

Fall 12-11-2016

THE CONNECTION BETWEEN MOVEMENT AND STUDENT ENGAGEMENT IN A KINDERGARTEN CLASSROOM

Catherine B. Lay
Hamline University

Follow this and additional works at: https://digitalcommons.hamline.edu/hse_all



Part of the [Education Commons](#)

Recommended Citation

Lay, Catherine B., "THE CONNECTION BETWEEN MOVEMENT AND STUDENT ENGAGEMENT IN A KINDERGARTEN CLASSROOM" (2016). *School of Education Student Capstone Theses and Dissertations*. 4253.
https://digitalcommons.hamline.edu/hse_all/4253

This Thesis is brought to you for free and open access by the School of Education at DigitalCommons@Hamline. It has been accepted for inclusion in School of Education Student Capstone Theses and Dissertations by an authorized administrator of DigitalCommons@Hamline. For more information, please contact digitalcommons@hamline.edu, lterveer01@hamline.edu.

THE CONNECTION BETWEEN MOVEMENT AND STUDENT ENGAGEMENT IN
A KINDERGARTEN CLASSROOM

by

Catherine B. Lay

A capstone submitted in partial fulfillment of the
requirements for the degree of Master of Literacy Education.

Hamline University

Saint Paul, Minnesota

November 18, 2016

Primary Advisor: Susan Manikowski
Secondary Advisor: Cindy Goldade
Peer Reviewer: Theresa Phillippo

Copyright by
CATHERINE B. LAY, 2016
All Rights Reserved

To my incredible husband. This capstone journey took place during our engagement, wedding, and first months as newlyweds. You supported and encouraged me through it all. Thank you for all the sacrifices you made to turn this idea into reality. I couldn't have done it without you.

TABLE OF CONTENTS

CHAPTER ONE: Introduction

Introduction.....	1
Childhood Memories.....	2
Rationale.....	3
Context.....	3
Current Reality.....	5
Personal Influences.....	5
Summary.....	7

CHAPTER TWO: Literature Review

Introduction.....	9
The Brain and Movement.....	10
Brain Hemispheres.....	11
The Vestibular System.....	12
Movements to Stimulate the Vestibular System.....	13
School Examples.....	15
Montessori.....	15
Liink Program.....	16
Finland.....	18
East Asia.....	19

Current Reality.....	21
Kindergarten: The New First Grade.....	21
Sample School.....	21
Childhood Health and Wellness.....	22
Obesity.....	22
Stress.....	23
Strategies to Increase Movement in the Classroom.....	24
Recess.....	24
Brain Gym®	24
Smart Steps.....	25
Content and Movement.....	25
Yoga Calm.....	27
Student Engagement.....	27
Summary.....	29
CHAPTER THREE: Methods	
Introduction.....	31
Research Paradigm.....	31
Setting.....	32
Classroom.....	34
Participants.....	35
Method Design.....	36
Summary.....	39

CHAPTER FOUR: Results

Introduction.....	41
Participants.....	42
Incomplete Work Results.....	42
Redirection Results.....	43
Movement Seeking Behavior Results.....	45
Interrelationship of Results.....	46
Take A Break Chair.....	46
Movement Corner.....	47
Attitude Survey.....	48
Control Group.....	48
Additional Recess Observations.....	50
Summary.....	52

CHAPTER FIVE: Conclusion

Introduction.....	55
Analysis of Results.....	56
Literature Review Connections.....	58
Suggestions for Improved Action Research.....	59
Implications for the Future.....	61
Conclusion.....	62

APPENDICES

Appendix A: Consent Letter.....	67
Appendix B: Principal Letter.....	70

Appendix C: Attitude Surveys.....	72
Appendix D: Quantitative Data Recording Sheets.....	75
Appendix E: Movement Corner Pictures.....	78
Appendix F: Brain Gym® Movements.....	80
REFERENCES.....	82

LIST OF TABLES

Table 1 – Sample Schedule.....	17
Table 2 – Week 1 Observations During Independent Work.....	64
Table 3 – Week 2 Observations During Independent Work.....	64
Table 4 – Week 3 Observations with Movement Intervention.....	65
Table 5 – Week 4 Observations with Movement Intervention.....	65
Table 6 – Week 1 Control Group Observations.....	66
Table 7 – Week 4 Control Group Observations.....	66

LIST OF FIGURES

Figure 1 Incomplete Work Results.....	43
Figure 2 Redirection Results.....	44
Figure 3 Movement Seeking Results.....	45
Figure 4 Control Group Results.....	50, 57
Figure 5 Summary of Results.....	53, 56

CHAPTER ONE

Introduction to Capstone

Introduction

As a kindergarten teacher, I have the privilege of facilitating the growth and development of 23 five and six year olds Monday through Friday. In kindergarten we learn how to read, develop number sense, compare and contrast text, and write sentences. Kindergarteners, perhaps even more importantly, learn the routines and expectations of school, how to take turns and problem solve, and social skills for interacting with peers in a positive, respectful manner. I somewhat jokingly say that kindergarten teachers are in the business of teaching little ones how to be human beings, moving from a state of self-absorption towards self-awareness and awareness of others.

I feel my school is strong in keeping high expectations academically for all students. We are very focused on making sure all students can read at the end of kindergarten and constantly pushing them towards the next level in their reading and math skills. While this is admirable, we are not keeping in mind the needs of the whole child and responding to what our students are showing us they need on a regular basis. By spending the whole afternoon on rigid reading instruction, we are taking away time to play, exercise, create, and explore. Our students are reacting to this with more behaviors and feelings of frustration. This student response and need for a solution to this

observation brings me to my research question: *How will regular movement opportunities impact student engagement in a kindergarten classroom?*

In this first chapter, I will further describe my personal experiences that have fueled my desire to investigate this question. I will highlight the observations and learning I have acquired both as a student and as an educator. I will describe the context of my teaching and the current reality my students are facing. I will share the outcome I hope to achieve through this research project.

Childhood Memories

I remember long summer days, full of sunshine, and backyard adventures.... cartwheeling through the sprinkler, racing down the street on roller blades, running to the top of the hill and rolling down, and pumping my legs to make my swing touch the sky. I remember racing around the track at school and pushing my body to go faster until it felt as if my heart might explode as I reach to be the first one to the big tree marking the end of the course in Physical Education Class. I remember coming back in from recess with an exhausted body pushed to the limits and a heart full of the joyful memories of our outside adventures. I remember crashing into bed at night, body and brain worked to the max, and eagerly awaiting the start of the next new adventure tomorrow.

Unfortunately, my happy memories of playing outside on a daily basis with not a care in the world are something foreign to many of our students today and it is having extreme consequences on our children. Children are spending half as much time outside as they did 20 years ago (Juster, 2004). According to the Centers for Disease Control, childhood obesity has doubled in the last 30 years.

Rationale

While this decrease in exercise, outdoor exploration, and free play time is happening in our schools and our children's lives, there is an increase in academic rigor and expectations being placed on our students. In my six years as a kindergarten teacher, the end of year expectations has risen dramatically for our five and six year olds. My district has moved from an end of year goal to read at a Fountas and Pinnell level C up to level D, from reading 20 sight words to 54 sight words, and from counting to 31 to counting to 100. We have transitioned from half-day kindergarten to full-day, every day kindergarten for all students and have lost our Physical Education, Art, and Music classes. We are constantly being pressured to decrease the 20 minutes of free play time we have at the end of the day for our students and replace it with additional reading instruction. Over the past two years, we have seen a dramatic increase in behavioral concerns for our students. I can't help but wonder if these behaviors are a response to the ever increasing academic demands and the dwindling time for play, movement, and exploration. This concern leads me to my research question: *How will regular movement opportunities impact student engagement in a kindergarten classroom?*

Context

In my kindergarten classroom, I notice a decrease in the attention and stamina in my students in the afternoon. Unfortunately, this is when we have our two hour reading block. Towards the end of the day, I notice behaviors escalate and my reminders about being a good listener and staying on task become much more frequent and are addressed to many more students. I see students bouncing in their chairs, talking to friends, playing with woodchips found on the carpet from recess, or just dozing off into space. I see

bodies full of energy and unable to follow our expectations to be crisscross applesauce, voice off, eyes on the teacher, and wait your turn to talk. This doesn't feel like the best environment for meaningful learning to occur. I wonder if responding to our students' needs that they are displaying for us on a regular basis with purposeful movement opportunities would solve these engagement issues. I wonder if creating an environment that supports what our brains and bodies need to learn new information would have a dramatic impact on student learning and attitudes about school.

