills to be attained (Savina, Garrity, Kenny & Doerr, 2016).

More generally, Piaget's approach may be elaborated in terms of two propositions: (a) *a decoupling proposition: brain activity dedicated to the production and regulation of limb movements can be dissociated from such movement and* (b) *a novel use of proposition: the organism can use the brain activity in this new state to develop new ways of interacting with the environment-mental ways.* (Becker, 2006, p. 196)

"Piaget was one of the first who emphasized that all actions form the basis of human learning, especially for young children" (Ruiter, Loyens & Pass, 2015, p. 458).

Becker (2006) proposed that Piaget's theory of thought, being derived from action was illustrated in animal research on brain activity related to the movement of artificial limbs. According to Piaget, children develop in a specific predictable pattern. The behavioral stages of development include the child's abilities to self-regulate impulsive behaviors in a classroom setting. In the studies reviewed by Becker (2006), there was a decoupling of limb movement from brain activity, which is in line with Piagetian ideas. Furthermore, the neurological work completed in the studies suggests there was an increase in brain activity when the motor skills originally associated with the thought were taken away leading the authors to believe more "empirical work [is

needed] to determine whether the learned independence of brain activity from actual limb movement is manifested in any increase in problem solving activities” (Becker, 2006, p. 297). In addition, Becker (2006) states, based on Piaget’s theory, “that schemes developed from sensorimotor activities provide mental referents for linguistic terms, one might raise the possibility of change related to symbolic or linguistic activities” (p. 197). Given the results gathered from the research reviewed by Becker (2006) the concept of students engaging in movement in the classroom to enhance the educational experience and learning should be further explored.

In addition to the educational benefits associated with Piagetian theories, there are also social benefits to be had by students. A major emphasis within Piagetian theory is learning by children to interacting with one another. In a diverse population that allows for children to develop social awareness

“as the child confronts the beliefs of those who see things differently than he does, as he adapts his wishes to theirs or theirs to his in ongoing socio-dramatic play, as he contests with them in structured games, he becomes less egocentric and better able to take viewpoints other than his own” (Almy, 1974, p. 4).

Montessori (2013) is another influential scholar concerned with the early education of children. She refers to the early schools’ creation and use of desks in classrooms as a way to immobilize students thus making lateral movements impossible. In fact, she referred to the desk as “an instrument of slavery in the school” (p. 27) which science worked to perfect. The Lancasterian system, which was popular in the 1820’s, is

referred to by Spring (2014) as a method of “discipline and orderliness” to “provide moral training” (p. 63). This was a factory type educational system which stressed the importance of obedience in the school system as a way to prepare students for factory life. Spring (2014) describes a pattern of the public, or common, school being used as a way to control children throughout the history of education in an effort to better society.

In 1915 John Dewey wrote about an ideal school, one which would look nothing like the stale, rote memory based traditional schools looked (Schiro, 2013). In this ideal school, he envisioned a different atmosphere, a different physical set up, and different roles of students and teachers than the traditional school had. Experiences were thought to increase student learning as, therefore students should be exposed to as many experiences as possible as learning is a life-long endeavor (Platz & Arellano, 2011). Schiro (2013) describes Dewey’s vision of a classroom as one that would not be a rigid stale environment where students were the takers of information and the teachers served as the only givers of information. In contrast, the ideal school would focus on cultivating individuality, encouraging learning through experiences, finding teachable moments in the everyday learning environment, and embracing a world which is ever changing (Torkington, 1996). In fact, Dewey like Locke, favored a curriculum which included physical fitness as he believed it was essential for mental growth (Platz & Arellano, 2011). Dewey recognized the “emotional and psychological benefits” of play, emphasizing that “play provided children with a number of natural learning experiences

that were relevant to children and enhanced their development” (Platz & Arellano, 2011, p. 57).

The 1960’s and 1970’s are referred to by Schiro (2013) as a time when Learner Centered ideology, such as that envisioned by Dewey and portrayed by Piagetian theory, was being promoted. In this learning environment students were encouraged to problem solve and identify solutions to everyday problems actively where authentic social interactions could take place (Platz & Arellano, 2011). After the time of Learner Centered Ideology, the 21st century has brought with it the accountability movement where test scores are now the focus rather than curriculum and instruction in a system “based in administrative (rather than educational) agendas” (Schiro, 2013, p. 82). Given the history of the public school system beginning with common schools, charity schools, and Lancasterian systems, to the development of multiple educational ideologies (Spring, 2014), and then to the “desegregation of public education which was aimed at providing all young people, regardless of race, the same rights” (Carlson, 2008, p. 26), it is evident change in education is inevitable. I have reflected on the history of the school to compare the school of the past and with schools of current time, and implemented strategies in an effort to bring best practiced into the classroom.

Decline of Recess

In the United States there has been a shift in educational focus from student development to academic achievement which is measured with specific standardized testing (Tyler, 2012). Academic performance is then linked to consequences, thus

creating a consequential accountability system for students, educators, administrations, individual schools and districts. As Tyler (2012) explains, educators drive instructions in an effort to meet accountability standards, resulting in the educational focus being transferred from educating the whole child, to test content and test taking skills being taught for the specific purpose of passing assessments. It is a trend that Adams (2011) traces back to the early eighties and “was accelerated under No Child Left Behind” (p. 55).

According to Chang and Coward (2015) and Dills, Morgan and Rotthoff (2011), these reform efforts have contributed to a reduction in the time students have for recess as instructional time is increased. In addition to increasing instructional time due to academic pressures, Dinkel, Lee and Schaffer (2016) cite decreases in school budgets as a predominant reason physical education classes and recess times have diminished. Yet, London et al. (2015) cite physical activity in recess as being a critical part of childhood development which is “recognized by the United Nations High Commission for Human rights as a right of every child and by the American Academy of Pediatrics as an essential part of children’s social, emotional, cognitive, and physical well-being” (p. 53). It is necessary that teachers find opportunities to integrate physical activity that extends past the playground and into the school day (Egan & Webster, 2018). Even though recess has been recognized as a child’s right, “school districts were beginning to implement ‘no recess’ policies claiming that recess wasted time better spent on academics” (Dills et al., 2011, p. 889). Furthermore, Dagli (2012) found

Recess exposure is less frequent and for a shorter period of time for students attending public schools than for those attending private schools, for African-American students than White students, for students from lower-income families than for those from higher-income families and for students with parents who have a lower level of education than those with parents with a higher level of education (p. 3).

In contrast, Chang and Coward (2015) reported Chinese education policies stated elementary aged students should only be engaged in instruction for 35-minute interval and, that elementary students are not developmentally ready to concentrate for extended periods of time. In the Chinese schools from which they collected data, students received 10 minutes of recess for every 40 minutes of instruction in which they were engaged. This was in addition to a lunch break and nap time after lunch. Those recommendations are in direct contrast to the schools in the United States where “more than 40% of school districts in the United States have eliminated recess or are considering doing so” (Ridgway, Northup, Pellegrin, LaRue & Hightshoe, 2003, p. 254) because of policies pressuring academic achievement since the inception of the No Child Left Behind act in 2001 (Savina et al., 2016, Efrat, 2011). Savina et al. (2016) found students are spending six to eight hours sitting each day, while other research showed that the majority of children do not meet the current national guideline of at least 60 minutes per day of physical activity. The emphasis on assessments may be a contributing factor to reports by Willis (2005) stating student study time is primarily (70%) made up by rote memorization.

Recess is not the only part of the day that has been affected by the pressure to have students meet predetermined assessment standards. Physical education classes have also been eliminated, or their occurrence greatly decreased. Efrat (2011) found more than 40% percent of school aged children were engaged in physical education classes daily in 1991, but by 2003 that number had dropped to just 28%.

McNamara (2013) reports “Constant pressure upon educators and administrators to meet the well-intentioned demands of science, math, and literacy reforms invariably shapes the way schools make administrative, financial, and scheduling decisions” (p. 4). One of the results reported of such decisions is that fewer resources and attention are allowed for a more well-balanced educational experience for children as educators allow for as much instruction as possible in the day. Mahar’s finding (2011) also confirms that the

“emphasis on end of grade testing can cause decreased opportunities during school for students to be physically active by inadvertently pressuring administrators and teachers to spend more sedentary time in the classroom and less physical activity time in physical education and recess in an effort to improve standardized test scores” (p. S60).

Some educators do find recess or times for students to be active important, but Fagerstrom and Mahoney (2006) claim those times are viewed as being devoid of any academic value. They found recess was often placed at the end of the day as the activity students received if everything else had been completed that day, thus implying recess’

lack of importance. Ridgeway et al. (2003) identify additional reasons for the recess elimination trend as being “violence on the playground”, cost saving, and “prevention of potential litigation arising from accidents or inappropriate behavior on the playground” (p. 254).

Brain Research Related to Physical Activity

Considering most teachers are working to help students be able to “think, interpret, and become engaged in subject matter” (Willis, 2005, 20), it is important educators understand not only their subject matter, but how the brain works as well. Lefmann and Combs-Orme (2013) report that, before technology was advanced enough to adequately study the development of the brain, Piaget had already concluded that “development of structures in the brain is key to the developmental tasks” (p. 640). children use to respond to their environment. In addition, a more recent study conducted by Parker, Thompson, Jordan, Grimaldi, Assaf, Jagannathan and Pearlson (2011) found a positive connection between aerobic activity and hippocampal volume. According to Parker et al., the hippocampus is the part of the brain responsible for memory and new learning. While the study was conducted with senior adults, the implications for a positive correlation between brain development and physical activity are significant. McClelland, Pitt and Stein (2015) report students who achieve muscle control for physical tasks and better able to understand more abstract tasks. Embodied cognition is described as the body being involved in specific learning tasks (McClelland, Pitt & Stein, 2015), essentially meaning “the brain’s control of the body plays an essential role in any form of thinking or problem solving” (p. 84). Physical activity

increases oxygen levels in the body, specifically the brain, resulting in positive effects on brain chemistry, metabolism, and brain growth and development (Mulrine, Prater & Jenkins, 2008). Therefore, higher levels of cognitive functioning may occur when the motor cortex and pre-motor cortex are stimulated through active engagement (Savina et al., 2016).

What Works Clearing House (2012) with the U.S. Department of Education conducted a study in which students ages seven to 11 participated in either a high dose of physical activity, a low dose of physical activity, or no physical activity. At the completion of the study, it was found that overweight students who received high doses of physical activity not only scored significantly higher on math assessments, but they also experienced increased executive functions from 50th percentile to 60th percentile. In contrast, they found no significant difference in measured reading achievement with the same test group of students.

In addition to the What Works Clearing House study (2012), Ruiters, Loyens and Pass (2015) also describe studies that have shown “semantic codes are active when participants perform motor tasks, suggesting a close interrelationship between cognitive and sensorimotor processes” (p. 458). In the study 118 first graders were given a mathematical task of building two-digit numbers, one group using movement and the other with non-movement conditions. At the end of the study, all students were assessed to analyze their knowledge of two-digit numbers. Researchers found participants in the movement group scored significantly higher than students who were in the non-movement group. Moreover, according to Marzano (2012) and Skoning

(2010), another benefit physical activity has on the brain is an increase in oxygen to the brain with increased blood flow. Marzano (2012) also suggests using physical activity in the classroom that requires both hemispheres of the brain to be activated simultaneously.

An equally important benefit of physical activity is the growth of new neurons in the dentate gyrus of a person's hippocampus; the area of the brain "involved in the storage, consolidation, and retrieval of information" (Wolfe, 2001, p. 94). Evidence has also shown an improved connectivity of those neurons between the right and left hemispheres of the brain, thus explaining the possible connection between higher activity levels and academic achievement (McClelland, Pitt & Stein, 2015). To further support the values exercise may have on the brain, Jensen (2008) notes multiple studies examining the brain to exercise connection and concluding "that exercise is strongly correlated with increased brain mass, better cognition, mood regulation, and new cell production" (p. 411).

The prefrontal cortex, which is associated with short term memory, is described by Buch (2010) as the "executive center" of the brain which takes in new information and uses the most energy in unfamiliar situations (p.43); as well as playing "an important role in motor control" (Savina et al., 2016, p. 287). This relatively small area of the brain has a smaller capacity to take in and retain large chunks of information. Buch (2010) compares this area in the brain to the water in an eight-ounce drinking glass, where as the rest of the brain would be the water in the whole ocean. "This is why the prefrontal cortex is oversaturated so quickly and needs time to rejuvenate throughout

the day” (p. 43). According to Buch (2010), oversaturating the prefrontal cortex leads to impaired judgment where decision making is ruled by emotions. Efrat (2011) suggests that decision-making, information-processing, recall and attention may all be improved when the working memory capacity is increased through physical activity.

Willis (2005) explains the need for brain breaks during instruction as being critical to memory retention. Information is transmitted through the brain across synapses by first a electrical travel and then over gaps between nerve cells by chemical travel. According to Willis (2005), neurotransmitters are needed for this to occur, and when they are depleted, information does not travel, therefore resulting in memory drops. Given the neurotransmitters rebuild with time, teachers must give students time between tasks for this to happen. Willis (2015) suggests the use of brain breaks when students are showing signs of distraction to give the brain time to regenerate neurotransmitters in order that more effective learning may take place. “By understanding the different types of memory, the neurophysiology of brain chemical and anatomical changes associated with memory, and ways to enhance the memory process, teachers can utilize proven techniques...to guide students over that bleak terrain of memorization” (Willis, 2005, 20).

Academic Achievement Related to Physical Activity Breaks

The association between physical activity and academic achievement was investigated by Rasberry, Lee, Robin, Laris, Russell, Coyle and Nihiser (2011 who analyzed a total of 50 studies to determine the associations between physical activity

and academic achievement, behavior, and cognitive skills existed. Their findings showed either a positive link between academic performance and physical activity or no association. The lack of any negative impact was consistent throughout the studies. These findings suggest the time for movement breaks, or physical activity, in the day would not detract from academic performance as schools work to meet assessment demands even when less time is available to devote to classroom instruction (Rasberry et al., 2011). Eight out of nine studies suggested that breaks given in the classroom for physical movement had a favorable impact on test scores. Moreover, Kercood and Banda (2012) found study participants took less time on assessment tasks and performed with higher accuracy rates after movement activities. Overall, the existing research suggests educators may be able to devote time in the classroom to movement breaks without worrying if it will detract from academic performance or student engagement.

Dagli (2012) explains that, studies have consistently shown that students become more attentive after being exposed to recess and when students become more attentive, learning is improved. In addition, Dagli cites the distributed effort theory to explain the correlation between movement breaks and academic achievement. The distributed effort theory posits, “students need a space between the tasks, such as recess, in order to pay more attention to cognitive tasks, and their attention is likely to result in learning” (Dagli, 2012, p. 5). In Dagli’s (2012) study, no correlation was found between the amount of recess kindergarten students received and their reading achievement success. However, it was noted there were no negative effects found

either when recess was increased. Further, no positive effects were found by lengthening the reading instruction time students received. The only correlation to reading achievement was found when the school day had a balance of experiences. This would imply reducing recess time and increasing classroom instruction in pursuit of enhancing academic achievement is ineffective.

In a study conducted by Becker, McClelland, Loprinzi and Trost (2014), once again there was no link between vigorous activity and academic achievement in pre-kindergarten students. The study included 51 preschool age children, with approximately half of them coming from low-income homes. At the onset of each recess period, an ActiGraph accelerometer was attached to each child for monitoring active play times. Along with checking for academic achievement, the researchers were also looking for self-regulatory skills in children. The study did find a link between vigorous activity and the self-regulatory skills of students. Students who were engaged in more vigorous active play scored higher on their self-regulation inhibitory control. Similar studies also showed executive functions were improved through physical activities which had gradual increases in complexity and repeated practices (McClelland, Pitt & Stein, 2015). This information, in conjunction with information from previous studies showing more physically fit students having higher reading and math achievement, led the researchers to suggest there may be an indirect link between active play and higher achievement. Even though this particular study of preschoolers did not find a significant link between activity and achievement, research has shown that self-regulation skills and academic achievement are linked (Becker et al., 2014). Becker et al. conclude by

confirming the study “connects the concept of active play with embodied cognition, self-regulation, and academic achievement by showing that higher levels of active play positively predict self-regulation scores and early math and literacy skills” (p. 67) as high self-regulation skills are a common predictor of academic achievement in older students.