In each one of my six years of teaching kindergarten, a few students stand out in my memory: Faith, Tyler, Noah, Gavin, and Quinn (names have been changed). All these five and six year olds were full of energy, blurting out, lacking impulse control, and all referred to our school behavior intervention plan. These are the kids that would push me to my limits each day at school, the ones I would talk about every night at the dinner table, and the faces I would see each night as I fell asleep thinking about how I could better meet their needs. I think of the parents of these students and how exhausted they appear from trying different diets and activities in an effort to make a positive impact on their child's behaviors. Some of these students are still on behavior plans and I wonder if this will be true for them throughout their whole educational journey. I believe our schools are not meeting the needs of so many of our students. I wonder how different Faith, Tyler, Noah, Gavin, and Quinn's first year of school experiences would have been if I had been able to respond to their needs by incorporating more movement into our classroom.

Current Reality

The need for more movement, play, and time outside in our schools is a hot topic right now. When I open up my Facebook newsfeed there are articles being shared daily that hit right on this concern. When I listen to the public radio station on my drive into work, I frequently hear reporters interviewing schools that are noticing these issues and trying out a different approach to education by incorporating more movement and play into the school day. I feel strongly that this is what our children need; and, as educators, we need to respond to their needs. In my research I will highlight schools and countries that are already doing this and seeing strong results. My goal is to bring this research and action plan into my school and dramatically impact the engagement of my kindergarteners.

There are many examples that will be explored in this paper of schools and countries that are responding to our students' needs by incorporating more movement, play, and time outside into the school day and gaining impressive results in achievement levels because of it. One example to highlight now is Finland. Finland is upheld as a leader in this approach to education. Finland is consistently ranked at the top for education system and students in Finnish elementary schools receive 75 minutes of recess each day, compared to the average 27 minutes of recess in American elementary schools (Taylor, 2012). With these impressive results, it is a wonder why more schools are not allowing additional time for movement during the day.

Personal Influences

I was fortunate to learn from a Finland native during my student teaching experience in college. Ulla grew up in Finland, studied education there, and moved to the

United States when she got married. Ulla teaches first grade and was my mentor teacher during my last semester of my undergraduate program. I loved hearing her stories about what education is like in Finland and her experiences navigating the American school systems. Ulla feels so passionately that our students need more time to move, play, and be outside that she continued to advocate for this to her principal for years until he granted her permission to take her class outside for a short second recess each day. No other class was given this same permission. Ulla's students met or exceeded the same benchmarks as other first graders, even though they spent a little less time in the classroom. It was shocking to me that this benefit of 20 additional minutes of outside time would not be shared with all the students in the school. This experience student teaching with Ulla, hearing about Finland's beliefs on education and children, and seeing the benefit of additional movement in the school day formed my early beliefs about education.

My feelings about the importance of movement in the classroom were reaffirmed and further ignited through an elective course at Hamline University as part of my master's program. I attended a Brain Gym® class and learned about the connection between different movements and the impact on the brain. We learned different movements to increase focus, comprehension, coordination, and processing. We discovered the importance of engaging both sides of the brain and including movements that cross the midline of the body. As students in the class, we would practice each series of movements throughout the course and I would feel a difference in my own body. After completing a series of movements, I would feel energized, focused, stress-free, and ready to take on the task ahead of me. I felt excited about the potential Brain Gym®

could have in my classroom and in my own life. I started using movements from Brain Gym® when I felt stressed, overwhelmed, or unfocused. My husband now reminds me to “Do some owls!” when I start feeling nervous about a task ahead of me. I want to learn more about integrating meaningful movement opportunities into my classroom and the impact this change has on student learning, engagement and behavior. This desire formed my research question: *How will regular movement opportunities impact student engagement in a kindergarten classroom?*

Chapter Summary

In my six years as a kindergarten teacher, I have observed a decrease in movement opportunities and an increase in the rigor of the kindergarten standards. I have experienced an increase in the behavior and lack of engagement in my students and wonder if there is a connection. I see kids with bodies full of energy and no appropriate outlet provided for them. These students are the ones who end up on a behavior intervention plan. I wonder if addressing this need for movement would impact kindergarteners’ behaviors, attitudes, and engagement in the classroom. This brings me to my research question: *How will regular movement opportunities impact student engagement in a kindergarten classroom?*

The need for movement and play is a hot topic right now. Social media is flooded with stories about schools integrating more movement and seeing impressive results. My own personal experiences as a kindergarten teacher, learning from my Finnish mentor teacher, and taking additional professional development courses focused on the brain and movement have influenced my beliefs that movement should be a necessary element for a productive learning environment.

Introduction to chapter two. In the following chapter, I will outline the research on the connection between movements, the brain, and learning. I will look at how the brain develops and what it needs to grow and learn. I will research how movement supports this process. I will also research other schools and countries who have increased the amount of time for recess, play, and outside exploration and reflect on how this impacts student learning and engagement. I will dive into programs and resources that support ways to increase movement throughout the school day in order to make a recommendation for my classroom and what my students need.

CHAPTER TWO

Literature Review

Introduction

In this section, I will be analyzing and reflecting on the research of other experts to build background and new learning as a first step in answering my research question: *How will regular movement opportunities impact student engagement in a kindergarten classroom?* I will begin with research on how the brain functions and the required conditions for optimal learning. I will look at how movement is tied to learning and engagement. Next, I will explore the current reality of many schools in the United States in terms of how much movement students are receiving during the school day and compare it to a few selected schools around the world. I will look at schools and teachers that are taking a new approach and working to incorporate more movement into the school day. I will highlight strategies to include in a primary classroom to increase movement opportunities and to get our brains ready to learn. Resources and programs to increase movement opportunities will be explained. I will research what student engagement means and looks like in a classroom. I will conclude this chapter with a summary of the needs and benefits of movement and strategies to increase movement in a primary classroom.

The Brain and Movement

The body and the brain are powerfully connected. What the body is doing, how and when it is moving, and what it is surrounded by impact the brain. Gill Connell and Cheryl McCarthy are authors of *A Moving Child is a Learning Child*. Learning begins with the body and Gill Connell explains that the body “is our point of reference. And for children, it’s even more so because the body is the brain’s first teacher” (2013, p7). It is through the body that children learn and experience their world and the brain makes meaning out of these experiences. As our bodies are moving and exploring the world, our brains are making sense of it. Professors Erin Reilly, Connie Buskist, and Michael Gross of Auburn University at Montgomery state, “Physical activity promotes biological changes in the brain that enhance adaptability and connections between brain cells; this brain activity is necessary for learning as well as for the growth of new brain cells” (2012, p63). The more we move, the more brain cells we grow, and the more we learn.

These neuron connections and learning experiences are facilitated by a process called myelination. “Myelination both speeds up processing power and helps cement experiences into permanent conscious or subconscious memories” (Connell & McCarthy, 2013, p23). This allows us to form memories or connections and move towards automaticity. Movement can powerfully impact myelination. Connell explains, “Even though the brain records every experience, those involving multiple inputs – physical, sensory, and emotional – will trigger the myelination process. The stronger the experience, the more myelin will grow” (2013, p23). When we create multisensory, movement-oriented learning experiences, we are allowing the brain to form deeper, faster, and more meaningful connections.

The concept of automaticity is crucial to brain development and learning. Automaticity is movement without having to think about how to make it happen (Connell & McCarthy, 2013, p24). While a younger child has to think carefully about how to write his name or tie his shoes, an older child can do these skills automatically, without having to use a lot of brain power to process through the steps. “The human brain is capable of doing only one thinking task at a time. But it can layer that thinking task on top of one or more automated processes. When movement becomes automated the child’s mind will be free to think” (Connell & McCarthy, 2013, p9). Children need to develop movement skills first and then are able to develop higher-level thinking skills. Professors Paul Chandler and Andre Tricot agree with Connell and McCarthy, as they have also studied integrating movement and learning. In their paper, *Mind Your Body: The Essential Role of Body Movements in Children’s Learning*, Chandler and Tricot discuss how adding movement into lessons can “free up working memory resources that can be used to create deeper understanding” (Chandler & Tricot, 2015, p366). Our goal for all students is to have a deep understanding of our learning targets and movement can help us achieve this.

Brain hemispheres. In order for the brain to be working at its highest potential, both sides of the brain must work together and this connection is developed through movement (Brown, 2012, p22). The left hemisphere is more logical and future-oriented. This is the part of the brain that plans, thinks sequentially, sees details and analyses them, and controls feelings. The right hemisphere uses intuition and sees the big picture first. It is more free with feelings, thinks simultaneously, and is focused on the present (Connell & McCarthy, 2013, p111). By utilizing both sides of the brain, we are able to

think more complexly. Movements that cross the midline of the body fire up left-right brain communications. “As this process unfolds through midline development, body control increases, learning becomes faster and easier, and the ability to analyze and apply learning into actions and ideas increase exponentially” (Connell & McCarthy, 2013, p111). This is exactly what teachers wish their students could do: control their bodies, learn easier, and apply their new understandings.

Understanding what influences the brain can have a powerful impact on student learning and engagement. Dr. Eric Jensen has researched brain-based learning and written numerous books on this subject. Dr. Jensen states, “We now know that new neurons are highly correlated with memory, mood, and learning. Of interest to educators is that this process can be regulated by our everyday behaviors. Specifically, it can be enhanced by exercise, lower levels of stress and good nutrition. Schools can and should, influence these variables” (2008, p411). This is a calling for schools to make changes in order to better support our students’ brains and influence their learning. Incorporating regular and frequent movement opportunities into the school day can be one strategy to grow new neurons and improve learning. Dr. Jensen highlights the fact that “exercise is strongly correlated with increased brain mass, better cognition, mood regulation, and new cell production” (2008, p411). With movement allowing the brain to work strongly, students will be able to actively engage in their learning.

The vestibular system. Movement can be a powerful answer to what our students need to be successful in school. Our bodies can tell us what they need and what our brains need. Connell points out, “Surprising as it may be, kids often fidget because they’re trying to concentrate. Sitting still is one of the most advanced demonstrations of

vestibular maturity, and the vestibular system is developed through movement. So if you want a child to learn to sit still, you've got to let him move" (2013, p86). Here is a look at how the vestibular system works and impacts student learning.

The vestibular system is the entry way into the conscious brain and allows us to be alert and responsive (Hannaford 2005, p169). Often times learning difficulties such as dyslexia, Attention Deficit Disorder, or Attention Deficit Hyperactive Disorder result from a lack of vestibular system development or disturbance to the vestibular system (Hannaford 2005, p169). Our students who can't sit in a chair without falling over, seem to have no perception of personal space, or choose to roll or spin on the carpet circle instead of sitting up crisscross applesauce are showing a need for more vestibular development.

These students need more movement opportunities. Hannaford explains, "When children move, damaged tissue to and from the vestibular system can be overridden as new nerve nets develop and myelinate" (2005, p172). The students that often feel frustrated at school and their constantly busy bodies that start to drive their teachers a little crazy can find an appropriate outlet and solution in movement. Dr. Jensen agrees and reiterates, "The human brain can and does grow new neurons...(this process) can be enhanced by exercise, lower levels of stress, and good nutrition" (Jensen, 2008, p411). I wonder how different the school experience of these busy students would be if we were able to give them the movement opportunities their brains and bodies need.

Movements to stimulate the vestibular system. The vestibular system manages our sense of balance which underlays all aspects of our daily life and is critical for children's development and school readiness. Connell explains, "The highest form of

balance is stillness. But children can't learn to sit still by practicing sitting still" (2013, p89). I have been guilty of having my students who can't sit and listen during circle time practice sitting still, when what they really need is movements to stimulate the vestibular system. Instead of practicing sitting still, I should have been incorporating opportunities to spin, roll, or hang upside down since these movements stimulate the vestibular system. Connell notes that all children need daily vestibular stimulation and activities or play that includes spinning slowly, rolling slowly, or hanging upside down allows the brain to absorb and assimilate these physical sensations and build balance (2013, p87).

Brain Gym® focuses on instilling balance to every skill and aspect of life. Brain Gym® outlines specific movements and series of movements that stimulate different areas of the brain in response to what the body needs. Brain Gym® recommends the following movements as strategies to stimulate the vestibular system. Pictures of these movements are in Appendix F.

- Brain Buttons – This movement involves placing one hand on your navel and the other hand gently rubs the indentations between the first and second ribs under the clavicle. These movements alert the vestibular system and stimulates blood flow to the brain (Hannaford 2005, p130).
- Hook-ups – This movement requires crossing one ankle over the other and crossing the arms, clasping the hands, and inverting them up toward your heart. Now rest your tongue on your hard palette behind your teeth. These actions stimulate both hemispheres of the brain and the vestibular system, which can facilitate focus, learning, and memory (Hannaford 2005, p134).

- The Elephant – For this movement, place your left ear onto your left shoulder and extend your left arm like a trunk. Your upper body will bend as your left arm draws a Lazy 8 pattern with your eyes following your fingertips. Repeat this action slowly on the right side too (Hannaford 2005, p140). This movement can have a powerful impact on students needing more vestibular system stimulation, in particular students with ADD.
 - Lazy 8 – Trace an infinity sign beginning at the center, up to the left, around and to the right. Repeat this movement without moving your head, just your eyes. This movement can aid in eye-hand coordination (Brown, 2012, p140).

School Examples

Montessori. Montessori schools are leaders in integrating movement into their daily lessons. Melani Alexander Fuchs has been teaching for 30 years in a Montessori school and is the co-author of *Movement Matters: A Movement Album for Early Childhood Programs*. Fuchs illustrates the Montessori commitment to movement by explaining, “Montessori’s first premise is that movement and cognition are closely entwined, and movement can exchange thinking and learning. In Montessori classrooms all over the world, children access learning by repeating a given sequence of movements, as shown in a Montessori lesson” (2014, p32). These lessons encourage students to move to learn. The Montessori approach not only emphasizes the connection between movement and learning but also highlights the impact movement can have on character. Dr. Maria Montessori states, “The child’s character remains rudimentary unless he finds opportunities for apply his powers of movement to his surroundings” (Fuchs 2014, p33).

Children need to practice movement in order to master it and transfer those movements into other academic, social, or experiential areas. When we see the value of movement instead of the frustration of students seeking this behavior, we are better able to create a cooperative environment that address this fundamental learning need (Rivkin, 2006, p36).

Liink project. The Liink Project was founded by Dr. Debbie Rhea, Professor at Texas Christian University and Associate Dean of Research in Harris College of Nursing and Health Sciences. The mission of the Liink Project is to “bridge the gap between academic, social, emotional, and healthy well-being of children through increased recess and character development” (Rhea, 2015). Dr. Rhea encourages schools to incorporate four-15 minute recesses throughout the day and teach character development three times a week. She believes schools need more unstructured play outdoors, and structured physical education to stimulate the brain for learning.