Physical activity as it relates to the brain is described by Chandler and Tricot (2015) as causing “physiological changes, such as increased cerebral blood flow, increased oxygen levels to areas of the brain that support memory and learning, and release of neurotrophins that enhance neuronal processes in the brain which benefit cognitive performance, especially executive functions” (p. 367). They also found, as did Becker et al. (2014), students who were more physically active performed better cognitively and academically. In Chandler and Tricot’s (2015) study, they found combining gestures and physical movements when teaching new concepts increase student academic achievement. In fact, they report “results clearly demonstrated that employing body movements can be highly beneficial for basic mathematical achievement as compared to simply studying instruction” (p. 369). To further strengthen the argument for employing body movements in instruction, findings by Ruiters, Loyens, and Paas (2015) showed higher performance on math tests when bodily movements were incorporated into teaching number units on a ruler. In addition, Savina et al. (2016) reported findings of improvements in curriculum-based math and reading measures when 20 minutes of physical activity was integrated into math and reading lessons for a 20-week period.

Researchers Howie, Schatz, and Pate (2015) were interested in determining if the amount of time students had for classroom exercise breaks had any effect on student achievement. Their study included 96 fourth and fifth graders from eight South Carolina classrooms. The duration of classroom exercise breaks were 5 minutes, 10 minutes, or 20 minutes. Results showed “the change in math scores was statistically higher after 10 min (estimated difference of 1.07, 95% CI [0.03, 2.12], $p \leq .04$) and 20 minutes (1.2, 95% CI [0.15, 2.26], $p \leq .02$) of exercise compared with sedentary conditions” (Howie et al., 2015, p. 220). The authors concluded, that while academic benefits were small, there were not any negative effects to academics, and they found students with the lowest IQ’s to have the greatest improvements in math scores.

Activity breaks were implemented into a fifth-grade math class as part of an action research study by Camahalan and Ipock (2015) to investigate the impact activity breaks and movement would have on students learning the long division process. As a part of the study, dance breaks, stretching, calisthenics, and movement games were implemented. The teachers also made movements to go along with the steps of the long division steps. Though not all students mastered the long division steps, all students did make academic gains between their pre- and post- tests.

The Council on School Health recognizes students need physical activity breaks between sessions of intense instruction in order for their brains to process information more efficiently (Perera, Frei, Frei & Bobe, 2015) and for increased memory retention of newly learned materials to take place (Willis, 2005). To further support this theory, Perera et al. (2015) refer to the Council on School Health’s research based information

which states other countries who traditionally score higher on standardized tests have up to 20-minute physical activity breaks between 40 to 50-minute instructional periods of time. Consistently authors have reported finding an increase in academic achievement when physical activity breaks are implemented or studies have shown no change, specifically with none showing any negative effects in the classroom from increased physical activity breaks (Jensen, 2008). Information from reported studies “contribute to a growing body of evidence indicating a significant relationship between students’ academic achievement and physical fitness” (Chomitz et al., 2009, p. 34) and suggests “working with the body offers a valuable tool to improve cognitive functioning in a very broad sense” (McClelland, Pitt & Stein, 2015, p. 86) and therefore deserves to be further explored through methodical investigations.

Behavior and Focus Related to Physical Activity

Student behaviors may be affected by short bouts of activity as well. Perera et al. (2015) reported 90% of teachers reported physical activity breaks improved student concentration. As noted by Kercood and Banda (2012), reprimanding students for bad behaviors is often ineffective, but adding student movement may be beneficial in decreasing off-task behaviors. Action researchers Camahalan and Ipock (2015) claimed “we originally thought...the students would be wired [after physical activity]”, but as the physical activity breaks became routine to the students, it was noticed “student’s bodies seemed calmer” (p. 297). They recognized that off-task behaviors such as pencil tapping, fidgeting, and getting up were dramatically decreased with routine activity breaks.

Kercood and Banda (2012) cite the Optimal Stimulation Theory as one possible explanation for increased student focus and decreased off-task behaviors with movement breaks. According to the Optimal Stimulation Theory, students will seek out stimulatory activities in an effort to reach a level of stability within their internal and external environments. Students with attention deficit hyperactivity disorders (ADHD) will seek excessive movement activities in order to reach a level of stability. By following recommendations from intervention studies to provide the optimum amount of movement activities, these students may reach homeostasis while having improved on-task behaviors (Kercood & Banda, 2012).

Similarly, student focus was reported greater by 27% of elementary teachers after physical activity breaks, and student alertness was reported better by 17% of teachers surveyed in North Carolina by Evenson, Ballard, Lee and Ammerman (2009). In this study, 106 educators from four North Carolina school districts completed the online survey to evaluate the Healthy Active Children Policy. Based on their study of 81 girls, Kubesch et al. (2009) attribute the increased attention in students to the effects physical activities have on cognitive functions of the brain, particularly, the executive functions. Students in the study were broken into two groups: one received 30 minutes of a Physical Education program while the other group took part in short movement breaks. Executive function of students was measured three times a day, the last being right after math instruction. The abilities to inhibit certain behaviors and stay focused on a particular task are executive control functions. Kubesch et al. (2009) found 30 minutes of physical education improved student in-task behaviors. Kubesch et al. (2009) have

also found evidence to show a correlation between inhibitory functions (well-developed executive control) and academic ability in students. According to Kubesch et al. (2003), “aerobic endurance exercise has been shown to improve higher cognitive functions such as executive control in healthy subjects” (p. 1005).

Another study evaluating the effects of a classroom-based physical activity program in relation to on-task behaviors, was completed by Mahar et al. (2006) with 15 classes kindergarten through fourth grade. Energizers, which last about 10 minutes and included academically appropriate learning content, were used just once a day. Over an eight-week period, students wore pedometers to measure activity while energizers were implemented in all but two classes the (control groups). For this study, observers were trained to gather on-task and off-task behavior data during 15-minute time periods before and after the energizers were completed. Researchers found the percentage of on-task behaviors increased by 20% for students who had been most off-task during the baseline period. The mean of on-task behaviors increased 8% overall, which was statistically significant. “Children often are more attentive, behave better, and perform as well or better scholastically after participation in physical activity through recess or physical education” (Mahar et al., 2006, p. 2086). Mahar et al. (2006) believe these data “should send an important message to teachers and administrators that inclusion of 10 minutes of physical activity each day in the classroom will increase on-task behavior” (Mahar et al., 2006, p. 2092).

In a comparative study conducted by Jarrett et al. (2001), children were identified as being more fidgety and less on task when they had not had a break -

suggesting “children think and work less efficiently when engaged in uninterrupted instructional time” (p. 125). The research was conducted in an urban school whose district had an “uninterrupted instructional time” (122) policy that did not allow for recess time. The researchers were given permission to conduct their research in two fourth grade classes with 43 students. The classes participated in a 30-minute physical education class 3 days a week, so recess, which was approximately 20 minutes in length, was given on one of the other 2 days and students were observed. Results indicated “without recess students were on task 85% of the time and fidgety 16% of the time. With recess, they were on task 90% of the time and fidgety 7% of the time” (p. 124), thus demonstrating a significant improvement in on-task behaviors. Further signifying the importance of movement breaks was the finding by Jarrett et al. (2001) that all of the students with ADD in the study benefited. Evidence was also found from Becker, McClelland, Loprinzi and Trost’s (2014) study of 51 preschool children to support the idea that “children use their bodies to communicate, memorize, learn, solve problems, and self-regulate” (p. 65) indicating a strong connection between mind and body.

Jarrett’s (2002) research found “that attention requires periodic novelty, that the brain needs downtime to recycle chemicals crucial for long-term memory formation, and that attention involves 90- to 110- minute cyclical patterns throughout the day” (p. 1) according to brain researcher Eric Jensen. Jarrett’s (2002) findings are synonymous with Berlyne’s novelty theory (Dagli, 2012), and further support the reasoning children need breaks during the school day. One of Jensen’s (1998) recommendations for increasing attention is to cut the lengths of focused attention periods, noting that the

human brain does not function well at nonstop attention. “It [the brain] needs time for processing and rest after learning” (Jensen, 1998, p. 46). Likewise, it is suggested by Tomporowski and Ellis (1986) that there is a relationship between vigorous activity and increased focus during cognitive tasks which may boost academic achievement.

Implications for Low-Income Minority Youth

Reduction of allotted recess times has not been equally distributed among schools. Even though current studies have shown “physical activity (or some aspects of physical fitness) favorably affects cognitive functioning” (Basch, 2011, p. 628), Beaulieu, Butterfield and Pratt (2009) found that reductions in physical activity times were higher for lower socioeconomic schools and schools where minority groups make up a majority of the population. According to Efrat (2011), school administrators believe by shifting focus to tested core subject areas, students will perform at higher academic levels. Research has also shown there are significant achievement gaps between minority groups and others in the school setting. Though the achievement gaps have lessened in recent years, they are still compelling enough to warrant further exploration. Wolf et al. (2015) found how youth used their time and lack of academic motivation to be contributing to low levels of school engagement in low-income minority youths, who were comprised predominantly of African Americans and Latinos. In addition, the researchers discovered “high engagement in organized extracurricular activities, would not only show reductions in delinquent activities but also increased prosocial behaviors, such as improved academic motivation and performance” (Wolf et al., 2015, p. 1209). While this study focused on youth from fourth to ninth grade,

median age of 16, it implies the patterns of school engagement that begin during the earliest educational experiences have lasting effects on youth. “Behaviors related to academic attitudes and performance, as well as risky behavior, are interrelated and likely to form over the course of adolescence, setting up individuals for future risk or success” (Wolf et al., 2015, p. 1210).

James-Burdumy et al.’s (2013) research study led to the conclusion student behavior and academic readiness in low-income classrooms were markedly improved after organized recess had taken place. In their study, 25 low income schools were randomly assigned to either be in a treatment group receiving Playworks instruction, or to be in a control group receiving no Playworks instruction. Full-time coaches were placed in the treatment group schools to provide organized physical activities throughout the year which included organized recess, class game time, junior coach programs and after-school activities. These activities were implemented in an effort to “engage students in physical activity, improve quality of play, foster social skills related to cooperation and conflict resolution, improve students’ ability to focus on class work, decrease behavioral problems, and improve the school climate” (James-Burdumy et al., 2013, p. 2). Through a combination of observations, surveys, interviews, administrative records and student physical activity data, James-Burdumy et al. (2013) determined less bullying occurred, students were more engaged and behavior incidents were less frequent in treatment schools. Similar results were found by London et al. (2015) in six San Francisco Bay area schools after the Playworks program was instituted. Teachers found students were able to get focused quicker and remain more focused when

returning to the classroom from an organized recess. Teachers and school administration reported an overall improved school climate as student relationships and engagement were both improved. As a result, schools experiencing the Playworks program referred to recess as the “fourth R” in education; reading, writing, arithmetic, recess.

In a similar study, McCormick et al. (2014) focused on low-income Black and Hispanic kindergarten and first grade students’ disruptive behaviors. Studies had shown this group was at an increased risk of developing patterns of disruptive and inattentive behaviors in the elementary school years. It was identified that teachers feel more stress teaching, and leave the teaching profession at a higher rate, when working in schools which are made up of predominantly low-income and minority students (McCormick et al., 2014). Thus, McCormick et al. were lead to research and identify intervention strategies which may abnegate the development of disruptive behaviors. The study included 192 children in kindergarten, 72% were Black and 85% were eligible for free or reduced lunch. The study followed the children from the winter of their kindergarten year until the spring of their first grade year. Student behaviors were measured five times in that period using the Sutter-Eyberg Student Behavior Inventory (SESBI); in addition, there were scales used to measure child temperament and teacher-child relationships. Although the study did not focus on using movement breaks specifically, the study did “suggest that teachers can function as an intervening force for children who display temperaments high in negative reactivity, redirecting their developmental trajectories toward healthier outcomes” (McCormick et al., 2014, p.

1214). Given that positive teacher-student relationships have the potential to redirect a child's developmental trajectory, there is a need for investigating positive classroom interactions and how using movement breaks in the school day may affect student behavior.

Theoretical Base

Learner Centered curriculum theory is based on the premise "schools should be enjoyable places where people develop naturally according to their own innate natures" (Schiro, 2013, p. 5). Schiro (2013) describes a school which is learner focused as concentrating on the growth of individual students. Whereas the traditional school requires students to restrain impulses, the Learner Centered ideology believes students must not be restrained if they are to experience personal growth. Schiro (2013) quotes Rugg and Shumaker's theory of Learner Centered ideology: "most deep-seated tendency in human life is movement, impulse, activity...that the basis of all learning is...action" (p. 109).

In fact, Hyndman and Telford (2015) have identified information that suggests movement breaks in the school day may compliment learning and are linked to cognitive, social, and physical improvements for students. The theoretical foundation for their study involving 54 students (ages 10 to 13) was derived from the application of the Social-Ecological Model which implies a connection between individuals, the social environment, and the physical environment. Furthermore, international governments

have specified policies, based on the potential for learning and development, to ensure physical activity is implemented into the school day (Hyndman & Telford, 2015).

In another study which analyzed the effects of North Carolina's Healthy Active Children Policy, Evenson, Ballard, Lee, and Ammerman (2009) found teachers reported an increase in student attention and focus when time spent in physical activity increased. The study was conducted with an online survey, which 106 of 111 potential respondents completed. Of the 106 participants, 27% of those in elementary schools reported seeing greater student focus during instruction and 17% indicated student alertness had improved after implementing 30 minutes of vigorous activity (Evenson et al., 2009).

As instructional time is increased in the classroom, student attention to instruction lessens and students begin to look for a novelty. This is explained by Dagli (2012) as the novelty theory which was developed in 1988 by Berlyne. Movement breaks can become the novelty, just as after these periods of active movement occur, the academic instruction can become the novelty. With respect to the novelty theory, it is necessary to change tasks frequently during the day. When instruction is switched from one academic task to another, students experience a build-up and learning can be impaired. "Students can learn more effectively if they are also provided with non-focused, non-intellectual activities" (Dagli, 2012, 4). Camahalan and Ipock (2015) site a shift in classroom instruction from having been child-centered to currently being testing-centered as having a significant impact on student engagement. The shift from student-centered instruction to testing-centered instruction that works to control

student behavior and teacher decisions, has been linked back to Race to the Top and No Child Left Behind mandates according to Spring (2014), even though evidence shows increased instruction does not mean increased achievement (Dagli, 2012).

One of the findings Au (2014) points to is a correlation between high stakes testing and curriculum content changes. His studies found that the influences of high stakes testing were isolated skill instruction, gaps in learning, and teaching to the tests. Science and social studies instruction had a reported drop, along with studies of the arts (Sisken, 2014), due to those subjects not being the focus of testing. The effect has become a curricular alignment to tests, a long way away from Social Reconstructionist curriculum which teaches students to function in society, not just pass tests. Even with given pressures brought on by high stakes testing, not all teachers are moving to a skill and drill curriculum to prepare students for high stakes testing. Au (2014) has found that some teachers who have increased their student-centered teaching and through methods such as balanced literacy and integration are preparing students to meet the required academic goals without teacher-centered instruction.

The field of education seems to be in a constant battle with itself of what to teach and how to teach students. Looking at trends in educational ideology influences, we can see Social Reconstruction peaking beginning after 1925, again in 1975, and on the rise in 2012 (Schiro, 2014, p. 197). Like Learner Centered ideology, Social Reconstructionist ideology has also made a major impact on the way students are taught today in cooperative learning groups, in social skills, and in vocational training. Even though it is important to prepare students for the academic demands they will

meet, it is equally important to prepare students to be productive citizens in a world that is ever changing.

Methodology

This action research follows a cyclical action research four-stage design as outlined by Mertler (2014) in which planning, acting, developing and then reflecting took place. The purpose of action research is to improve one's own practice through a better understanding gained from research findings with the intent to implement positive change and to gain knowledge that will be useful to others in the field (Mostofo & Zambo, 2015; Morales et al., 2016). Given that "it takes expertise to make expertise" (Fink & Markholt, 2013, 332), it is essential to regard other experts in the field as a model from which to ground the present action-research. Similarly, Ioannidou-Koutselini and Patsalidou (2015) found studies that "sufficiently demonstrated that the use of investigation, individual and collaborative research activities and practices-related reflection helped to increase students' outcomes" (p. 127). Identifying methods that have the potential to enhance the overall educational experience for students is the overarching goal of action research.