Two Texas private schools have spent two years implementing the Liink project and have seen impressive results with student behavior, focus, and academic progress. Children demonstrated positive growth in their peer interactions and attitudes towards recess. Attention and focus in the classroom increased by 30 percent, while off-task behaviors decreased by 25 percent (Rhea, 2015). Students were able to cut down on transition time and be ready to learn as soon as they entered the classroom. Dr. Rhea also noted that academic performance on reading and math assessments significantly improved (Rhea, 2015).

The Liink Project recommends the following schedule for kindergarten to second grade:

TABLE 1 – Sample Schedule

School Begins	8:15
Morning Meeting	8:15 – 8:25
Content	8:25 – 9:05
Recess 1	9:05 – 9:20
Content	9:20 – 10:20
Recess 2	10:20 – 10:35
Lunch	10:35 – 11:05
Content (physical education and another co-curricular)	11:05 – 12:40
Recess 3	12:40 – 12:55
Content	12:55 – 2:00
Recess 4	2:00 – 2:15
Content	2:15 – 3:00
School Dismissal	3:00

With the success of these schools, the Liink Project has spread to schools across the country. Some parents and teachers were worried about taking time away from academic instruction and the impact on test scores. A parent at Eagle Mountain Elementary School, after witnessing the impact the Liink Project has had on both her daughter’s social and academic development stated, “It’s that fear that your children are not going to have the highest test scores. Sometimes, I think that we look at a number

verses the whole child” (Pawlowski). It takes a mindset shift to recognize that catering to the needs of the whole child is more beneficial than striving for the highest test score.

Dr. Rhea address the concern and explains the extra time for recess and character development is found by incorporating the 20-minute character development lessons into other areas of the curriculum and needing less time for transitions and redirecting off-task behaviors, which are results of the Liink Program (Rhea, 2015).

Finland. Finland is upheld as a leader in education due to its’ impressive educational system turnaround and outstanding test scores. Finland understands the power of movement and on average, Finnish students receive 75 minutes of daily recess (Taylor, 2012). Finland’s school days for kindergarten through second grade are typically 4.5 hours long. Only three of those hours are devoted to reading, math, and other content areas. However, Finland is ranked in 5th place for reading, 12th place for math, and 6th place for science in the world (Rhea, 2015). Schools in the United States are typically seven hours long, with six of those hours devoted to academic instruction. These extra hours of instruction are not making an impact on our test scores. The United States is ranked 21 in reading, 31 in math, and 24 in science (Rhea, 2015). These comparisons illustrate that responding to what our children’s bodies and brains need has a far greater impact on academic success than extra hours of direct instruction.

Tim Walker is a teacher from Boston who moved to Finland to learn more about their approaches to education. Walker is now a fifth and sixth grade teacher at a Helsinki public school and spent time researching and interviewing teachers throughout Finland. In Finland, students start preschool at six years old and their typical school day is four hours long (Walker, 2015). Unlike most American kindergarten classrooms, these five

and six year olds spend most of their school day playing, with a very short period of time spent sitting down with paper and pencils. The school's direct Maarit Reinikka explains, "It's not a natural way for a child to learn when the teacher says, 'Take this pencil and sit still'" (Walker, 2015). Instead, Finnish teachers offer learning experiences through play. Walker comments on this, "Throughout the morning I noticed that the kindergarteners played in two different ways: One was spontaneous and free form, while the other was more guided and pedagogical (2015).

Time for both structured and unstructured play is exactly what Finland requires of their preschool and kindergarten teachers. Arja-Sisko Holappa, counselor for the Finnish National Board of Education states, "Play is a very efficient way for learning for children. And we can use it in a way that children will learn with joy," (Walker, 2015). Learning with joy is such a powerful concept and something that I think many schools are looking over. If we want to create life-long learners, joy should be tied to each learning experience we provide.

East Asia. Providing additional breaks or recesses throughout the day is one way to respond to the developmental needs of young children. Professors Anthony Pellegrini and David Bjorklund state in their article, *The Role of Recess in Children's Cognitive Performance*, "Young children do not process most information as effectively as older children. The immaturity of their nervous systems and their lack of experiences render them unable to perform higher level cognitive tasks with the same efficiency as older children and adults and directly influences their educability" (1997, p36). Elementary schools need to take this into consideration when creating their schedule and curriculum. Dr. Jensen agrees and reiterates that, "Schools work to the degree the brains in the

schools are working well. When there's a mismatch between the brain and the environment, something at school will suffer" (Jensen, 2008). We need to respond to what our brains need. Pellegrini and Bjorklund remind us that both children and adults learn better and more quickly when a task is distributed, meaning the task is broken up and breaks are offered throughout it, rather than concentrated, when no break is provided for the duration of the task (1997, p36). Recess provides a break from school tasks. In elementary schools, students of all ages receive the same amount of recess minutes, regardless of their stage of development. Some schools are completely disregarding the developmental need for movement and breaks in the day and shortening or eliminating daily recess.

Schools in east Asia are responding to the developmental needs of their students and providing 10-15 minutes of recess for every 40-50 minutes in the classroom (Pellegrini & Bjorklund, 1997, p38). One study compared the number and duration of school days and the number of recesses offered each day among first and fifth grades in Minneapolis, Taipei, Taiwan; and Sendai, Japan. In Minneapolis, both first and fifth grades attend school for 6 hours with 2 recess (at most) offered for the 174 school days. Schools in Taipei have 230 school days with four recesses provided each day. First graders attend school for 4 hours while fifth graders attend school for 8.3 hours. In Sendai, students attend school for 234 days out of the year. First grade students have 5 hours of school with 4 recesses. Fifth grade students have 6.5 hours of school with 5 recesses (Pellegrini & Bjorklund, 1997, p38). Even though students from Taipei and Sendai have more school days than American schools, they spend less time in school than we do. It is important to note that the duration of a school day for a first grader is

significantly shorter than the duration of a school day for a fifth grader in both Taipei and Sendai. It seems as though these east Asian school systems have a greater understanding of the developmental and cognitive needs of their younger children than American schools do.

Current Reality

Kindergarten: the new first grade. University of Virginia Professor Daphna Bassok, doctoral student Scott Latham, and policy associate at the Weldon Cooper Center for Public Service Anna Rorem conducted a study titled *Is Kindergarten the New First Grade?*. This study researches the changing nature of kindergarten from 1998 to 2010 by documenting five key elements: teachers' beliefs about school readiness, time allocated to academic and nonacademic subjects, classroom organization, pedagogical approach, and assessment practices (Bassok, Lathan, & Rorem, 2016). Kindergarten teachers in 2010 were more than twice as likely to expect their students end kindergarten knowing how to read, than kindergarten teachers were in 1998 (Bassok, et.al., 2016). As a current kindergarten teacher, I feel the pressure to have all my students be readers by the end of the year.

The structure of the kindergarten day has changed significantly from 1998 to 2010. There has been an increase of time spent on literacy and math instruction in kindergarten with a substantial decrease in time spent on art, music, and science (Bassok, et.al., 2016). It is during art, music, and science class that students are most able to explore their creativity, problem-solving, sense of wonder, and experience multi-sensory and hands-on learning. Connell recommends, "80 percent of a young child's day be devoted to high-energy, physical, sensory-stimulating types of play. The remaining 20

percent should be contemplative or artistic pursuits” (2013, p214). This certainly is not the norm for many kindergarten classrooms across the United States.

Sample school. I will use the elementary school where I teach kindergarten as my sample school. This primary school is a kindergarten through third grade and located in the upper Midwest. I have taught kindergarten here for six years and have noticed an increase in the rigor and academic expectations. Five years ago, kindergarteners were expected to read 20 sight words, read at a Fountas and Pinnell level C, and attended daily physical education, music, or art classes. This year, kindergarteners are expected to read 54 sight words, read at a Fountas and Pinnell level D, and do not have physical education/music/art classes. Our kindergarten schedule requires 120 minutes of reading instruction, 30 minutes of writing instruction, 75 minutes of math instruction, a 20-minute free play time, and only 25 minutes of recess. Instead of physical education/music/art classes, our kindergarteners have a specialist time where they do a short brain break, practice social and problem-solving skills, and integrate Science, Technology, Engineering, and Math (STEM) explorations. I believe our students are not receiving enough movement opportunities throughout the school day and this, in combination with the increased rigor, is creating more behavioral issues and a lack of engagement and excitement about learning.

Childhood Health and Wellness

Obesity. The Center for Disease Control reports that approximately 17 percent of children ages 2 – 19 years old are obese (School Healthy Policies). Many schools have made changes to their lunch menus in response to this; however, the amount of recess and physical education classes has remained unchanged. The CDC recommends 60 minutes

of daily physical activity for children to maintain a healthy body and lifestyle. Since students spend a large majority of their time at school, there should be opportunities to reach this goal of 60 minutes of daily activity at school. The Institute of Medicine recommends that at least half of this requirement should be able to be fulfilled during the school day (Turner, Chriqui, & Chaloupka, 2013, p534). Only 58.9 percent of U.S. school districts require regularly scheduled recess for their students and 30 percent of those school districts require 30 minutes of recess per day (School Healthy Policies). Our students need more opportunities to move throughout the school day.

Stress. Stress and anxiety are becoming common school experiences for many of our students. Dr. Jensen observes, “Chronic stress is a very real issue at schools for both staff and students. Homeostasis is no longer a guaranteed ‘set point’” (2008, p411). Constant feelings of stress and anxiety can have a detrimental impact on the brain, school performance, and emotional well-being. When our bodies are stressed out, our brain responds with fight or flight. When our bodies are on alert, extra adrenalin and cortisol are secreted, blood flow and oxygen distribution are increased, and our sensitivity to the environment around us is heightened. These survival responses have a negative impact on learning. “Because the nerve net development and myelination is focused in the survival areas, nerve net development into the limbic system and neocortex is limited. People who live with a great deal of stress may inadequately develop the neural pathways that form the foundations for new learning, reasoning and creativity” (Hannaford, 2005, p181). Dr. Hannaford suggests movement as a method for managing stress: “It requires consciously moving the focus and nervous energy of the body/mind system away from the survival centers, and bringing coherence to all areas of the system” (Hannaford, 2005,

p196). Movement can help get all systems of the body back on track for optimal learning.

Strategies to Increase Movement in the Classroom

Recess. Recess provides a much needed break for our children from the stress and rigorous academic demands of the school day. Dr. Rhea states, “Research shows students are not paying attention or able to focus past 45 minutes to an hour,” (Rhea, 2016, p3). Instead of working so hard to hold our students’ attention when they so clearly need a break, we could give them what their brains and bodies need. The results from the study of Pellegrini and Bjorklund mentioned earlier concur with this need and reiterate that when students are given a break, their level of attention increases (1997, p39). Responding to what our children need by offering additional recess time throughout the day can increase student focus and engagement and thereby impact student achievement. The following are examples of movements that can be incorporated into a classroom, if the option for additional recess is not available.

Brain Gym®. Dr. Paul Dennison and Gail Dennison, leaders in the field of Educational Kinesiology, which is the study of movement and its relationship to learning, have created the Brain Gym® program. Brain Gym® offers twenty-six movements to strengthen the body-brain connection and improve learning and well-being. Dr. Dennison explains, “The twenty-six Brain Gym® activities were designed to activate cognitive functions by balancing the various physical skills involved in the learning process,” (2007, p9). Each Brain Gym® Balance follows a five-step process: 1. Find your PACE. 2. Set and PACE a goal. 3. Do pre-activities. 4. Choose from a learning menu. 5. Do post-activities.

Everyone has a unique pace for optimal learning. Each balance begins by finding your PACE and getting our bodies and brains ready to do our best learning. PACE stands for Positive, Active, Clear, and Energetic. The movements in PACE actually begin in a backward sequence. The Energetic Movement involves sipping water to restore hydration and supply electrolytes to cell membranes. The Clear Movement requires us to perform Brain Buttons to allow for building our visual center. The Active Movement implements the Cross Crawl, which activates both sides of the body and both hemispheres in the brain. The Positive Movement uses Hook-ups to activate the vestibular system and restores equilibrium after emotional or environmental stress (Dennison, 2007, p13). These movements are listed in Appendix F. By incorporating these movements into the classroom, teachers can support students in getting their brains and bodies ready to learn.

Smart Steps. Smart Steps is a step-by-step program for children ages birth through seven years old (approximately) to increase their automaticity with their movements and thus prepare their brains for learning and school readiness. Connell explains, “With Smart Steps, the primary objective is to help children refine and automate their movement foundations in order to unlock their brain power for the thinking, reasoning, and creativity needed for formal learning” (Connell & McCarthy, 2013, p272). The twenty-four Smart Steps are grouped by their sensory and motor emphasis and are highlighted by which age group the movement is most appropriate for.

Content and movement. Movement can be entwined with content learning activities throughout the day. Dr. Donna Wilson is the cofounder of BrainSMART and author of many books focusing on brain-based teaching. Dr. Wilson notes the power of movement

in learning and suggests beginning each school day with exercise and providing movement opportunities in between each lesson. Dr. Wilson highlights a study where students were able to run for 15-45 minutes before class and this resulted in more attentive students for up to two hours after this exercise. (Wilson, D., & Conyers, M., 2014). It is important to note that movement doesn't have to stop once the lesson begins.

John Helgeson is a teacher in Seattle who is committed to incorporating movement into his lessons throughout the day. Helgeson notes, "Movement is vital for young children because physical activity aids in the intellectual development of a child's brain," (2011, p82). By getting our brains ready to learn, our lesson plans suddenly become much more meaningful to our students. Helgeson suggests three simple activities to practice concept topics while students move their bodies. Notes Around the Room involves placing content area words or concepts such as vocabulary, addition facts, or objects to measure around the room. Students take their recording sheets and walk around the room to find and solve each problem (Helgeson, 2011, p83).

Stand-Sit Warm Up can occur at the beginning of a lesson. The teacher prepares questions and students sit or stand to indicate their response to them. Four Corners is a great way to review a concept. Each corner is assigned a letter to a multiple choice question. Teacher reads a question and shows the multiple choice answers on the smartboard. Students walk to the corner that reflects their answer (Helgeson, 2011, p84).

Professors Erin Reilly, Connie Buskist, and Michael Gross of the Auburn University at Montgomery reiterate the importance of movement throughout the day by highlighting that after 20 minutes of inactivity, there is a drop in glucose and oxygen to the brain, making it more difficult to pay attention (Reilly, Buskist, & Gross, 2012, p63).

They suggest simple activities such as Slap Clapping and Deal or No Deal to incorporate movement into academic lessons. Slap Clapping requires students to cross the midline to clap hands with a partner while reciting an assigned academic topic. Deal or No Deal provides movement cards in the midst of a review game for the class to follow (Reilly, et.al., 2012, p65). By adding movement into our lessons, we ensure students are engaged and remembering our learning targets.

Yoga Calm. Yoga Calm is a program founded by Lynea and Jim Gillen to provide teachers, nurses, therapists, and counselors with tools to better meet the needs of the whole child. Yoga Calm is a series of yoga poses and stories to engage the heart, mind, and body. Yoga Calm instructors offer professional development classes for teachers to integrate Yoga Calm into their classrooms and classes for children to participate in. In 2007, Minneapolis Public Schools implemented Yoga Calm and reported “increased time on task/self-regulation, decreased behavioral referrals, improved feelings of community, improved auditory comprehension, smoother transitions, and improved reflection in writing (Gillen). Incorporating movement into the classroom can benefit more than just academic learning.