Mostofo and Zambo (2015) claim "applying supportive action research principles can 're-energize' instructors and help them to recapture some of their old enthusiasm for the teaching/learning process" (p. 510). Kayaoglu (2015) refers to action research as being "problem-focused but also future-oriented process, which will result in practical

and propositional knowledge” (p. 144) as opposed to traditional research which often fails to be “compatible with classroom reality” (p. 144).

Most action research models involve a circular sequence of steps with the intent of improving practices and a creating a metanoia- “a shift of the mind” (Senge, 2014, p 12). The study took place in a second-grade classroom in a rural South Carolina elementary school spring of 2018 with approximately 24 students. Students in the class were from varied social and ethnic backgrounds with divergent needs emotionally and academically. A mixed-methods data collection approach took place where qualitative and quantitative data were gathered and given equal emphasis. Quantitative data on student behaviors were collected by myself, the teacher-researcher, as the study progressed and then the data was analyzed in tally frequency charts to track behaviors just as was done by researchers Camahalan and Ipock (2015). While Camahalan and Ipock (2015) observed instances of students fidgeting, out of their seats, and on task, I recorded the number of times students are noncompliant, exhibiting disruptive behaviors, and being inattentive. The data gathered was recorded in a frequency table. Frequency of off-task and disruptive behaviors (combined together as off-task) during math whole group instruction for each of six movement transitions implemented were compared to analyze any impacts the movement breaks may have had on student behaviors. A student questionnaire was also used to gather information in regards to the children felt the active transitions helped them to concentrate during math instruction. Finally, qualitative data was gathered in field notes which described student and teacher behaviors as observed on video recordings and was then analyzed.

Conclusion

There is an undeniable need for students to move and be active in the classroom. Many studies have been completed which have shown the positive academic, physical, and social benefits of incorporating physical activity into the school day. The research consistently shows recess or movement activities have an educational value and are relevant enough to be explored further (Pellegrini & Smith, 1993). As students spend the greatest part of their week days in school, it is important “they are engaged in educational and social activities that shape their cognitive, socio-emotional, and physical development” (Savina et al., 2016, p. 282).

According to Mulrine et al. (2008), current research literature from “physical education, special education, and neuroscience on the effects of exercise and learning suggests that physical activity is a viable teaching strategy worth implementing” (p. 21). Along with current research, past scholars such as Montessori, Piaget and Dewey have elaborated on the connections between mind and body and have argued for a more learner-centered approach to education (Schiro, 2013).

In this action research study, I endeavored to combine the findings of scholars in the past, such as, Dewey, Montessori and Piaget, with information from current research studies completed by scholars studying the relationship between the mind and body, in an effort to discover if there is a significant difference in student off-task behaviors when transitions include physical activity, or movement, and are regularly implemented in the instructional school day.

Key Concepts

Active engagement: “Goal oriented action and attention” (Jenson, 1998, p. 43).

Activity breaks: “Short, structured classroom activity breaks, also referred to as classroom energizers, brain breaks, and activity bursts” (Delk, Springer, Kelder & Grayless, 2014, p. 723).

Classroom Energizers: “Classroom-based activities that integrate physical activity with academic concepts” (Evenson, Ballard, Lee & Ammerman, 2009).

Classroom physical activity: Activities that occur in the classroom, usually in increments of time, in which students are engaged in physical activity.

Disruptive behaviors: Behaviors which impede instruction from teachers and which interfere with other students learning (McCormick et al., 2014).

Instructional time: Time spent engaged in instruction and learning of academic standards.

On-task behavior: On-task behaviors are any behaviors, verbal or motor, which are following classroom rules and are related to the learning situation. (Mahar et al., 2006)

Physical activity: Activities which meet the physical and sensory needs of students through stretching, relaxation, aerobic and strength training. (Jarrett, 2002)

Recess: A break from activity during which a person may “relax, recharge, and exercise” (Dagli, 2012, p. 2).

Transitions: Movements or actions used for the purpose of changing from one activity to another (Smythe, 2002).

CHAPTER 3: RESEARCH DESIGN AND METHODS

Chapter three delineates the methodology that was used to complete this action research study. Leading up to this study, I consistently kept behavioral checklists in my classroom, which indicated students' off-task behaviors during instruction had increased, specifically so for the students with Attention-Deficit Hyperactivity Disorder (ADHD) and for those students who are two or more grade levels behind in reading.

Previous studies have indicated student off-task behaviors may be reduced by intentionally adding periods of movement activities into the school day (Ridgway, Northup, Pellegrin, LaRue, and Hightshoe, 2003). Camahalan and Ipock (2015) cite instances where students with ADHD were identified as paying significantly more attention to tasks after exercise breaks. Results from a study conducted by Jarrett were noted by Ridgway et al. (2003) to be particularly positive for the students with ADHD who were exposed to periods of physical activity. With these findings in mind, this action research was guided by the research question: How do various types of movement breaks during instructional transitions impact off-task behaviors among second grade students during classroom instruction? Movement break transitions consisted of songs to move, physical activity, and calming mindfulness activities. In the following sections, this chapter details the research design and intervention, describes

the participants of the study, explains the data collection measures along with the instruments and tools utilized, and how information will be used and shared.

Research Design and Intervention

Reflecting on what is and what is not working is crucial to advancement in the educational field. McLeod (2015) ascertains “Becoming a reflective professional as an agent of change is gained by reflection upon the difficulties of classroom practice and the ability to ‘stand back’ and see different perspectives” (p. 255). Through a cyclical action research cycle, I identified strategies to lessen disruptive and off-task behaviors for the purpose of implementing positive change in the classroom. For this study, movement breaks were characterized as intentional movements for transitions, on-task behaviors are those which have students purposefully engaged in instruction, and off-task behaviors are those behaviors which inhibit a person or persons from being actively engaged in classroom instruction. Those off-task behaviors may include fidgeting with objects, playing with another student’s hair, leaving designated learning area unnecessarily, or talking that is unrelated to the learning. Even though behaviors were identified as off-task or disruptive for the data collection process, they were grouped together for the purposes of data analysis in this study. The iterative and reflective nature of action research methodology provided an appropriate strategy for this study (Mertler, 2013) and the study’s focus on understanding how regular movement breaks as transitions impact off-task behaviors of second graders during math instruction. Action research offered a systematic inquiry process into my teaching practices and

student behaviors to explore alternative transitional strategies with the overall end goal of having improved the classroom environment. Sagor (2000) describes the action research systematic process as a never ending cycle, it continues as questions arise and further research is needed. As stated by Mertler (2013), participating in action research “has the potential to empower educators and to engage them directly in the process of educational improvement” (xxii).

Action research is research in which “those involved ... generally want to solve some kind of day-to-day immediate problem” (Fraenkel, Wallen, and Hyun, 2015, p. 587). As such, action research allowed me to conduct the research through a system that is manageable as the teacher and researcher. Mertler (2014) characterizes action research as being done by teachers with the aspiration to better one’s own practice. Action research of the PoP allowed science and practice to be merged together as I was able to engage with other educators, research current best practices in education, and analyze data gathered to find solutions which are sustainable in the educational setting. Educational theories and practices have been used as I actively participated in the professional inquiry research. My study focused on student behaviors and the impact of movement breaks used during transitions on the students’ ability to stay focused for periods of academic instructional time in the elementary classroom. A mixed methods sequential explanatory design was used to explore the impact of brain breaks with activity to improve on task time and engagement in the instructional setting. During the study, quantitative data were gathered from observations of student behaviors during whole group math instruction and from a student questionnaire. Along with the

quantitative data, there were also qualitative data ascertained from video observations to more thoroughly explore the impact various transitional strategies have on student off-task behaviors. Though these perspectives are disparate in nature, “the combination of both qualitative and quantitative research are, contemporarily, seen to be increasingly important and useful” (Grassick, 2016, p. 18). For this action research study, a mixed-methods sequential explanatory design where quantitative data was gathered from student behaviors and followed with information gathered from observations, video transcriptions and surveys worked best.

The identified Problem of Practice (PoP) for the present action research study involved a second-grade class in a rural South Carolina elementary school and the frequency of off-task behaviors students displayed during periods of instructional time. Based on research completed before the study, I decided to use movement breaks as transitions into instructional sessions in the second grade classroom. With the application of Dewey’s (1938) theory which calls for “the need for sound mind and a sound body”, it is plausible to ascertain that a lack of active movement has contributed to the students’ inability to focus during instruction; therefore, leading to behavioral disruptions (p. 63). As the teacher-researcher, I implemented action research which required me to change the curriculum and pedagogy to enable students to have transitional “movement breaks” before teacher-centered instructional times. Chavez, Martinez, and Pienta (2015) find that: “the academic success of a child is often dependent on the ability to remain on task in the classroom with minimal distraction,” (p. 97). Their findings reinforce the need for the mind and body to act jointly, which

would subsequently allow teachers to maximize periods of instructional lessons after having movement breaks. I chose three specific transitional activities for this research. The first transitional activities had students transitioning to whole group instruction singing a song three times. When students heard “I’m coming to the rug”, they were to begin singing “I’m coming, I’m coming, I’m coming to the rug”. After the verse had been completed three times, all students were expected to be at the rug and ready for math instruction. GoNoodle videos were used for the second type of transitional activities. Students were actively involved in a race simulation video which required them to run in place and jump as if they were running track and jumping hurdles racing against other runners on the video. Since this required students to be at the front of the room participating, they were ready to sit on the rug for whole group instruction. For the final transition strategy, mindfulness and stretching videos were implemented. These videos were also lead by GoNoodle videos and required students to be at the front of the room. Each of the transitions used in this investigation were used to move the students from seats (or previous activities) to the front of the classroom for a whole group math instruction to begin.

Active transitions served as the independent variable in this study while student off-task behaviors during whole group instruction served as the dependent variable. The three types of transition activities used in this study were selected based on anecdotal observations of what seemed to work in my classroom, conversations I had with other educators, and recommendations from previous literature. Songs for transitioning were chosen based observations showing my students have particularly enjoyed and regained

focus when we have used call backs and short songs. In addition, my students have requested time for being active. The student's desires, along with the research found regarding benefits of physical movement, led me to use physical activity movement breaks (Kubesch et al., 2009). The final transition using calming movements was identified for use after investigation of Brensilver's (2017) analysis of research study findings which indicated mindfulness, or calming, activities to be beneficial to students when used in the classroom setting. Three previously mentioned transitions, noted in literature to be effective, were used to transition students into whole group math instruction for the purpose of this study (Smythe, 2002). A student's inability to focus was noted by their off-task behaviors or disruptive behaviors when attention to tasks was expected. Off-task and disruptive behaviors were then identified by reviewing the video recorded whole group lessons and documenting observations on a chart. Off-task behaviors noted were characterized as students doodling, day-dreaming, or being out of their seats and were behaviors that generally kept only a particular student from learning. Disruptive behaviors were characterized as out of seat, making noises, talking to others, annoying others, and other behaviors that kept themselves or others from understanding lesson content or from completing assigned work in the time allotted. Though off-task and disruptive behaviors were identified separately, they were averaged together and identified in the qualitative data as off-task. This research was intended to improve the educational experience and instructional practices and took place in my classroom where I was the teacher and the researcher, making this the optimal environment for action research to take place.

Keeping students focused and on task is a macro-level problem in education. This problem increases when students are identified as having Attention Deficit Hyperactivity Disorder (ADHD). “Students with ADHD exhibit a variety of behaviors in the classroom that may seriously disrupt the teaching process and impede their own learning, including off-task behavior, motoric restlessness, and intrusive verbalizations” (Greene et. al., 2002, p. 79). Furthermore, it is noted by McConaughy, Volpe, Antshel, Gordon and Eiraldi (2011) that “Many group studies have reported poor academic performance for children with ADHD compared to their typically developing classmates” (p. 201). Simply removing students from the room for off-task behaviors will not alleviate the problem, as these students would miss crucial instruction and subsequently fall behind academically. Therefore, it is quintessential to explore alternative methods for increasing on-task behaviors during classroom instruction, as off-task and disruptive behaviors inhibit learning of all students (McGoey et. al., 2007). On a micro-level off-task behaviors have continued to disrupt teaching and learning in my second grade classroom. Of the 24 second graders in my classroom, 38% of them have a medical diagnoses of ADHD. Only 25% of those diagnosed students consistently receive the medications recommended by their doctors. This study is taking place in a self-contained second grade classroom with 24 students. This micro-level action research was completed having a reflective mindset without having to make extreme changes in the classroom routine.

My role as teacher and researcher changed my positionality in the classroom through the planning and execution of this study. As the teacher, I have actively worked

to know and understand my students personally and academically. It is with this understanding of them as individuals that student expectations are formed. While working as the researcher in this study, I had to look at each student, and their behaviors, objectively. These roles also forced me to inspect my pedagogy more thoughtfully. Through collaboration with other professionals and through my research, this study's focus shifted to include transitions students were involved in and how those transitional movements affected the students' off-task behaviors during whole group math instruction. Previous observations of student behaviors lead me to identify transitions in the classroom and whole group instruction as a weak area in my instruction.

Participants

The site school where the research took place is a Title One school, that according to South Carolina State Report Card serves 489 Pre-Kindergarten through fourth grade students (South Carolina Department of Education, 2018). The majority of the student population (86.2%) is from low socioeconomic homes. The student body is diverse and made up of students who are 47.8% White, 25.5% African American, 18.8% Hispanic, and 7.9% multiracial (Niche, 2018). The school is located within city limits of a small rural town, while four other elementary schools in the district lie on the outskirts of town. The district has the largest land area when compared to surrounding districts, yet the district is supported by the lowest tax base of surrounding districts. Therefore, financial resources within the school, and the district, are limited. Research took place in

one self-contained second grade classroom of 24 students with myself, the teacher, serving as the researcher.

Action research participants included 24 second grade students ranging in age from seven to nine. The participants were randomly placed in the second grade classroom by the school administration; therefore, the study sample is a random selection from the school's second grade population of 74 students. Given I was in charge of implementing the transitional activities and collecting data during this action research study, only the self-contained students in my class served as participants. Student academic ability levels range from Kindergarten level in reading and math to approximately fourth grade equivalent levels in each. These academic levels are determined by data gathered from the Measures of Academic Progress (MAP) testing and Developmental Reading Assessments (DRA), both of which are administered three times within the school year. Six of the 24 students were on medication for Attention Deficit and Hyperactivity Disorder (ADHD); of those, two saw a psychologist weekly for behavioral issues. Seven of the 24 students were involved in a Boys and Girls Club after school program, six students were identified as being two grade levels or more behind in reading and receive extra instruction according to Read to Succeed guidelines. All six of these students were pulled out for additional reading instruction at varied times in the day. In addition, six students were a part of a pull-out resource program and received additional instruction daily per their Individualized Educational Plan (IEP) for 50 minutes a day. One student had a 504 Plan with accommodations being met within the classroom. Four students were a part of the speech pull-out program twice a week per

their IEP's, one for articulation and the other three for language processing deficiencies. Of the 24 students, five are English Language Learners (ELL), but based on the language proficiency testing results, only two of the students qualified for additional pull-out support from the English for Speakers of Other Languages (ESOL) teacher. It is relevant to mention that one student received three of those services and two students received two of those services, and therefore they were pulled out of the regular educational classroom for these enrichment classes two or three times daily. Students have left and entered the classroom during data collection times for the present action research study. Additionally, two students were identified as gifted and talented based on Iowa Test of Basic Skills (ITBS) and the Cognitive Abilities Test (CogAt). These students will receive educational enrichment classes the following year with a pull-out enrichment model.

Data Collection Methods, Instruments and Tools

Observations. A mixed methods sequential explanatory design was used to collect and analyze quantitative and qualitative data during the study. Data collection began by gathering quantitative data based on the number of off-task behaviors after each of the three transitional practices. Pre-recorded lessons were observed specifically looking for off-task or disruptive behaviors which occurred between the end of the transition strategy and the beginning of independent math assignments. Data in regards to off-task and disruptive behaviors were recorded using tallies on a preformatted table created specifically to document the aforementioned behaviors for each recorded math lesson. The data collection table identified students with number codes to ensure

student anonymity as I documented each child's off-task and disruptive behaviors during the specified times.