Student Engagement

In order for meaningful learning to occur, students must be engaged in the lesson and their work. Phillip Schlechty is the founder of Schlechty Center for Leadership in School Reform and has studied student engagement. Schlechty describes four components that are present when a student is engaged. The student is attentive, committed, persistent, and finds value in the tasks placed before him or her (Schlechty, 2011, p14). Schlechty describes the importance of student engagement in the classroom by stating,

“Engagement is more likely to produce the levels of persistence and commitment required to sustain the kind of effort needed to learn at higher levels,” (2011, p25). These are the skills we want all our students to be able to do.

Another leader in researching and promoting student engagement is Dr. Robert Marzano, cofounder and CEO of Marzano Research. Dr. Marzano suggests teachers reflect on how their students would answer the following questions to foster student engagement: How do I feel? Am I interested? Is this important? Can I do this? (2010, p8-19). Students’ feelings and attitudes towards a task before them can influence their engagement in that task.

Dr. Marzano also notes that movement can be used as a tool to increase student engagement when associating it with rehearsal. Rehearsal is repeating information in a way to help students remember it. Using movement with rehearsal can increase student engagement and learning (Marzano, 2010, p25). Both Schlechty and Marzano highlight the importance of offering student choice in creating engagement. Professors Ella Shoval, Tal Sharir, and Boaz Shulruf wrote the article *The Challenge Kindergarten Model: Integrating Body-Movements and Scaffolding to Keep the Child in the Center* and demonstrate how adding movement into lessons can increase all the elements of engagement Marzano and Schelchty support. When teachers integrate movement into their lessons, “It places the children at the center and opens the possibility for their perseverance in learning out of choice” (Shoval, Sharir, & Shulruf, 2014, p282). A student persevering in their task is a sign of true engagement and this can be facilitated through movement.

Chapter Summary

Movement is an essential element for getting our brains ready to learn. Practiced movement allows for automaticity, which frees up brain power to tackle higher-order thinking skills. Movement can form deeper, more meaningful connections and increase students' ability to focus. Not only is movement an ingredient to a healthy lifestyle, it is a powerful tool for supporting emotional well-being by reducing stress and connecting the mind with the body, which is something more and more of our students are needing.

Most of our students in the United States do not receive enough movement opportunities throughout the day. Students of all ages have six hours of school, with only 25 minutes of recess, on the average. Schools in other countries that are leading in their test scores, have shorter school days for younger students and offer all students more breaks for recess throughout the day. The Liink Program encourages American schools to include four recess periods and character development throughout the school day. The Liink Program has shown impressive results both in behavior, social skills, and academic achievement. Brain Gym®, Smart Steps, and Yoga Calm are other programs offered to teachers to incorporate meaningful movement opportunities into the classroom and throughout the day. Movement is a strategy that can trigger the characteristics of an engaged student.

Introduction to chapter three. I feel this research provides a powerful argument for increasing the amount of movement in a kindergarten classroom and points toward yielding positive results from such a change in the daily routine of a typical school day. In the next chapter, I will detail my plan for incorporating more movement into my kindergarten classroom and measuring the impact it has on student engagement in an

effort to answer my research question: *How will regular movement opportunities impact student engagement in a kindergarten classroom?* I will explain my mixed-methods approach to measuring student engagement during an independent work period in the afternoon by using an attitude survey and tallying off-task behaviors. After a two-week observation period, I will begin integrating an additional afternoon recess, a guided movement break before independent work time, and using the Movement Corner instead of the Take a Break chair to redirect students to get back on task. I will again measure students' attitudes and tally off-task behaviors during an afternoon independent work time.

CHAPTER THREE

Methods

Introduction

In the previous chapter, I dove into research supporting the importance of movement for a child to grow, develop, and learn. I highlighted schools and countries that are integrating frequent movement opportunities throughout the school day and seeing impressive results. Different methods for incorporating additional movement into the school day were also discussed. In this chapter, I will outline my research plan and detail how I will integrate more movement opportunities into my kindergarten classroom and the tools I will be using to collect data on how these additional movement opportunities impact student engagement. I will describe the elementary school where this action research will take place, and introduce my students who will be participating in this study. Through my action research I hope to answer my driving question: *How will regular movement opportunities impact student engagement in a kindergarten classroom?*

Research Paradigm

The research paradigm I chose for this study is mixed methods approach because I used quantitative and qualitative research methods. I used the Explanatory Sequential Mixed Methods design as I began with a qualitative data collection and followed this up with my quantitative data collection, and concluded with an interpretation of these two

pieces (Creswell, 2014, p220). I used an attitude survey at the beginning and the end of my study as shown in Appendix C. This was my qualitative research. I marked tallies of off-task behavior during a ten-minute independent work time in the afternoon, using recording sheets found in Appendix D. This was my quantitative research. Throughout my study, I was an active participant observer, meaning I was engaged in teaching my class and observed the activities of my students (Mills, 2007, p88). My class of kindergarteners was my pretest and posttest group. I also observed the engagement of another kindergarten class as my control group. By incorporating both quantitative and qualitative methods, I hoped to gather a complete representation of the results from additional movement opportunities and eliminate opportunities for bias to creep into the results.

Setting

This research study took place at an elementary school in a suburb in the upper Midwest. This school is a large primary school with 800 students enrolled in grades kindergarten through third grade. Due to the large size of this school and in an effort to create a sense of community, the school is split into two groups: the east campus and west campus. Each campus has a group of about 100 students per grade level and they will move up each grade level together. This way, students will be more likely to form stronger relationships with one another and have familiar faces in their classes. Each campus has a grade level pod with four classrooms surrounding it.

Each classroom has around 24 students with one classroom teacher. There are no classroom aides or paras, unless assigned to a specific student with special needs. Teachers feel strongly that there is a need for more para support at our school. We have a

behavior team that has grown each year from beginning with a part-time para to two full-time Positive Behavior Intervention Specialists. In our school of 800 students, our wonderful behavior specialists are not able to keep up with the demands of our students. We need a larger team to respond to the growing behavioral needs of our students.

In order to provide the most support to our special education students, there are clusters of special education students in each campus. The west campus typically works with students labeled with Emotional Behavioral Disorder and Oppositional Defiant Disorder. The east campus typically works with students labeled as English Language Learners, Developmental Delay, and Other Health concerns. Both campuses support students with Autism Spectrum Disorder, Attention Deficit Disorder, and Gifted and Talented students. This elementary school houses special education settings 1 – 4. Depending on their needs, our special education students may spend the whole day with us on their own, have para support, be pulled out of the classroom for small group instruction, or spend the day in a contained setting.

This school district is a 1:1 school and provides each student, grades kindergarten through twelfth grade with their own iPads or iPad minis. Teachers are expected to integrate technology throughout the school day to increase student engagement, differentiation, collaboration, and practice 21st century digital citizenship skills. The vision statement reads, “Our district will be a world-class learning community aligned around fostering personalized experiences so that each student feels valued, inspired, and has a sense of belonging, and resulting in college readiness and the development of academic, life and career skills so that each student has aspirations for success.”

The student population at this primary school is 69% white students, 12.6% Asian students, 10.6% black students, 6.5% Hispanic students, and 1.3% Native American students. 26.6% of students qualify for free or reduced lunch. Of the 800 students, 8.7% receive special education services, 2.1% are labeled as Gifted and Talented, and 7.8% are English Language Learners.

This study will take place at the beginning of the year, when our new kindergarteners are adjusting to school routines and expectations. Full day kindergarten is now the norm and it is a difficult adjustment for some students. I see an increase in off-task behavior and a rise in frustration levels in the afternoon. Because afternoon is a particularly challenging time of the day for these new kindergarteners, this is when I conducted my research and integrated more movement in response to their needs.