For the purpose of this study, off-task behaviors were noted as fidgeting with objects and moving around when staying seated was expected. Disruptive behaviors were also noted and differed from off-task behaviors in that the behaviors a student displayed distracted other students from learning. Those disruptive behaviors included, playing in others hair, making disruptive noises and talking to others. The gathered data were grouped together and identified as off-task before being analyzed to determine the effect, if any, that the three transitional strategies had on off-task and disruptive behaviors.

Questionnaires. At this point, students were given a math interest questionnaire to assess how students perceived math instruction before the movement breaks were implemented compared with after. In addition, the student questionnaire inquired about which transitional activity movement, if any, students felt was most effective in helping them to focus during math instruction. The student questionnaire gave information to make a more informed decision concerning the types of transitional activities to be used in the second grade classroom to improve student time on task as I reflected on best practices. Furthermore, the student questionnaire lent sight into students' perspectives concerning their needs and preferences in regards to the classroom instruction they receive.

Document Analysis. The quantitative data collection was followed up with a qualitative data collection intended to elaborate on the quantitative findings. Recorded lessons were observed and student/teacher behaviors were noted by myself to identify any trends in student behaviors and to discover any relationships that may exist between transitional activities and student engagement. Video transcription allowed me to collect qualitative data on student behaviors and to then form interpretations of the situations observed during the lessons. The qualitative information gathered provided potential insights into the quantitative data results collected.

Research Procedure

I recorded the off-task behaviors of students during math whole group instruction for a period of approximately 20-minutes over six instructional periods on a preformatted checklist of behaviors. This method of data collection was modeled after studies completed by Ridgway et al. (2003) and Jarrett et al. (2001), in which the effects of recess on classroom behavior was explored. Observers in the Ridgway et al. (2003) study noted targeted off-task behaviors for three days before the recess breaks were implemented and then for three days with recess break implementation. Similarly, observers used pre-coded behavior grids to note student behaviors for five-second intervals before and after recess periods in the Jarrett et al. (2001) study. This action research study consisted of six data collection periods where I observed recorded math lessons of approximately twenty-minutes each. Each recording began with the transition into math instruction and concluded after whole group instruction as students moved into independent practice. Two recorded lessons began with a song transition, two

began with a physically active transition, and the final two began with a calming movement activity. The preformatted recording graph noted off-task behaviors and disruptive behaviors of students during whole group math instruction.

At the beginning of the data collection period, two math lessons were developed using songs to transition students into math instruction. I began recording each lesson before the transition started, and continued the recording as students settled onto the rug, through whole group math instruction and until students moved into independent math practice time. The following two math lessons were developed to include an active movement period to transition students into the math instruction. Movement activities consisting of running in place and jumping came from a website, GoNoodle, which promotes student learning, health, and exercise. Once again, the lessons were recorded to include the transitional movement activity and the following whole group math instruction. The final two math lessons were created to include a calming transitional movement period. During these transitions, students used slow movements and breathing exercises lead by the previously mentioned website, GoNoodle, to become aware of themselves and their environment. Just as with the previous lessons, the recordings began before the transitional activity, through the whole group math instruction and concluded as the students moved into independent math assignments.

Lesson Plans and Surveys. Lesson plans were created to include the transitions into math instruction, essential questions, introduction hooks, procedures, state standards, and materials used. The lesson plans were used to ensure instruction procedural consistency in an effort to increase study fidelity. In addition, a student questionnaire

related to math instruction and transitions was distributed to all participants. These surveys were administered orally to all students to assure all students understood the survey questions. The surveys were collected and analyzed once completed.

Protection of Participants. As the teacher-researcher, I implemented this action research study with the ethical consideration of looking closely at classroom practices for the purpose of making adjustments to classroom instruction and practices in an effort enhance all students' learning (Dana & Yendol-Hoppey, 2014). This is following the principle of beneficence which, as stated by Mertler (2014) states, "research should be done in order to acquire knowledge about human beings and the educational process" (p. 112). The results of the action research will be shared with other school personnel in an effort to contribute to the field of education.

Mertler (2014) refers to the use of two forms of participation when action research studies are involving minors. First, I provided parental consent forms which were sent to and collected from the guardians of minor student study participants. In addition, participants were made aware of the study, that participation was not mandatory, and that they should not feel they were being coerced into participation.

The protection of participant anonymity was paramount in the ethical considerations of this study. Pseudonyms have been used when discussing participants, the school, and the district in which the action research took place in order to ensure confidentiality. There was no harm done to the participants, and the data was collected and reported on honestly and fairly.

Transcription Process and Data Entry. Recorded lessons, which included transitions and whole group math instruction, were observed and field notes were taken regarding student behaviors and teacher behaviors. Notes were gathered in five-minute intervals. These notes were analyzed to identify trends, if any, when each transitional activity was used. The qualitative information gathered from these observations provided greater insight into the qualitative data.

Treatment, Processing and Analysis of Data

As data are gathered in any type of study, it is important to identify which methods of statistical analysis will be most efficient and merited for understanding a study's findings. Two types of statistical analysis described by Mertler (2014) are descriptive and inferential statistics. My study utilized descriptive statistics to provide summaries which describe the information collected in the study

Descriptive statistics were used to calculate means and standard deviation for student off-task and disruptive behaviors pre- and post- intervention. This information was used to determine if there was a decrease in off-task or disruptive behaviors with the change to regularly implemented movement breaks during transitions.

Questionnaires were given to participants at the conclusion to measure the overall satisfaction with the movement breaks and classroom environment.

Summary

The goal of this action research was to increase the on-task behaviors of second graders through changing classroom routine to include regularly scheduled movement

breaks during classroom transitional times. Action research is a cyclical process in which a teacher-researcher must use reflection to make informed decisions based on data gathered from research to proceed in improving the educational experience for the students (Mertler, 2014). In fact, Kemmis (2009) refers to action research as meta-practice, a practice through which other practices are shaped. A mixed methods sequential explanatory design was used to analyze the frequency of off-task and disruptive behaviors over three two-day cycles of math instruction which followed one of three transitions: movement with songs, physical activity movement, or calming movements. Each of the transitions were followed by a period of whole group math instruction which was recorded. Each recording was analyzed to record instances of off-task and disruptive behaviors into a preformatted data collection table. This action research study was based on Dewey's theories that play and movement are a waste of time, but investments in learning. Dewey (1938) realized the need for movement to "maintain normal physical and mental health" (p. 63).

Through reflection, decisions have been made on how the action research study should be shared with other educators, what steps need to be taken for further research and what actions will take place in the classroom.

Conclusions

Time for students to be active and moving has steadily decreased beginning with the introduction and then implementation in 2001 of No Child Left Behind policies and has continued with current Read to Succeed legislation which emphasizes academic

achievement and accountability for teachers and students (McMurrer, 2007). As educators strive to meet accountability standards, time for student play (or recess) has increasingly been replaced with academic instructional time (Schachter, 2005). The purpose of this action research study was to examine the effect regularly scheduled movement breaks during transitional times have on behavioral interruptions and off-task learning behaviors in a rural South Carolina second grade classroom. The research question which guides this study is: How do various types of movement breaks during instructional transitions impact off-task behaviors among second grade students during classroom instruction?

Action Plan

I have conducted my action research based on Mertler's (2014) cyclical process of planning, acting, developing, and reflecting. Each phase of the action research followed Mertler's (2014) recommendations. The planning stage has consisted of identifying a topic, gathering information, and developing a research plan. Planning has allowed me to methodologically plan out the research with a firm foundation in previous studies which are similar in content or methods. The acting stage has consisted of carrying out the research plan, collecting, and analyzing the data in an authentic setting, the classroom. During the developing stage I have proposed an action plan for implementing change based on the data results, and have implement the strategy. Finally, in the reflecting stage, results will be shared with other educators and the process reflected upon in the final stage for the purpose of positive change in the field of education. This final stage is critical in that "sharing the results of action research

studies conducted by teacher-researchers can help reduce the gap that exists between research/theory and practical application in educational settings” (Mertler, 2014, 265).

CHAPTER 4: FINDINGS AND DISCUSSIONS

Summary of Methodology and Methods

This chapter will discuss the methods used during phase two of the action research process, will reveal the findings from this action research study and will discuss any implications derived from those findings. The identified problem of practice in this study stemmed from the occurrences of off-task behaviors noted during whole group math instruction in my second grade classroom. The desire to lessen those off-task behaviors, and therefore improve the learning environment has driven this research.

This action research was guided by the research question: How do various types of movement breaks during instructional transitions impact off-task behaviors of second grade students during classroom instruction? Through observation it had been noted that off-task behaviors were distracting from classroom instruction and the overall classroom environment. Research conducted by McCormick et. al. (2014) found disruptive behaviors in the classroom do interpose on the teacher's ability to teach lessons and, indeed, have broader effects on the overall classroom management.

A mixed methods sequential explanatory design was used to analyze the quantitative and qualitative data gathered during the study. During the data collection period, three separate transitions were used to move students into math whole group

instruction. Each of the transition strategies were used two times, for a total of six interventions. Those six transitions and subsequent lessons were video recorded, then videos were analyzed to collect data on the number of off-task behaviors exhibited and finally the videoed lessons were transcribed. This chapter will analyze the quantitative data gathered from recorded lessons, and the qualitative data gathered from the video notes. For the purposes of this research, off-task behaviors identified were fidgeting with objects and moving around the classroom when staying seated was expected. Disruptive behaviors were identified as the behaviors which distracted others from learning, such as playing in others' hair, making disruptive noises, talking to others, and calling out unrelated to the concepts being learned. Finally, an interpretation of the data using descriptive statistics will be given and followed by a conclusion summarizing the findings. This sequence follows the systematic approach of action research as described by Sagor (2000).

Findings

Transitional activity interventions began with a strategy of teacher and students singing to come to the rug for whole group math instruction. When I, the teacher, began to sing the transition song "I'm coming, I'm coming, I'm coming to the rug", the students joined in with the singing for a total of three repeated verses. Videos were recorded of the transitional activity and subsequent whole group math instruction. After analyzing the video for student behaviors, findings from the first song as transition showed 8 out of 18, or 44% (as shown in figure 4.1) of the students displayed off-task or disruptive behaviors. Identically, the second video analyzed which had used songs as transitions

also showed 8 out of 18 (44%) students displaying off-task or disruptive behaviors. It is important to note that they were not the same students displaying disruptive behaviors in for each of the whole group instructional periods, and some students were not included in the data analysis due to their being absent during one or more of the transitional activities.

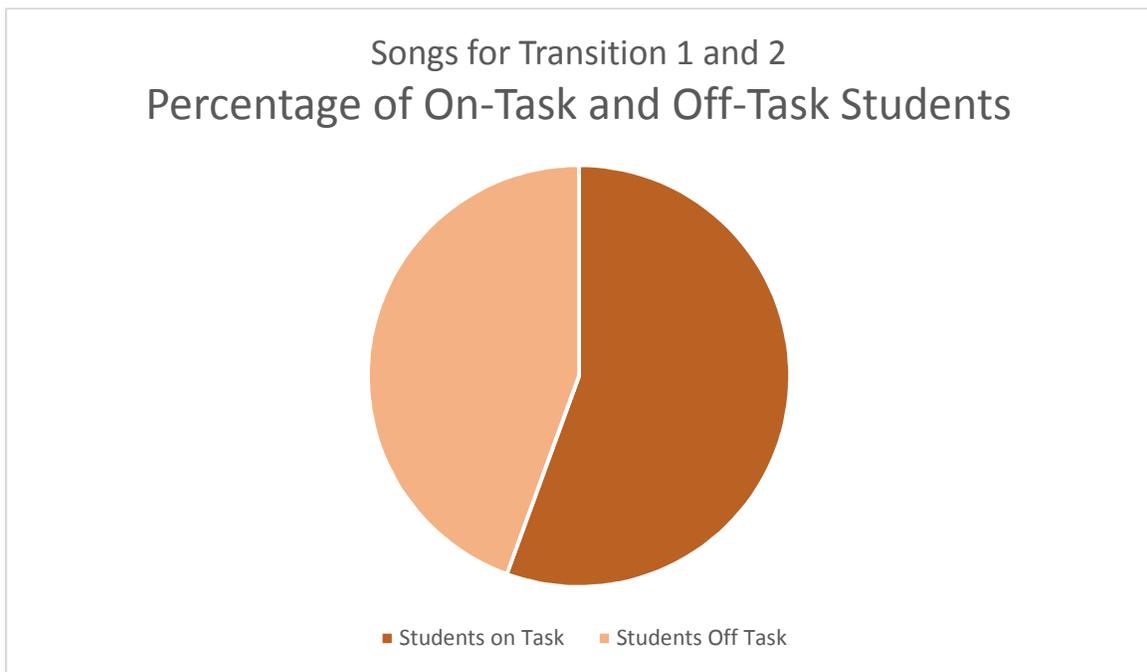


Figure 4.1 On and Off-Task Behaviors after Song as Transition

During the second phase of transitional activities, students participated in a physical activity lead by GoNoodle for approximately five minutes to transition into math whole group instruction. Physical activity included running in place and jumping in video simulated races. Once again, video was used to record the transitional activity and the math whole group instruction. From the recorded video, analysis of student behaviors during whole group math instruction showed 5 out of 15 students, or 33.3%,

(as shown in figure 4.2) were off-task or disruptive during instruction. Analysis of the second whole group math lesson taught after a physical activity transition showed identical results. Data was gathered from only 15 out of the 24 students enrolled based on who were present for each of the activities and whole group lessons. Though the percentage of off-task behaviors were the same during both whole group instructional periods, the students displaying off-task behaviors in each instance were not the same.

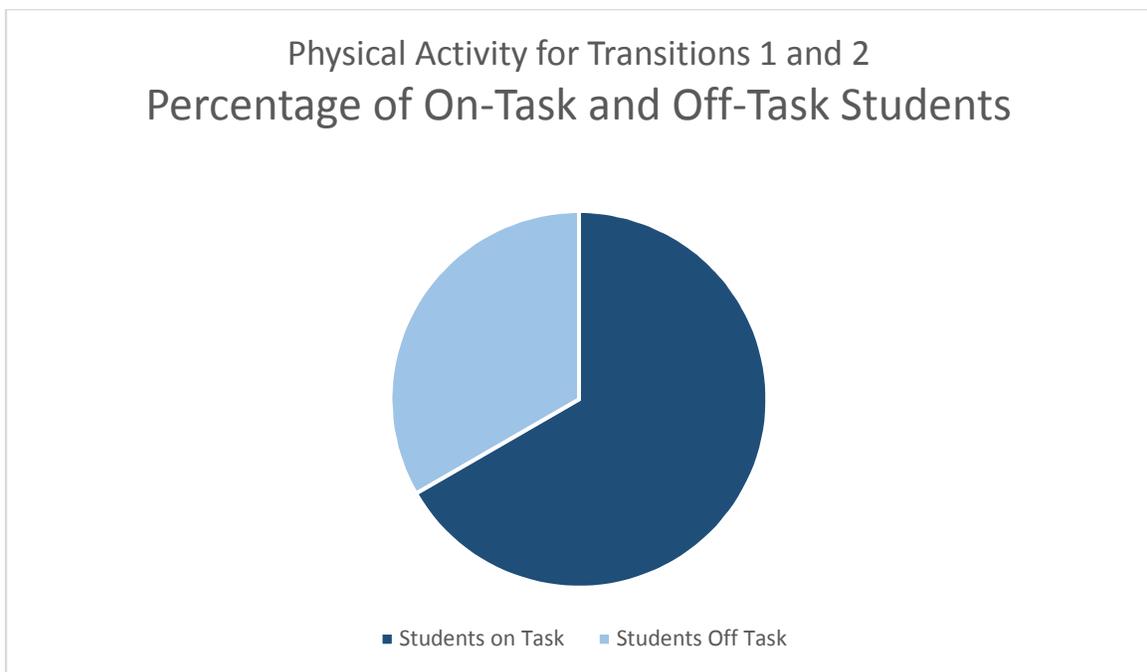


Figure 4.2 On and Off-Task Behaviors after Physical Activity as Transition

The third, and final phase of transitional activities used calming movements to transition into math whole group instruction. Calming movements were lead by GoNoodle for a period of approximately five to 10 minutes and consisted of stretching and breathing exercises. Video recordings began with the transitional activity and continued through the whole group math instruction for two cycles. Videos were then

analyzed to identify students with off-task or disruptive behaviors during math whole group instruction. Data was gathered from 18 of the 24 students enrolled in the class. Those videos showed 11 out of 18 (61%) students were on-task and 7 out of 18 (38.8%) students on task respectively (as shown in figures 4.3 and 4.4). Students who were out of the room for one or more of the interventions were not included in the data.