Classroom

Kindergarten classrooms are larger than first grade through third grade rooms. Half of the classroom is carpeted and half has tile floor. The carpeted half of the room contains a circle rug in front of the smartboard where most whole group lessons take place. There are two large windows on this half of the room. There is a teacher desk and kidney shaped table for small group instruction surrounded by a white board. On the tile floor, there are four tables for students to work at independently and a row of their cubbies on one wall. There is a bathroom and two sinks on this side of the room with a window that looks out into our pod. There is a door to enter the classroom next to the sink and an emergency exit door that leads outside behind the teacher desk.

Participants

I have 23 kindergarteners, 11 boys and 12 girls. in my classroom on the east kindergarten campus. Three students have Individualized Education Plans (IEPs) and receive Special Education Services. One student is repeating kindergarten. Two students speak different languages at home and receive English Language Learner services. Two students are participating in our school behavior intervention program. One student receives support from our Family Service team. This has been a more challenging class that I typically have as three students have very high needs in terms of functions, behaviors, and academics.

Our kindergarteners receive 25 minutes of outdoor recess time each day, weather permitting. Grades first through third grade receive specialist classes: music, art, or Physical Education each day. Kindergarten does not attend these classes but has a kindergarten specialist come into the classroom each day for 45 minutes. These lessons are centered around social skills, STEM, and cultures around the world. While these are important lessons, our kindergarteners are missing out on much needed opportunities for movement. I notice a decrease in student attention and engagement in the afternoon, as their bodies are calling out for more movement opportunities.

Method Design

The first step of this action research study was to obtain permission from the Human Subject Committee. I registered with the Hamline University Institutional Review Board and submitted the non-exempt application for my research plan to the Human Subject Committee. My principal was informed of my research study and gave her approval. Upon their approval, I sent home the consent letter to my students'

families, describing my research project and asking their permission for their child to participate in my study. A sample consent letter for families and for my principal is attached in the Appendix A and B. The afternoon is typically the period of the day where it is most difficult for kindergarteners to stay engaged in their learning. In response to this, my action research took place during part our core reading block in the afternoon from 2:30 – 3:15.

I began a two-week observation period to track off-task behavior during a ten-minute period of independent work time in the afternoon reading block. I administered an attitude survey to my students to determine their feelings about this period of the day. I think a student's feelings of enjoyment and ability to accomplish a task impact their engagement level during the task and I was wondering if I would also see a difference in attitude toward task once I began incorporating more movement into that time period. This attitude survey was kindergarten appropriate with simplified questions and a range of faces to represent a feeling associated with each question and is included in the appendix. This was the qualitative aspect of my study.

Next, I tallied results of off-task behavior during a ten-minute period of independent work. I broke the results of these unengaged behaviors into three categories: incomplete work, redirection given, and students seeking extra movement/sensory input.. Students seeking extra movement input could be represented in students wiggling in chairs, unnecessarily walking around the room, rolling on the carpet, making additional noises/sounds, chewing on tools, tipping over on chair, or playing with learning tools instead of using them appropriately. I also noted whether or not we had outside recess. Students with more than one reminder given for off-task behavior were asked to Take A

Break in the Think Chair and come back when they are ready to work, as is consistent with our school-wide Responsive Classroom program. I documented if this intervention resulted in a positive change in behavior during work time. I will display this data in a graph and compare it with the final two week observations.

When I began my observations, I also observed the control group of kindergarteners during a ten-minute period of independent work time for four days during my prep period. I did not interact with these students and they did not participate in my movement interventions. Again I tallied off-task behavior, using a similar chart that I used with my class of kindergarteners. Sometimes this observation took place during the control group's independent work time and sometimes this was during an art project.

After my two-week observation period, I began my two-week movement intervention with my class of kindergarteners. During the first week, I incorporated an additional ten-minute outdoor recess into the afternoon. Before our ten-minute independent work time, I lead my students in a series of movements. I researched movements from Brain Gym®, Smart Steps, and Yoga Calm. For my action research, I chose to integrate movements from Brain Gym®, as I have had more experience with this program than the others. These movements are shown in Appendix F. I documented which movements were used in my observation sheet. During the independent work time, I again tallied any results of off-task behaviors. I will display this data in a graph and compare it with the initial two-week observation in order to analyze how movement impacts engagement.

During the second week of my movement intervention period, in addition to the afternoon recess, I introduced a Movement Corner in our classroom with pictures of the

movements we have learned to help focus and engage our learners. Students were encouraged to visit the corner if they noticed their bodies are needing more movement. Routines and rules for appropriate use of this space were modeled. Only one student was able to use this corner at a time. Once they completed the sequence of movements, or the ones they chose to do, students were to return to their carpet spot or work table. Pictures of this Movement Corner are included in Appendix E.

Again I observed during independent work time in the afternoon and tallied off-task behavior. This last week of intervention, if students had more than one reminder about off-task behavior were asked to visit the Movement Corner and come back when they were ready to work. I documented if this intervention was successful. I continued to record if we had outdoor recess each day. After our two-week integration of movement, students completed another attitude survey of their independent work time during our core reading block. I will share the results from this survey and draw conclusions based on data on how these interventions impacted students' attitudes toward writing and their work.

On week four of this action research, I observed my control group of kindergarteners in the classroom next door again for four days during my prep period. Again, I did not interact with any students in this classroom. I tallied any off-task behavior observed during a ten-minute independent work period. This week of observation of the control group was in an effort to determine if any change I would potentially see in my class was due to the movement interventions or if it was a result of students simply becoming more familiar with the routines and expectations of school. I

will display the results in a graph to compare week one and week four in order to answer this question.

Chapter Summary

My action research was an attempt to answer the question: *How will regular movement opportunities impact student engagement in a kindergarten classroom?* My kindergarten class was my pretest and posttest group and was observed for four weeks. This kindergarten class is a heterogeneous group of students with mixed races, abilities, and needs. Another kindergarten classroom served as the control group and was observed during week one and week four of my action research period.

The kindergarteners receive 25 minutes of recess and a 20-minute free play period, but do not attend Physical Education class. In my six years of experience as a kindergarten teacher, I noticed an increase in disengaged students in the afternoons as their bodies were full of energy and seeking additional movement opportunities. I hoped my movement intervention responds to this need. I used both qualitative research by incorporating an attitude survey and quantitative research by tallying off-task behaviors in my study. I observed for a two-week period without any additional movement opportunities and recorded off-task behaviors. I then integrated an additional afternoon recess and guided movement breaks prior to independent work time and tallied any off-task behaviors for an additional two-weeks. A Movement Corner was introduced the last week of observation as an alternative to the Take A Break Chair as a tool for off-task students to refocus.

Introduction to chapter four. In the next section I will further describe the participants in the study and note areas of demonstrated need for increased movement. I

will describe the results from the attitude surveys and display the results from the observation period in a table. I will look closely at the results for each category of off-task behavior. I will use a graph to compare the results from the initial two-week observation period with the results from the two-week intervention period. I will represent the observations from the control group in a table. I will use a graph to compare the results from week one to week four of observations of the control group. I will further describe the Movement Corner and Take A Break Chair. I will begin to draw conclusions from this data in an attempt to answer my research question: *How will regular movement opportunities impact student engagement in a kindergarten classroom?*

CHAPTER FOUR

Results

Introduction

In chapter three, I described the methods of my action research in an attempt to answer my driving question: *How will regular movement opportunities impact student engagement in a kindergarten classroom?* I detailed my plan to observe student engagement during independent work time in the afternoon. I tracked the numbers of incomplete assignments, redirections given, movement-seeking behaviors, and visits to the Take A Break Chair for two weeks. I then introduced an additional ten-minute afternoon recess and incorporated Brain Gym® movements throughout the day. Again, I observed during independent work time and tallied incomplete assignments, redirections given, and movement-seeking behaviors for two weeks. The final week of observation, I added a Movement Corner to use as an alternative to the Take A Break Chair. I administered an attitude survey at the beginning and end of my action research period to my students to evaluate their feelings during independent writing time. I observed another kindergarten class during the first week and final week of my action research period and tracked their engagement using the same categories.