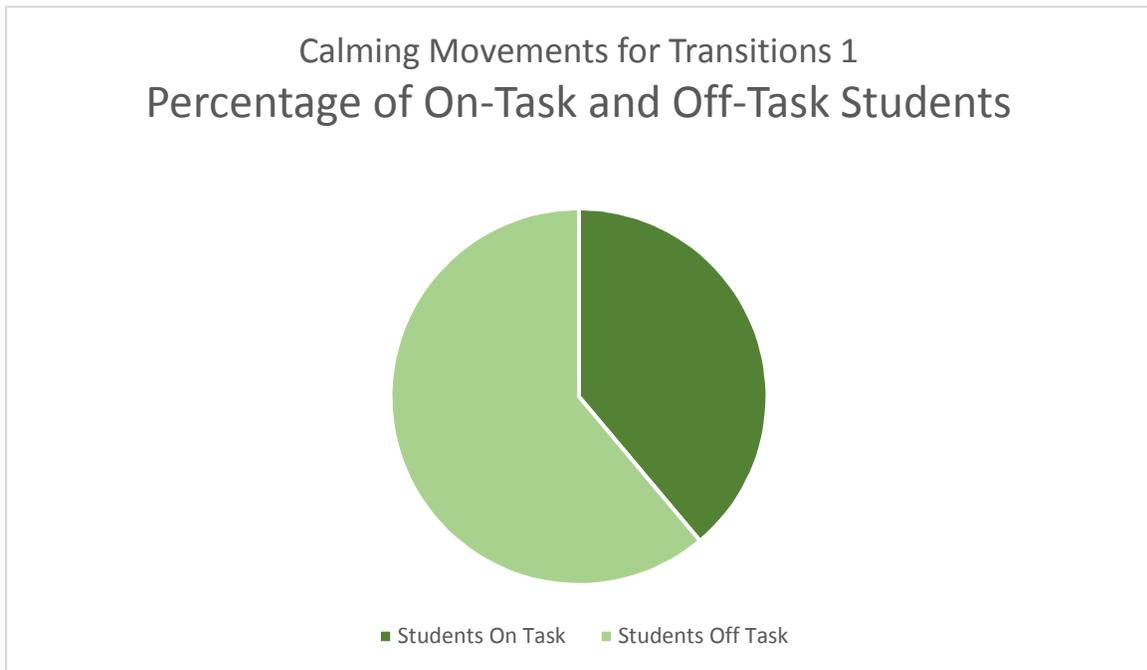


Figure 4.3 On and Off-Task Behaviors after Calming Movements for Transitions Lesson 1

Calming Movements for Transitions 2 Percentage of On-Task and Off-Task Students

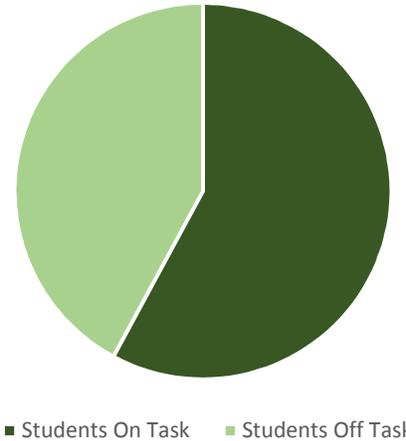


Figure 4.4 On and Off-Task Behaviors after Calming Movements for Transitions Lesson 2

Students were also given a self-reflective questionnaire to determine which transitional activities they deemed to be the most beneficial for themselves. The questionnaires were passed out to students and read aloud to ensure each student knew what each of the statements meant. Students responded to the statements with very true, somewhat true, or not true at all (see results in Figure 4.5). In response to the statement “I can concentrate better after singing”, 26% of students responded that was very true. 32% of students replied very true to the statement “I can concentrate better after exercising (physical movement)”. The largest number of students (41%) felt that calming movements helped them to concentrate better. In the same survey, students overwhelmingly (77%) stated they enjoyed learning math and felt it was important.

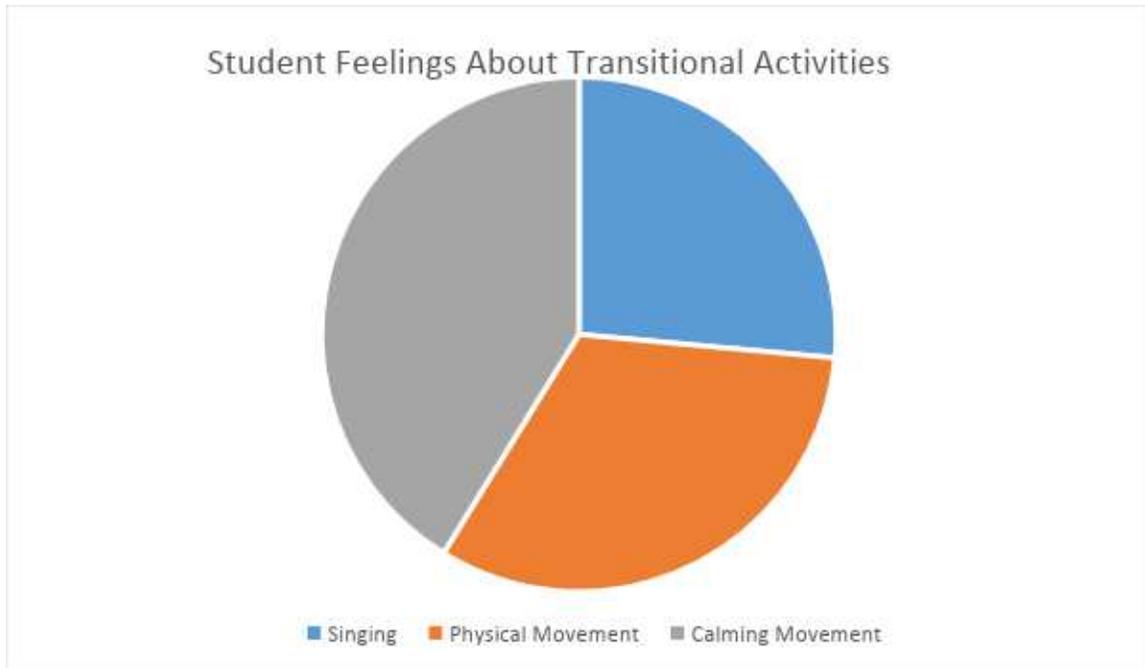


Figure 4.5 Student Responses to Self-Reflection Questionnaire

Detailed observations of behaviors were collected and coded following coding recommendations outlined by Saldña (2009) (see Appendix E). Interpretations were developed from the information presented in the detailed observations and coding. As stated by Saldña (2009), coding is composed of titles (or labels) which “represent and capture a datum’s primary content and essence” (p. 3). Coding is a valuable tool for analyzing qualitative data in a systematic process. Field notes were collected from observations of the six video recorded transitions and following whole group instruction, and then coded. Student and teacher behaviors are organized into code categories (see Appendix D), to better make comparisons.

The field notes provided further detail about student off-task and disruptive behavior. During field note collection, M identifies students presenting as males and F

represents students presenting as females. Students are also identified by a number; this allows for student privacy while allowing the data to be analyzed for trends. The first lesson utilized song for transition into a whole group math lesson where students would be surveying classmates to collect data. After the transition, the whole group lesson gave the students the information and process necessary to complete the independent work.

Findings showed that F3 was disruptive three times. M22 was off-task four times. M5 was disruptive and had to be redirected, yet continued with his behavior. Throughout the lesson, there were six teacher initiated redirections for correction of student behaviors. The next lesson also utilized singing as the transition, and lead into a whole group instruction for students to create a graph using data collected during class. These notes were taken during and following a song for transition time. Of the 14 students displaying off-task and disruptive behaviors, 12 were males and two were females. M15 was off-task two times, and disruptive once. M22 was off-task twice and disruptive twice. Throughout the whole group instruction, students were redirected four times by the teacher to correct behaviors.

Students were involved in physical activity during the third transition leading into a lesson utilizing math Unifix cubes to create graphs. Notes which were taken during and following a physical activity transition, showed females moved to the rug quickly. M9 was up front and participating (this particular information is key given that in the calming movement transitions M9 did not participate). M22 and M14 were together displaying off-task and disruptive behaviors. Four redirections from the teacher to

correct off-task behaviors were noted. Six males were observed with off-task or disruptive behaviors and three females. Students were redirected three times. M14 was disruptive four times, breaking rules two times, and not participating one time. M22 was disruptive five times and breaking rules one time. The second physical activity transition led students into a lesson of probability utilizing fraction circles. Field notes were taken during and following a physical activity movements transition time. M9 was observed participating in the transitions movement once again. Three males, M14, M8, and M22, delayed coming to the front and were bumping into one another and tugging pillows away. When the physical activity transition ended, M14 was arguing with M8 and M22. Two females and one male did not participate in movement transition at all. There were not any females noted as being off-task or not participating during the whole group instruction. M14 was disruptive six times and breaking rules one time. Four redirections by the teacher were noted during observation.

The final transitional activity used calming movements to lead into whole group math instruction. Day one of using this strategy transitioned students into a lesson graphing the number of days it took their butterfly larva to develop into butterflies. Observational field notes yielded the following information. F2 was often disruptive with behaviors; talking, getting in other student's space, hitting students as she danced around. F6 was often off-task, but was not disruptive in her behaviors. M9 did not participate in the calming movement activity, but was not being disruptive either (he was participating eagerly in the physical activity movements). M19 argues with other students, talks out and touches others. M19 was disruptive six times and off-task five

times. M19 had to be redirected several times by the teacher. M22 often moves away from the group, and is off-task. Of the 12 students who were displaying off-task and disruptive behaviors, two were females and 10 were males. Six redirections were needed through the lesson to get students back on task. The final transition and lesson observed was also a calming movement transition. Students were guided through instruction on using the part-part-whole box strategy to solve word problems. Of note is student M9, who did not participate in the transition at all. As previously stated, M9 had been up front and very active during the physical movement transition. It is also important to note that of the students being disruptive and off-task, only one was a female. M19 was disruptive three times, and off-task two times. M15 was disruptive five times and off-task six times. During the transition and whole group math lesson observation time, 6 redirections were needed.

Notes gathered from video observations showed several trends. When students sang to come to the rug, class noise was at a low level, yet multiple students had to be reminded to come to the area for whole group math instruction and in both cases students were arguing with one another. When physical activity movement was used, students came to the rug very quickly. It was also noted that many boys gathered at the front near the board where the activity was being displayed for the students to follow. Voice levels were very high during and after these activities, but it was noted that students quickly got ready to begin math instruction and did not have to be asked to come to the group for instruction. Finally calming movements were used to transition. During this transition, boys stayed towards the back of the group and the girls

congregated at the front of the board. Most students were engaged in the movements and voices were low, but when it was time to sit for group instruction, several students had to be reminded where they were supposed to be. Students were getting up and moving around, while at least two played with pencils for most of the lesson. It was recognized that at the 10-minute mark in each video, students became restless.

Discussion

The data collected and analyzed in this study compared the occurrences of student off-task and disruptive behaviors after specific transitional activities were used. Percentages of off-task behaviors for each of the six lessons taught are shown in Figure 4.6. This research was completed to address the strategies educators could use in the elementary classroom to increase student on-task behaviors during whole group instruction. In order to measure the influence transitional activities, have on student behaviors, three separate transitions implemented and resulting student behaviors were compared to one another. Data is made clearer by comparing the number of students displaying off-task and disruptive behaviors following each transitional activity. This discussion will include interpretations of the data collected and then focus on how these findings may affect future classroom instruction.

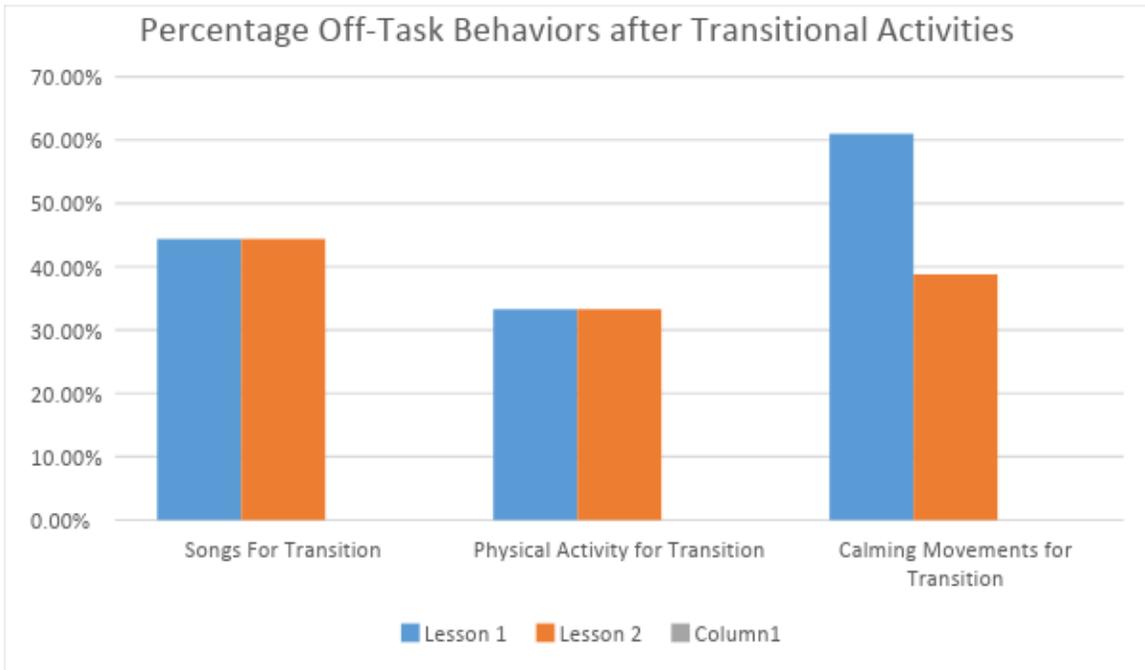


Figure 4.6 Off-Task Behaviors after Transitional Activities for Six Math Lessons

Interpreting Findings

Data of student off-task and disruptive behaviors were gathered from video recordings of transitional activities and the whole group math instructions which followed to determine if transitional routines impact off-task behaviors of second graders. In the second grade classroom, students transition to a rug at the front of the classroom for whole group math instruction before moving into independent work.

The whole group math instruction introduces the math concept for the day, shares some examples, and allows students to engage in working through a few

examples. Following that whole group instruction, students are expected to complete an independent practice at their seats. Students were exposed to three separate transitional activities for the purposes of this study; song for transition, physical movement for transition, and calming movement for transition.

The data indicated that students have the least off-task behaviors when physical activity is used for transition. Off-task behaviors were 10% higher when songs were used for transitions, and they were up to 28% higher when calming movements were used to transition into math whole group lessons. One instance found calming movements for transitioning resulted in off-task behaviors only being 5% higher than when the physical activity was used.

Though off-task behaviors were the highest after calming movement transitions, more students (41%) indicated in the survey that the calming activities helped them to concentrate. Off-task behaviors were at their lowest after physical movement transitions, and 32% of students felt the physical movement transitions helped them to concentrate on their math instruction the most. The self-reflection survey helped me to analyze student feelings about classroom instruction with the goal increasing student engagement.

Observation notes of the videos showed students were more actively involved in the physical activity transitions, and while much louder moving into whole group instruction, they were more engaged. By analyzing student body language, I discovered

the majority of the boys were more eager to engage in physical activity, and the majority of the girls were more eager to participate in the calming movements,

Conclusion

This action research asked the following research question: How do various types of movement breaks during instructional transitions impact off-task behaviors among second grade students during classroom instruction? Off-task behaviors were measured after implementing three separate research based transitional activities before whole group math instruction began (Smythe, 2002). Results from the data collection and descriptive statistical analysis indicate that when physically active movements are used as transitions into math instruction, there is a moderate lessening of off-task behaviors. These findings provide evidence which suggests physical activity before whole group instruction may improve student on-task behaviors, and therefore improve the overall learning environment (McCormick et. al., 2014).

I have followed the action research systematic process, as described by Sagor (2000), by selecting my focus, clarifying my theories, identifying the research question as a focus, collecting and analyzing data, and reporting the results in this chapter and the previous chapters. This process has required continual reflection of my teaching practices and student behaviors. Reflection will continue into the following chapter as I will continue the cycle with the reflecting phase and the creation of a plan of action. Steps for improvements in classroom routines as they relate to transitional activities will continue in the following chapter. Those steps will begin with a discussion of changes to

be made and my thoughts on the limitations within this study, followed by an action plan and implications for future classroom practice will be discussed. To conclude, suggestions for further research will be given.

CHAPTER 5: SUMMARY AND DISCUSSION

Introduction

The purpose of my action research study was to determine the effects different classroom transitions have on the off-task behaviors of second grade students during whole group math instruction. The research question which has guided this action research study is: How do various types of movement breaks during instructional transitions impact off-task behaviors among second grade students during classroom instruction? This research question has been discussed in each of the chapters describing this research study.

Based on daily behavior charts, I had noted second grade students in my class were consistently displaying off-task behaviors during whole group math instruction. Off-task behaviors interrupt classroom instruction and hamper the overall learning environment for all students (Greene et. al., 2002). Therefore, I altered the transitional activities which led the students into the whole group math instruction. While using these transitional activities, I recorded students to later analyze their behavior transitioning into the whole group math lessons. Quantitative data was gathered from the videos and the data was used to analyze the effect transitions made on student behaviors. Chapter Five includes a restatement of the problem of practice, a description of the study's focus, an overview of the study, a summary of the study, the implications

and finding derived from the research, the action plan created after analyzing the data and suggestions for further research to be conducted.

Focus of the Study

The purpose of this quantitative study was to compare the effects differing transitional activities have on the off-task behaviors of second grade students during whole group math instruction. This quantitative study was designed to determine the impact of the transitional activities before whole group math instruction began on the students' off-task behaviors.

Three different transitional strategies, noted by Smythe (2002) as being effective, were used to complete the study: singing to transition, physical movement activities and calming movements were included. Through teacher observations and behavior checklists I have identified off-task behaviors as being disruptive to whole group math instruction. This action research has attempted to discover if changing the process for transitioning from an activity into math instruction would affect the number of off-task behaviors students display during math whole group instruction.

Overview of the Study

Educators are tasked with keeping students on-task during instructional activities. Multiple assessments are used to measure student progress and teacher effectiveness. Furthermore, Schiro (2013) acknowledges the mandates initiated by No Child Left Behind and Race to the Top have increased testing pressures and have led classrooms to be assessment focused. Assessment and data focused classrooms have

therefore directed classroom instruction to models where students are spending more time seated and less time spent in play or movement activities. From the social reconstructionist point of view, this is seen as way for the government to control student learning.

Three different transitional activities, which allowed students to be moving or singing, were implemented into classroom instruction to allow students time to move before whole group math instruction began. According to McNamara (2013), cognitive benefits have been linked to activity breaks in multiple studies. Along with being cognitively beneficial, McNamar's study also found that students who had regular movement breaks were more focused on the tasks given and were attentive to instruction. Even with evidence stating the benefits of students being active, Fagerstrom and Mahoney (2006) found classroom teachers often skipped recess to accommodate for increasing academic pressures. Distracted and off-task students led to lost instruction time (McGoey et. al., 2007). To increase learner focus, students need to have time for for the brain to rest and the body to move (Jensen, 1998; Tomporowski & Ellis,1986).

Summary of the Study

Quantitative data reflecting student off-task behaviors during math instruction gathered from observing video recordings of math whole group lessons were used to answer the question: How do differing transitional activities affect student off-task behaviors in a second grade whole group math lesson? Three separate transitions were

used two times each for analysis in this study. The first transitional activity had students singing a song three times as they moved to a central area for the math lesson to begin.

The mean score for off-task behaviors after the singing transition was 44.4% for both whole group math lessons. After participating in physical activity transitions, student off-task behaviors during math instruction was reduced to 33.3% in both instances, representing an 11.1% decrease in off-task behaviors when the transitional activity was changed from singing to physical activity movements. A final transition activity, which used calming movements to transition students into two math lessons, resulted in a student off-task statistical mean of 61.0% and 38.8% respectively. The mean score for off-task behaviors increased 27.7% from using physical activity to transition to using calming movements in the first lesson. In the second lesson, the statistical mean increased, but only by 5.5%. Test results revealed there was no statistically significant difference in off-task behaviors for second grade students who participated in singing, physical activity, or calming movements for transitional activities.

Students also completed a questionnaire concerning which of the three transitional activities helped them to transition and be ready to learn during math instruction. Only 26% of the students questioned indicated singing for transitions as being the most helpful for them. The questionnaire analysis showed 32% of students felt physical activity as a transition was the most helpful in getting prepared for math instruction. Even though students were most off-task after the calming movement

transitions, most students (41%) indicated that the calming movements for transitions were the most helpful for concentrating during math instruction.

Qualitative data showed students were more engaged in the math instruction after the physical activity transition than singing for transition or calming movements for transition. Students moved to the whole group instruction area quicker and stayed engaged longer after the physical activity. Student noise level was lower after singing for transition and calming movements for transition, but noise level did not have any bearing on the level of engagement during the math lesson following transitions. Based on the notes taken, students exhibit off-task behaviors more at the beginning of a whole group lesson and around the 10-minute mark post transition.

Implications of the Findings

This study examined transitional activities as they related to student off-task behaviors. There are implications within the study for educational change as discussions of transitional activities and movement in the classroom can be used to enhance classroom instruction. Findings from this action research study will be shared with administration and the school Professional Learning Communities (PLC) coach to find opportunities for sharing the information across grade levels. Though there was not a statistically significant difference, using movement for transitional activities is still an effective strategy to lessen off-task behaviors and to improve the learning environment.

After analyzing the data in this action research study, I was able to develop a plan of action to assist colleagues in implementing transitional activities to improve on-

task behaviors of students in the elementary classroom. This action plan will provide myself and colleagues with continued support throughout the school year to improve the consistency in which effective transitions are used in the classroom. Effective transitions are a significant piece of quality classroom instruction. Purposeful transitions have the potential to lessen the off-task behaviors of students during whole group instructions, and therefore to ultimately improve academic success and the overall classroom environment.

Action Plan Development

The purpose of my action research was to study the effects of movement breaks, during transitions specifically, on the off-task behaviors of students. As the demands for more assessment driven data have increased, so have the demands for time on task resulting in the opportunities for students to have active movement in the school day to decrease (Becker et. al., 2014). Yet, studies have indicated that time devoted to physical activity can actually increase student time on-task and student learning (Pellegrini, 2008). This action plan includes the actions I will take in my classroom as I move forward and my plans for outreach into my school community. The actions I plan to take as a part of this action plan and a proposed timeline for taking these actions are outlined in table 5.1.

As educators, we are charged with providing the best educational experience possible for our students, but we cannot do effectively do that without reflecting on our practices and make changes for improvement where necessary. Student behaviors in

the classroom cannot always be controlled, but as educators, we do have the control to change our instructional routines and practices to best meet the needs of the students (Ioannidou-Koutselini, 2015). It is equally important to create classroom environments where students are able to meet their full academic potential. This can not be accomplished when students are displaying off-task behaviors during instructional periods (Chavez et.al., 2015).

Administration, the PLC coach and I should work side by side with educators gaining information and insight concerning effective transitional activities to be used during instruction. This professional development should begin during the summer of 2018 and continue through PLC sessions throughout the 2018/2019 school year. Smythe (2002) has found effective transitions can improve student behaviors and student focus. The transitional activities teachers implement into their classrooms have the potential to improve the classroom environment. Administrators or PLC coaches should demonstrate a variety of effective transitions teachers can use in their classrooms if implementation is going to be successful.

Action Plan Timeline

My first step in the action plan would be to meet with administrators and the PLC coach to share the findings on student behaviors in relation to the classroom transitions used. From that discussion, we will define the roles each of us has in sharing strategies for effective transitions with the classroom teachers. During a quarterly PLC meeting I, along with the PLC coach, will work with teachers to share research findings

which support the use of physically active transitions to use in the classroom. The second stage would involve engaging in professional learning sessions which would guide teachers in collecting data on their students for analysis to evaluate the effectiveness of transitions being used. This will allow the teachers to make informed decisions concerning the transitional strategies they choose to use within their own classrooms. I recommend at least one PLC meeting a quarter be devoted to using transitional strategies effectively. These PLC meetings should be structured to collaborate in disseminating information regarding transitions in the classroom, to receive feedback concerning the transitions teachers are using, to review any new data, and share experiences that may provide guidance on using the transitional activities to improve student behaviors during instructional times.

This action plan was developed with the intent of beginning on one of the first days back to school in August 2018. This would give teachers the time to think about the transitional strategies they would like to try and to plan how they will implement them. A follow up PLC would potentially take place in November to allow educators to discuss what transitions are working and to receive any needed guidance. This would also be the time for educators to decide what changes in transitions need to be made. A third meeting would occur in February to analyze data in regards to student behaviors and to make informed decisions on changes in transitions that may improve those behaviors. A final PLC meeting would be held in May where educators could share their own findings and insights regarding the effects classroom transitions have had on student behaviors. Table 5.1 shows the progression of the plan implementation.

Table 5.1 *Action Plan Implementation*

Initiative	Action to be Taken	Outcome	Completion Date	Personnel Involved
<p>Create a framework for using transitions in the classrooms.</p> <p>Create common language and practices across the school.</p>	<p>Collaboration among teachers, PLC coach and administrators to determine the roles and responsibilities for using effective transitions.</p>	<p>Educators will increase their understanding of effective classroom transitions and will be prepared to implement them in class instruction.</p>	<p>August 2018</p>	<p>Myself, PLC Coach, Teachers</p>
<p>Reflect on transitional strategies and</p>	<p>Collaboration among teachers concerning what transitions are and</p>	<p>Decide what changes, if any, need to be made to the transitional</p>	<p>November 2018</p>	<p>Myself, PLC Coach, Teachers</p>

implement changes.	are not working in the classroom.	strategies taking place.		
Find trends in data of student behaviors and how they relate to classroom transitions.	Teachers will analyze classroom behavior data looking for any specific trends.	Create plans to change or modify classroom transitions for the purpose of improving classroom behavior.	February 2019	Myself, PLC Coach, Teachers
To continue professional growth as teachers make decisions about educational practices and reflect on their practices.	Teachers will reflect on how they have used transitions in the classroom through the year. They will also discuss the impact that effective transitions have made on student behaviors and the	Plans for future implementation of transitional activities will be made as teachers look at data and reflect on the previous year.	May 2019	Myself, PLC Coach, Teachers

	classroom environment.			
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Suggestions for Future Research

This action research study investigated the effects of classroom transitions on student off-task behaviors in a second grade classroom. Based on this study's findings, future research might enhance the understanding of how off-task behaviors relate to classroom transitions. Data gathered during this study covered a period of six days. Therefore, conducting the study over a longer period of time may potentially show a greater difference in the occurrences of off-task behaviors after selected transitions. In addition, a longer study would give the time necessary to determine if classroom transitions are more effective when kept consistent, or if they need to change after extended periods of use in the classroom. Some students did not display off-task behaviors throughout the study. Therefore, it might be beneficial to focus on select students who consistently display off-task behaviors and the effects classroom transitions have on their behavior. Finally, including open-ended questions in questionnaires interviewing students might provide richer information concerning transitions and how the transitions affect the students' ability to focus.

Conclusions

The purpose of this action research study was to determine the effect classroom transitions have on off-task behaviors of second grade students during whole group

math instruction. With this in mind, I made changes to my educational practices to implement effective transitional activities. This study tested the hypothesis using the a mixed-methods explanatory design to determine the significance of the data gathered. Three different transitional activities were used in the study over 6 lessons: singing to transition, physical movement activities and calming movements. The quantitative data collected included the mean of off-task behaviors during whole group math instruction which followed each of the transitions two time, for a total of six collection periods. There was also a student questionnaire survey completed by students, collected and analyzed to gain a better understanding of how students felt about the transitional activities and their own abilities to concentrate on math instruction. There was no significant difference shown in off-task behaviors in relation to the transitional strategies implemented.

REFERENCES

- Adams, C. (2011). Recess makes kids smarter. *Instructor*, 120(5), 55-59.
- Almy, M. (1974). Piaget in action.
- Au, W. (2013). High-stakes testing and curriculum control: A qualitative metasyntesis. In: D.J. Flinders & S. J. Thornton (Eds), *Curriculum Studies Reader (4th ed.)*, pp. 235-251. New York, NY: Routledge.
- Barros, R.M., Silver, E. J., & Stein, R. E. K. (2009). School recess and group behavior. *Pediatrics*, 123(2), 431-436. Doi:10.1542/peds.2007-2825
- Beaulieu, L., Butterfield, S., & Pratt, P. (2009). Physical activity opportunity in the United States public elementary schools. *Journal of Research* 4(2), 6-9.
- Becker, D. R., McClelland, M. M., Loprinzi, P, & Troust, S. G. (2014). Physical activity, self-regulation, and early academic achievement in preschool children. *Early Education and Development*, 25(1), 56-70.
- Becker, J. (2006). Relation of neurological findings on decoupling of brain activity from limb movement to Piagetian ideas on the origin of thought. *Cognitive Development* 21, 194-198.

- Brain Breaks: Physical activity and brain power intersect supporting evidence for gonoodle. (n.d.). Retrieved April 9, 2016, from <http://gonoodleassets.s3.amazonaws.com/instructions/gonoodle-white-paper.pdf>
- Brensilver, M. (2017). Mind the hype: Reflections on a critique of mindfulness research. Retrieved July 6, 2018, from <https://www.mindfulschools.org/foundational-concelts/response-mind-hype-article/>
- Bodrova, E., & Leong, D. J. (2015). Vygotskian and Post-Vygotskian views on children's play. *American Journal Of Play, 7*(3), 371-388.
- Buch, K. (2010). Brain break: Understanding the influence of brain functions on organizational effectiveness. *T&D, 64*(5). 42-47.
- Camahalan, F. & Ipock, A. (2015). Physical activity breaks and student learning: A teacher-research project. *Education, 135*(3), 291-298.
- Carlson, D. (2008). Remembering Rosa: Rosa Parks, multicultural education, and dominant narratives of the Civil Rights Movement in America. In S. Schramm-Pate & R. Jeffries (Eds.), *Grappling with diversity: Readings on civil rights pedagogy and critical multiculturalism*. (pp. 15-34). Albany, NY: State University of New York.
- Chandler, P. & Tricot, A. (2015). Mind your body: the essential role of body movements in children's learning. *Educational Psychology Review, 27*(3), 365-370.
- Chang, R., & Coward, F.L. (2015). More recess time, please!. *Phi Delta Kappan,*

- 97(3), 14-17.
- Chavez, J. N., Martinez, J., & Pienta, R. S. (2015). Effects of story mapping on third-grade students with attention deficit hyperactivity disorder. *Journal of Pedagogy*, 6(1), 95-121.
- Chomitz, V. R., Slining, M. M., McGowan, R. J., Mitchell, S. E., Dawson, G. F., Hacker, K. A. (2009). Is there a relationship between physical fitness and academic achievement? Positive results from public school children in Northeastern United States. *Journal of School Health*, 79(1), 30-37.
- Dagli, U. (2012). Recess and reading achievement of early childhood students in public schools. *Education Policy Analysis Archives*, 20(10), 1-24.
- Dana, N. F., & Yendol-Hoppey, D. (2014). *The reflective educator's guide to classroom research: Learning to teach and teaching to learn through practitioner inquiry* (3rd ed.). Thousand Oaks, CA: Sage Publications, Inc.
- Delk, J., Springer, A.E., Kelder, S.H., & Grayless, M. (2014). Promoting teacher adoption of physical activity breaks in the classroom: Findings of the central Texas CATCH middle school project. *Journal of School Health*, 84, 722-730.
- Dewey, J. (1916). *Democracy and education: An introduction to the philosophy of education*. New York, NY: Macmillian
Dewey, J. (1938). *Experience and education*. New York, NY: Macmillian.
- Dills, A. K., Morgan, H. N., & Rotthoff, K. W. (2011). Recess, physical education, and the elementary school outcomes. *Economics of Education Review*, 30(5), 889- 900.

- Dinkel, D., Lee, J. & Schaffer, C. (2016). Examining the knowledge and capacity of elementary teachers to implement classroom physical activity breaks. *International Electronic Journal of Elementary Education*, 9(1), 182-196.
- Dobrovolny, J. L., & Fuentes, S. C. (2008). Quantitative versus qualitative evaluation: A tool to decide which to use. *Performance Improvement*, 47(4), 7-14.
doi:10.1002/pfi.197
- Efrat, M. (2011). The relationship between low-income and minority children's physical activity and academic-related outcomes: A review of the literature. *Health Education & Behavior*, 38(5), 441-451.
- Egan, C. A. & Webster, C. A. (2018). Using theory to support classroom teachers as physical activity promoters. *Journal of Physical Education, Recreation & Dance*, 89(1), 23-29.
- Everson, K. R., Ballard, K., Lee, G. & Ammerman, A. (2009). Implementation of a school-based state policy to increase physical activity. *Journal of School Health*, 79(5), 231-238.
- Fink, S. & Markholt, A. (2014). The leader's role in developing teacher expertise. In: Margaret Grogan (Eds.), *The Jossey-Bass Reader on Educational Leadership (3rd ed.)*, pp. 317-333, San Francisco, CA: Wiley.
- Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (2015). *How to design and evaluate research in education* (Ninth ed.). New York, NY: McGraw-Hill Education.
- Fagerstrom, T., & Mahoney, K. (2006). Give me a break! Can strategic recess scheduling increase on-task behaviour for first graders? *Ontario Action Researcher*, 9(2), 1-6.

- Goh, T. L. (2017). Children's physical activity and on-task behavior following active academic lessons: 2017 National Association for Kinesiology in Higher Education Hally Beth Poindexter young scholar address. *Quest, 69*(2), 177-186.
- Goh, T. L., Hannon, J., Webster, C. A., Podlog, L. W., Brusseau, T., & Newton, M. (2014). Effects of a classroom-based physical activity program on children's physical activity levels. *Journal of Teaching in Physical Education, 33*(4), 558-572.
- Grassick, Daniel (2016). Exploring the metacognitive orientation of school makerspaces: A research proposal for a sequential explanatory mixed-methods study. *Alberta Science Education Journal, 44*(2), 16-23.
- Greene, R. W., Beszterczey, S. K., Katzenstein, T., Park, K., & Goring, J. (2002). Are students with ADHD more stressful to teach? Patterns of teacher stress in an elementary school sample. *Journal Of Emotional And Behavioral Disorders, 10*(2), 79-89.
- Howie, E. K., Schatz, J., & Pate, R. R. (2015). Acute effects of classroom exercise breaks on executive function and math performance: A dose-response study. *Research Quarterly For Exercise & Sport, 86*(3), 217-224.
doi:10.1080/02701367.2015.1039892
- Hyndman, B. & Telford, A. (2015). Should educators be 'wrapping school playgrounds in cotton wool' to encourage physical activity? Exploring primary and secondary students' voices from the school playground. *Australian Journal of Teacher*

- Education*, 40(6).
- Ioannidou-Koutselini, M. & Patsalidou, F. (2015). Engaging school teachers and school principals in action research in-service development as a means of pedagogical self-awareness. *Educational Action Research*, 23(2), 124-139.
- James-Burdumy, S., Bleeker, M., Beyler, N., London, R. A., Westrich, L., Stokes-Guinan, K., Castrechini, S. (2013). Does playworks work? Findings from a randomized controlled trial. *Society for Research on Educational Effectiveness*, 6.
- Jarrett, O. S., & ERIC Clearinghouse on elementary and early childhood education, C. I. (2002). *Recess in elementary school: What does the research say? ERIC Digest*.
- Jarrett, O., Maxwell, D., Dickerson, C., Hoge, P. Davies, G., & Yetley, A. (2001). Impact of recess on classroom behavior: Group effects and individual differences. *Journal of Educational Research* 92(2), 121-126.
- Jensen, E. (1998). *Teaching with the brain in mind*. Alexandria VA: Association for Supervision and Curriculum Development.
- Jensen, E. (2008). A fresh new look at brain-based education. *Phi Delta Kappa* 89(6), 408-417.
- Kayaoglu, M. (2015). Teacher researchers in action research in heavily centralized education system. *Education Action Research*, 23(2), 140-161.

- Kemmis, S. (2009). Action research as a practice-based practice. *Educational Action Research, 17*(3) 463-474.
- Kercood, S. & Banda, D. (2012). The effects of added physical activity on performance during listening comprehension task for students with and without attention problems. *International journal of applied educational studies, 13*(1), 19-32.
- Kubesch, S., Bretschneider, V., Freudenmann, R., Weidenhammer, N., Lehmann, M., Spritzer, M., & Gron, G. (2003). Aerobic endurance exercise improves executive functions in depressed patients. *Journal of Clinical Psychiatry, 64*(9), 1005-1012.
- Kubesch, S., Walk, L., Spitzer, M., Kammer, T., Lainburg, A., Heim, R., & Hille, K. (2009). A 30-minute physical education program improves students' executive attention. *Mind, Brain, & Education, 3*(4), 235-242.
- Landrum, T. J., & Sweigart, C. A. (2014). Simple, evidence-based interventions for classic problems of emotional and behavioral disorders. *Beyond Behavior, 23*(3), 3-9.
- Leek, J. j., & Peng, R. D. (2015). What is the question?. *Science, 347*(6228), 1314-1315.
doi:10.1126/science.aaa6146
- Lefmann, T. & Combs-Orme, T. (2013). Early brain development for social work practice: Integrating neuroscience with Piaget's theory of cognitive theory. *Journal of Human Behavior in the Social Environment, 23*, 640-647.

- London, R. A., Westrich, L., Stokes-Guinan, K., & McLaughlin, M. (2015). Playing fair: The contribution of high functioning recess to overall school climate in low-income elementary schools. *Journal of School Health, 85*(1), 53-60.
- Mahar, M. T. (2011). Impact of short bouts of physical activity on attention-to-task in elementary school children. *Preventive Medicine, 52*, S60-S64.
- Mahar, M. T., Murphey, S. K., Rowe, D. A., Golden, J., Shields, A. T., & Raedeke, T. D., (2006). Effects of a classroom-based program on physical activity and on-task behavior. *Medicine & Science in Sports & Exercise, 38*(12), 2086-2094.
- Marzano, R. J. (2012). A moving proposal. *Educational leadership, 69*(7), p. 88-89.
- McClland, E., Pitt, A., & Stein, J. (2015). Enhanced academic performance using a novel classroom physical activity intervention to increase awareness, attention and self control: Putting embodied cognition into practice. *Improving schools, 18*(1), 83-100.
- McConaughy, S. H., Volpe, R. J., Antshel, K. M., Gordon, M., & Eiraldi, R. B. (2011). Academic and social impairments of elementary school children with attention deficit hyperactivity disorder. *School Psychology Review, 40*(2), 200-225.
- McCormick, M. P., Turbeville, A. R., Barnes, S. B. & McClowry, S. G. (2014). Challenging temperament, teacher-child relationships, and behavior problems in urban low-income children: A longitudinal study. *Early Education and Development 25*(8), 1198-1218.

- McGoey, K. E., Prodan, T., & Condit, N. (2007). Examining the effects of teacher and self-evaluation of disruptive behavior via school-home notes for two young children in kindergarten. *Journal of Early And Intensive Behavior Intervention, 4*(1), 365-376. doi:10.1037/h0100349
- McMurrer, J. (2007). NCLB5: choices, changes, and challenges: curriculum and instruction in the NCLB era. Retrieved from Center on Education Policy: <http://www.cep-dc.org>.
- McNamara, L. (2013). What's getting in the way of play? An analysis of the contextual factors that hinder recess in American schools. *Canadian Journal of Action Research, 14*(2), 3-21.
- McLeod, N. (2015). Reflecting on reflection: Improving teachers' readiness to facilitate participatory learning with young children. *Professional Development in Education, 41*(2), 254-272.
- Mertler, C.A. (2014). *Action research: Improving schools and empowering educators*. (4th ed.) Thousand Oaks, CA: Sage Publications, Inc.
- Method. (2012). Retrieved May 18, 2018, from <https://marginalllearninggains.com/methodology-micro-action-research/>
- Montessori, M. (2013). A critical consideration of the new pedagogy. In: D. J. Flinders & S. J. Thornton (Eds.), *Curriculum Studies Reader (4th ed.)*, pp. 19-31. New York, NY: Routledge.
- Mostofo, J. & Zambo, R. (2015). Improving instruction in the mathematics methods

- classroom through action research. *Educational Action Research*, 23(4), 497-513.
- Morales, M., Abulon, E., Soriano, P., David, A., Hermosisima, M., & Gerundio, M. (2016). Examining teachers' conception of and needs on action research. *Issues In Educational Research*, 26(3), 464-489.
- Mulrine, C. F., Prater, M. A., & Jenkins, A. (2008). The active classroom: Supporting students with attention deficit hyperactivity disorder through exercise. *Teaching Exceptional Children*, 40(5), 16-22.
- Parker, B. A., Thompson, P. D., Jordan, K. C., Grimaldi, A. S., Assaf, M., Jagannathan, K. & Pearson, G. D. (2011). Effects of exercise training on hippocampal volume in humans. *Research Quarterly for Exercise and Sport*, 2(3), 585-591.
- Niche. (n.d.) Retrieved May 18, 2018, from <https://k12.niche.com/harold-c-johnson-elementary-school-york-sc/>
- Pellegrini, A. D. (2008). The recess debate: A disjuncture between educational policy and scientific research. *American Journal of Play*, 1(2), 181-191.
- Pellegrini, A. D., & Bjorklund, D. 1. (1997). The role of recess in children's cognitive performance. *Educational Psychologist*, 32, 35-40.
- Pellegrini, A. D. & Smith, P. K. (1993). School recess: Implications for education and development. *Review of Educational Research*, 63(1), 51-67.
- Perera, T., Frei, S., Frei, B., & Bobe, G. (2015). Promoting physical activity in elementary schools: Needs assessment and a pilot study if brain breaks. *Journal of Education and Practice*, 6(15), 55-64.

- Platz, D. & Arellano, J. (2011). Time tested early childhood theories and practices. *Education, 132*(1), 54-63.
- Rasberry, C. N., Lee, S. M., Robin, L., Laris, B. A., Russell, L. A., Coyle, K.K., & Nihiser, A. J. (2011). The association between school-based physical activity, including physical education, and academic performance: A systematic review of the literature. *Preventive Medicine, 52*, S10-S20.
- Ridgway, A., Northup, J., Pellegrin, A., LaRue, R., & Hightshoe, A. (2003). Effects of recess on the classroom behavior of children with and without attention-deficit hyperactivity disorder. *School Psychology Quarterly, 18*(3), 253-268.
- Ruiter, M., Loyens, S., & Pass, F. (2015). Watch your step children! Learning two-digit numbers through mirror-based observation of self-initiated body movements. *Educational Psychology Review, 27*(3), 457-474.
- Saldaña, J. (2009). *The coding manual for qualitative researchers*. Los Angeles: Sage.
- Savina, E., Garrity, K., Kenny, P. & Doerr, C. (2016). The benefits of movement for youth: A whole child approach. *Contemporary school psychology, 20*(3), 282-292.
- Scstatehousegov. (2016). *Scstatehousegov*. Retrieved 26 March, 2016, from http://www.scstatehouse.gov/sess120_2013-2014/bills/516.htm
- Schachter, R. (2005). The end of recess. *District Administration, 41*(8), 36-41.
- Schiro, M. (2013). *Curriculum theory: Conflicting visions and enduring concerns*. Los Angeles: Sage.

- Senge, P. M. (2014). Give me a lever long enough...and single-handed I can move the world. In: Margaret Grogan (Eds.), *The Jossey-Bass Reader on Educational Leadership (3rd ed.)*, pp. 3-16, San Francisco, CA: Wiley.
- Siskin, L. S. (2013). Outside the core: Accountability in tested and untested subjects. In: D. J. Flinders & S. J. Thornton (Eds.), *Curriculum Studies Reader (4th ed.)*, pp. 195-205. New York, NY: Routledge.
- Skoning, S. (2010). Dancing in the curriculum. *Kappa Delta Pi Record*, 46(4), 170-174.
- Smythe, C. (2002). Preparing for Smooth Transitions. Spotlight: Updating Our Agendas. *Montessori Life*, 14(1), 42-45.
- South Carolina Department of Education. (n.d.). Retrieved May 20, 2018, from <https://ed.sc.gov/data/report-cards/state-report-cards/2017/opportunities/students/?d=4601&s=049&t=E&y=2017>
- Spring, J. (2014). *The American school, a global context: From the Puritans to the Obama administration*. New York: McGraw-Hill Education.
- Tomprowski, P. D. & Ellis, N. R. (1986). Effects of exercise on cognitive processes: A review. *Psychological Bulletin*, 99(3), 338-346.
- Torkington, Kate & Bernard Van Leer Foundation, T (1996). The rationale for experiential/ participatory learning. *Working Papers in Early Childhood Development*, 16, 1-31.

Tyler, K. P. (2012). The impact of the shifting knowledge base from development to achievement on early education programs. *Forum on Public Policy Online*, 2012-n1.

What Works Clearinghouse (2012). What works clearinghouse quick review of the report “Exercise improves executive function and achievement and alters brain activation in overweight children: A randomized, controlled trial”. *What Works Clearinghouse*.

Webster, C. A., Erwin, H. & Parks, M. (2013). Relationships between and changes in preservice classroom teachers’ efficacy beliefs, willingness to integrate movement and perceived barriers to movement integration. *Physical Educator*, 70(3), 314-335.

Willis, J. (2005). Sharpen kids’ memory to raise test scores. *Education digest: Essential readings condensed for quick review*, 70(7), 20-24.

Wolfe, P. (2001). *Brain matters: Translating research into classroom practice*. Alexandria, VA: ASCD.

Wolf, S., Aber, J., & Morris, P. (2015). Patterns of time use among low-income urban minority adolescents and associations with academic outcomes and problem behaviors. *Journal of Youth & Adolescence*, 44(6), 1208-1225.

Wyllis, R. E. (1978). Teaching descriptive and inferential statistics in library schools. *Journal of Education For Librarianship*, 19, 3-20.

Yesil Dagali, U. (2012). Recess and reading achievement of early childhood students in public schools. *Education Policy Archives*, 20(10). Arizona State University, Phoenix, Arizona.

APPENDIX A

CONSENT FORM

Dear Parents and Families,

I am always trying to find new ways to help students learn their best and to improve my instruction. As a part of doing that, I have been enrolled in classes at the University of South Carolina for the last 3 years. I am studying curriculum and instruction. To complete my degree am doing a research study which focuses on giving students the opportunity to have active movement before starting math instruction. I will be collecting data on student behaviors during this study as a search for the best instructional practices. **No** student names, nor the school name, will ever be used in the study. In fact, even these consent forms **will not** be turned in, but rather kept by me. I am asking that your child be able to be included in the study to help me finish this last requirement for my studies. Thank you for being supportive as I work to improve your child's learning experiences.

Sincerely,

Mrs. Sizemore

Please check yes or no.

_____ Yes, I give permission for my child to be included in the study to improve classroom instruction as long as **no** identifiable information is used.

_____ No, I do not give permission for my child to be included in the study to improve classroom instruction.

Parent Signature _____

APPENDIX B

STUDENT QUESTIONNAIRE SURVEY

Student Survey

Student # _____

Please answer each question below. For each question bubble in the box for the response that is most correct. If you have any questions, please ask your teacher for help.

	This Is Very True For Me	This Is a Little Bit True For Me	This Is Not True At All For Me
1. I like learning math.			
2. Math is boring.			
3. Learning new math is fun for me.			
4. Math is important through life.			
5. I can concentrate on math better after singing to come to the rug.			

6. I can concentrate on math better after exercising before coming to the rug.			
7. I can concentrate on math better after doing breathing and calming movements before coming to the rug.			

APPENDIX C

STUDENT QUESTIONNAIRE SURVEY RESULTS

Student Questionnaire Survey Results

	VERY TRUE	MOSTLY TRUE	NOT AT ALL TRUE	
I Like Learning math.	17	4	1	
Math is boring	3	2	17	
Learning math is fun.	17	5		
Math is important throughout life.	17	4	1	
I can concentrate better after singing.	9	6	7	
I can concentrate better after exercising.	11	6	5	
I can concentrate better after doing calming movements.	14	1	7	

APPENDIX D

FIRST CYCLE CODING CATEGORIES FOLLOWED BY DESCRIPTIVE CODES

Disruptive

Playing in another student's hair, Touching other students, Calling out loudly, Bumping into others, Arguing, Talking to others, Playing with toys, Pulling on students, Waving hands in air, Dancing around

Off-task

Not at seat, Playing with pencils, Covering up head during instruction, Walking off, Playing with shoes, Scooting around during group time,

Breaking Rule

Leaving seat without raising hand, Laying down in group time, Sitting under tables at group, Calling out answers

(Note: these are rule breaking behaviors which may not fit into the off-task and disruptive categories.)

Redirection

Called back to group, Moved to another seat, Argument intervention

On-Task

Working, Eyes on speaker, Raising hand,

Participating

Actively engaged in transition, Actively listening or working on problems, Sitting in group, Asking questions

Involved in Learning

Asking questions, Raising hands, Giving answers quickly,

Routines

Moving to rug, Moving to seats

APPENDIX E

FIELD NOTES OF OBSERVATIONS AND CODING

April 25th **Transition:** Singing to Transition **Lesson:** Surveying Classmates to Collect Data

These notes were taken during and following a sing to transition time.

Of note is F3 was disruptive three times. M 22 was off-task four times. M5 was disruptive and had to be redirected. He continued with his behavior. Students were redirected six times.

Time	Descriptive Field Notes	Coding 1
10:23	<p>F6 was the only student who didn't come to the rug. Teacher called her. M22 moved under table.</p> <p>F6 scooting back and forth in group. Students calling out, teacher states "I am looking for hands"</p> <p>Students talking out of turn. Teacher asks friends to be listening and ready.</p> <p>M17 using hands and knees like a drum. F3 playing with hair. M5 rocking on stool. This continued for the whole observation time.</p>	<p>Off-task, redirection Breaking rules Off-task Breaking rules, redirection Breaking rules, redirection</p> <p>Off-task Disruptive Off-task</p>
10:28	<p>F3, M22, F6 not participating in turn and talk.</p> <p>F3 playing in hair. Asked to stop.</p>	<p>Not participating Disruptive, redirection Disruptive, redirection</p>

	<p>F3 still playing in hair, asked to turn around and stop.</p> <p>M5 rocking on stool, asked to move to rug.</p> <p>M22 moved back under the table.</p> <p>M5 moved back to stool.</p> <p>M17 trying to talk to M15.</p> <p>M19 calling out.</p>	<p>Disruptive, redirection</p> <p>Breaking rules</p> <p>Breaking rules</p> <p>Disruptive</p> <p>Disruptive</p>
10:33	<p>M22 and M8 covering faces with shirts.</p> <p>F1 playing in hair</p> <p>Students move to independent work.</p>	<p>Off-task Disruptive</p> <p>Routine</p>

April 26th 10:43 AM **Transition:** Singing to the rug **Lesson:** Creating a Class Graph from Data Gathered

These notes were taken during and following a song for transition time. Of the 14 students displaying off-task and disruptive behaviors, 12 were males and two were females. M15 was off-task two times, and disruptive once. M22 was off-task twice and disruptive twice. Students were redirected four times.

Time	Descriptive Field Notes	Coding 1
10:43	<p>M14 shoves students and dives over others to get to the rug.</p> <p>M22 was not at rug when song was done.</p> <p>M3 playing with pencil.</p> <p>M15 head covered up and laying down.</p> <p>M24 asked to pay attention.</p> <p>10 students raised hands when asked a question.</p> <p>M16 went to get water.</p> <p>M19 raised hand to give answer.</p> <p>M3 and M15 talking at seat. They continuously check to see if the teacher is watching.</p>	<p>Disruptive</p> <p>Off-task</p> <p>Off-task</p> <p>Off-task</p> <p>Redirection</p> <p>Involved</p> <p>Breaking Rule</p> <p>Involved</p> <p>Disruptive</p> <p>Disruptive</p> <p>Involved</p>

	M12 yelling out. M9 quiet hands, answering questions. M5 calls out. 5 students raise hands.	Disruptive Involved
10:48	Playing with pencil. Teacher called M3 to pay attention M19 calling out. Asked to wait. M22 turned away from work we are doing, and playing with shoe. M16 moving places. M19 raised hand and waited to be called on. M5 and F13 arguing. Teacher asked them to stop. 5 students raising hands to give the next step. M22 waving hands in the air. M22 begins talking with M3. F6 playing with shoes. M16 gets up and walks away. Asked to come back. M15 up dancing M19 walks around the group. Teacher gently motions him to sit.	Off-task Redirection Disruptive Off-task Breaking rule On-task Disruptive Involved Disruptive Disruptive Off-task Off-task, redirection Off-task Off-task, redirection
10:53	All students appear to be participating in group activity. F7 moves to seat. M8 walking around room. Moved into independent work.	Involved On-task Off-task Routine

May 1st 10:30 **Transition:** Physical Activity **Lesson:** Building Graphs with Unifix Cubes

These notes were taken during and following a physical activity transition time. Females moved to the rug quickly. M9 was up front and participating. M22 and M14 were together displaying off-task and disruptive behaviors. Four redirections were noted. Six males were observed with off-task or disruptive behaviors and three females. Students were redirected three times. M14 was disruptive four times, breaking rules two times,

and not participating one time. M22 was disruptive five times and breaking rules one time.

Time	Descriptive Field Notes	Coding 1
10:30	<p>5 F and 1 M move quickly to rug. 4 F are at front of board, 1 M M22 and M14 run into one another. M24 turned backwards talking to someone. M14 is bothering M22. 3 Males have moved to front. M5 is running around room.</p> <p>M14 is not participating.</p> <p>M19 went to talk to M22 and M14. M22 is moving in front of other students so they cannot see. M22, M14, and F18 begin to run around the room. M22 and M14 on the floor pulling on M8. M9 is participating.</p>	<p>On-Task Male/Female Disruptive Disruptive Disruptive Male/Female Breaking Rules Not participating</p> <p>Disruptive Disruptive</p> <p>Breaking Rules Disruptive Participating</p>
10:35	<p>Students are asked to sit around the rug. M19 begins chanting "UNO". 6 students were called out as working quickly. F20 shoved a student, teacher asked her to make better choices. M19 and M22 arguing over where to sit. Asked to use kind words.</p> <p>F18 moved from the group. M3 was sitting nice, drew first. F2 arguing with others. M5 sitting nicely and paying attention. M19 waited with hand raised. Students are all sitting around the rug and participating.</p>	<p>Routines Disruptive On-task Disruptive, Redirection Disruptive, Redirection</p> <p>Redirection On-task Disruptive On-task Involved Participating</p>
10:40	<p>Students are actively involved in whole group lesson. Talk is related to activity. M14 lays down.</p>	<p>Involved</p> <p>On-task Breaking rules Disruptive, Redirection</p>

	<p>M19 and M22 arguing. Teacher intervenes.</p> <p>Students move to whole group activity.</p> <p>M14 wraps his arm around M22 as he moves to his seat.</p> <p>M19 begins saying “Onomatopoeia” over and over.</p>	<p>Routine</p> <p>Disruptive</p> <p>Disruptive</p>
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May 2nd 10:27 AM **Transition:** Physical Activity **Lesson:** Probability with Spinning on Fraction Circles

These notes were taken during and following a physical activity movements transition time. M9 was observed participating in the transitions movement. Three males, M14, M8, and M22, delayed coming to the front and were bumping into one another and tugging pillows away. When transition ended, M14 was arguing with M8 and M22. Two F and one M did not participate in movement. There were not any females noted as being off-task or not participating. M14 was disruptive six times and breaking rules one time. Four redirections were noted.

Time	Descriptive Field Notes	Coding 1
10:27	<p>1 boy and 3 girls in the front.</p> <p>M 8 and M10 bumping into others.</p> <p>M14 goes to sit down holding a pillow, M8 is struggling to get it back.</p> <p>5 boys have moved to the front.</p> <p>M9 is being active.</p> <p>M14 laying in the floor while others are trying to do the movement activity.</p> <p>All students but F2, F4, and M22 were participating.</p> <p>M14 arguing with M8 and M22.</p> <p>Teacher redirects with a call back.</p> <p>M14 complains he was hit; he was laying in the floor.</p>	<p>On-task</p> <p>Disruptive</p> <p>Disruptive</p> <p>On-task</p> <p>Participating</p> <p>Disruptive</p> <p>Participating</p> <p>Disruptive</p> <p>Redirection</p> <p>Disruptive</p>

	M16 asked to sit down. M14 lays down. 3 students raising hands to answer questions.	Redirection Breaking rule Involved
10:32	M11 turned tying shoes. M3 comes to class late and quickly sits down. M16 turning lights on shoes in his shoes. M19 raising hand to answer questions. Question was asked and 10 students raised hands. Question was asked and students began all talking out. Call back “ Scooby Dooby Doo” was used to get students on track. M17 moves under a table. M14 calls out answer. Teacher “Looking for those hands.	Off-task On-task Disruptive Involved Involved Breaking Rule Redirection Breaking rule Redirection
10:37	M22 talking to another student. Students appear to be listening. M9 lays down. Teacher asks him to sit up. M19 yells out over another student speaking. Students move to seat M22 grabs a student’s feet as he tries to move. M14 chases M22.	Disruptive On-Task Breaking Rules, Redirection Disruptive Routines Disruptive Disruptive

May 11th 9:45 am **Transition:** Calming Movements **Lesson:** Graphing Butterfly Life Cycle Times

These notes were taken during and following a calming movements transition time. Observations show F2 was often disruptive with behaviors; talking, getting in other student’s space, hitting students as she danced around. F6 was often off-task, but was not disruptive in her behaviors. M9 did not participate in the calming movement activity, but was not being disruptive either. M19 argues with other students, talks out, touches others. M19 was disruptive six times and off-task five times. M19 has to be redirected several times. M22 often moves away from the group. Of the 12 students

who were displaying off-task and disruptive behaviors, two were females and 10 were males. Six redirections were needed.

Time	Descriptive Field Notes	Coding 1
9:45	<p>4F's come to the rug first. M 3, M15, M9 were asked to come to the rug. M9 was asked again. M8 and M22 move behind teacher to talk. M19 talking out, touching a student. M22 begins doing the floss dance during the calming movement. Then turns and walks to back of room. M19 turns and talks to someone behind him. F2 bounces in front of three students, then talks to another student. M24 gets face to face with a student and interrupts. M16 leaves the group for water. M15 sits back down. F2 moves to another group of students and talks.</p>	<p>On-task Redirection Disruptive Disruptive Off-task Disruptive Disruptive Off-task On-task Disruptive</p>
9:50	<p>M22 sits down. M3 is not participating, but looking around. F23 arms crossed not moving. All but 1 male and 1 female are participating. M5 sat down, is talking to F 23. 5 females are at the front of the group. M9 not participating. M19 playing with paper. Teacher asks to stop. Teacher has to take paper from student. M5 and M19 begin shushing one another. Teacher asks them to stop. Then has to get M5. M22 playing with items at a desk. M15 sat down. M16 went to get tissues. 15 students came to rug quickly to start.</p>	<p>On-task Off-task Not participating On-task On-task Off-task Off-task Redirection Disruptive Redirection Off-task On-task Off-task On-task</p>
9:55	<p>M 19 was asked to come to the group. M8 and M12 moved. F6 walking around. M19 standing in the middle of the group. Asked to sit down. M15 pulled a tooth.</p>	<p>Redirection Off-task Off-task Disruptive Disruptive</p>

	<p>M19 lost work, had to be given new work. M19 still walking around. M22 on knees slowly moving away from the group. M19 brought a book forward. M22 got up and moved to a table. F7 giving great answers. M16 giving answers. M19 sticking paper on his lips to move with his mouth. 13 students are participating. M22 walking on knees back and forth. F20, F2, F6, M22, M24 asked to come back to the group.</p>	<p>Disruptive Disruptive Off-task Off-task Off-task Involved Involved Off-task Participating Disruptive Redirection</p>
10:00	<p>5 students were quick to give their answers. F7 redirected to the rug. F2 begins dancing and hitting students around her with swinging arms. Students moved into independent work. They took work back to their seats. M17 playing with paper. M19 arguing with others as he moves back. M12 arguing with F7 over a seat.</p>	<p>Involved Redirection Disruptive On-task Off-task Disruptive Disruptive</p>

May 15th, 2018 10:30 am **Transition:** Calming Movements Transition **Lesson:** Using Part Part Whole Boxes to Solve Problems

These notes were taken during and following a calming movements transition time. Of note is student M9, who did not participate in the transition at all. M9 had been up front and very active during the physical movement transition. M15 was off-task for much of the instructional time, but rarely disruptive to those around him. It is also important to note that of the students being disruptive and off-task, only one was a female. M19 was disruptive three times, and off-task two times. M15 was disruptive five times and off-task six times. 6 redirections were needed during this observation time.

Time	Descriptive Field Notes	Coding 1	Coding 2
10:30	<p>F2 “Mrs. Sizemore, he said you don’t know nothing.”</p> <p>M19 “I only said she doesn’t know everything.”</p> <p>M 19 asked 2 times to come to the front.</p> <p>Females moves to front.</p> <p>M19 moved to teacher because of bothering others.</p> <p>M 8 and M 22 moved to sit back down.</p> <p>M9 not participating, but watching.</p> <p>M8 turned around backwards to not do movements. Was asked to turn around.</p> <p>M19 began participating and staying to self.</p>	<p>Disruptive</p> <p>Disruptive Redirection</p> <p>Redirection</p> <p>Off-task Not participating Off-task, Redirection</p> <p>On-Task</p>	<p>arguing</p> <p>not following directions</p> <p>avoiding</p> <p>Participating</p>
10:35	<p>Students were asked to sit down.</p> <p>M19 clapping hands moving around.</p> <p>M15 looking at camera making gestures.</p> <p>F2 reaching behind herself touching students in back.</p> <p>M24 talking to M 12.</p> <p>5 students are raising hands to answer questions.</p> <p>5 males are observed counting on hands solving word problems.</p> <p>F2 making faces at students behind her.</p> <p>M 5 playing with a sentence strip.</p> <p>M 24 turns and makes a shooting gesture at M 15. M 15 begins doing it back.</p>	<p>Direction</p> <p>Disruptive</p> <p>Off-task</p> <p>Disruptive</p> <p>Disruptive</p> <p>Involved</p> <p>Involved</p> <p>Disruptive</p> <p>Off-task</p> <p>Disruptive</p>	<p>Attention seeking Bothering others</p> <p>playing</p>
10:40	<p>M 15 making dancing motions with his hands.</p> <p>M 15 was playing with glue sticks.</p> <p>M3 talking with M15. M 15 puts his pencil and glue stick together and makes the motion of shooting a machine gun.</p> <p>M15 then gets into another student’s pencil box.</p> <p>6 students are observed counting on fingers, presumably to answer question.</p> <p>M24 turns and talks to M12.</p> <p>M3 AND M15 are working together to solve problems.</p>	<p>Off-Task</p> <p>Off-task</p> <p>Disruptive</p> <p>Off-task</p> <p>Off-task</p> <p>Disruptive</p> <p>On-Task</p>	<p>Playing</p> <p>playing</p> <p>working</p>
10:45	<p>M15 making another glue stick and pencil to look like a gun and making shooting motions.</p>	<p>Off-Task</p>	<p>playing</p>

	<p>M16 talking to others around him. T asked him to stop.</p> <p>6 students are raising hands to answer questions.</p> <p>Students all appeared to answer chorally.</p> <p>M3 getting pencils from M 15.</p> <p>M15 was asked to look at the problem.</p> <p>M24 asked to leave another student alone.</p> <p>10 students were raising hands to answer questions.</p> <p>M15 had pencils in his mouth playing with it.</p>	<p>Disruptive</p> <p>Involved</p> <p>Involved</p> <p>Disruptive</p> <p>Redirection</p> <p>Redirection</p> <p>Involved</p> <p>Off-task</p>	
10:50	<p>M19 asked to sit back down.</p> <p>M3, M15, M 9 talking about the upcoming assignment. They were asked to stop.</p> <p>Students move to independent work.</p>	<p>Redirection</p> <p>Disruptive</p> <p>Routines</p>	