In this chapter, I will describe the results from this action research. I will compare and analyze the data from my student observations during independent work

time. I will add more detail to what kind of off-task behaviors I noticed in each of the following categories: incomplete work, redirection given, movement-seeking behaviors, and visits to the Take A Break Chair. I will highlight the results from the student attitude surveys. I will compare and analyze the results from my classroom observations with the results from the observations of the control group. I will use these results to answer my research question: *How will regular movement opportunities impact student engagement in a kindergarten classroom?*

Participants

The participants in my action research are my 23 kindergartener students. There are 11 boys and 12 girls. Three students have Individualized Education Plans (IEPs) and receive Special Education Services. One student is repeating kindergarten. Two students speak different languages at home and receive English Language Learner services. Two students are participating in our school behavior intervention program. One student receives support from our Family Service team. This has been a more challenging class that I typically have as three students have very high needs in terms of functional skills, behavior, and academics.

Incomplete Work Results

During my four weeks of observation, I tallied the number of students who were unable to complete their assignment during the allotted work time. This data is shown in Tables 2, 3, 4, and 5. During my two-week initial observation, I noticed it was always the same three students who had difficulty completing their writing task. One student had very weak fine motor skills and writing was a big challenge for this student and she did not want to write. Another student had an IEP and had a hard time focusing on an

independent task and getting started independently. The third student also had an IEP and had difficulty transitioning from one task to another. These three students all have different reasons why they were unable to complete their writing task in the allotted work time. However, the additional afternoon recess and guided movement break before writing seemed to help them all. The number of incomplete assignments went down from 15 during the initial two-week period to just 3 during the two-week intervention period, as show in Figure 1 below.

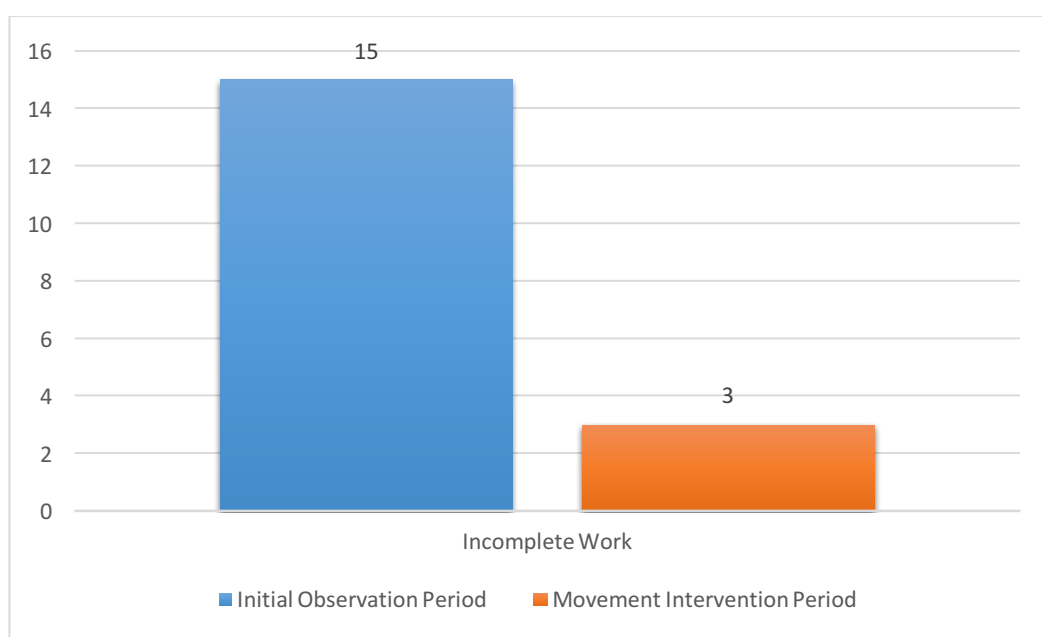


Figure 1. Incomplete Work Results

Redirection Results

For four weeks I tallied the number of redirection reminders I gave during a ten-minute independent work time in our writing block. This data is shown in Tables 2, 3, 4, and 5. These redirection reminders included anything I needed to remind students about during the ten-minute independent work time. This included reminders about what your job was, using an inside voice, getting started right away on your work, using kind words

to others at your table, not putting pencils in your mouth or banging it on the table, staying seated in your chair, and where to put your work when you are finished.

During the two-week initial observation period, I tallied 53 redirection reminders were given during the ten-minute independent writing time. During the two-week movement intervention period, I tallied 32 redirection reminders were given during the ten-minute independent writing time. This is show in Figure 2 below. I noticed the type of redirection I gave changed during the two-weeks with the movement intervention. I no longer needed to give redirection about movement-seeking behaviors, like I needed to during the initial two-week observation period. I still needed to give reminders about using tools appropriately, kind words to others, and appropriate voice level at the beginning of the work time. I noticed my redirection was usually just needed at the beginning of the work time and then students were able to sustain the reminders throughout the independent work time. This was not the case during the initial two-week observation period. I needed to give redirection throughout the work period and it was coupled with redirection towards movement-seeking behaviors.

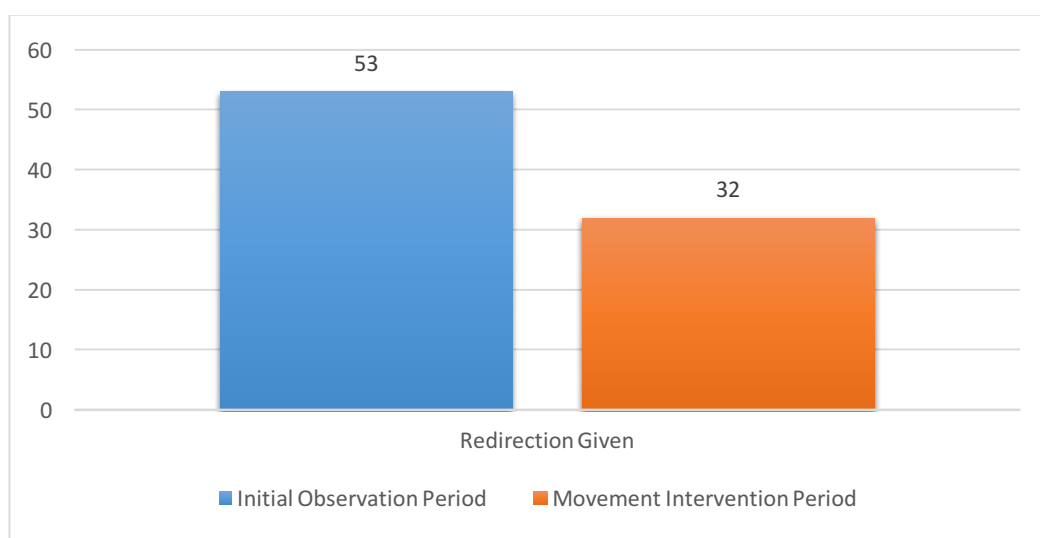


Figure 2. Redirection Results

Movement Seeking Behaviors Results

Movement seeking behaviors can occur when a student is not able to sit still. Some of these behaviors include: students wiggling in chairs, unnecessarily walking around the room, rolling on the carpet, banging pencils on table, kicking feet to the table, making additional noises/sounds, chewing on learning tools, tipping over on chair, or playing with learning tools instead of using them appropriately. The most frequent movement seeking behaviors I observed in my classroom were walking around the room, pencils or markers in the mouth, banging pencils and feet on table, and making additional noises. During the two-week initial observation period, I tallied 32 observations of movement seeking behaviors. During the two-week intervention period, after an additional outdoor recess and a guided movement break, I tallied just 8 movement seeking behaviors during the ten-minute independent writing time, as is shown in Figure 3 below.

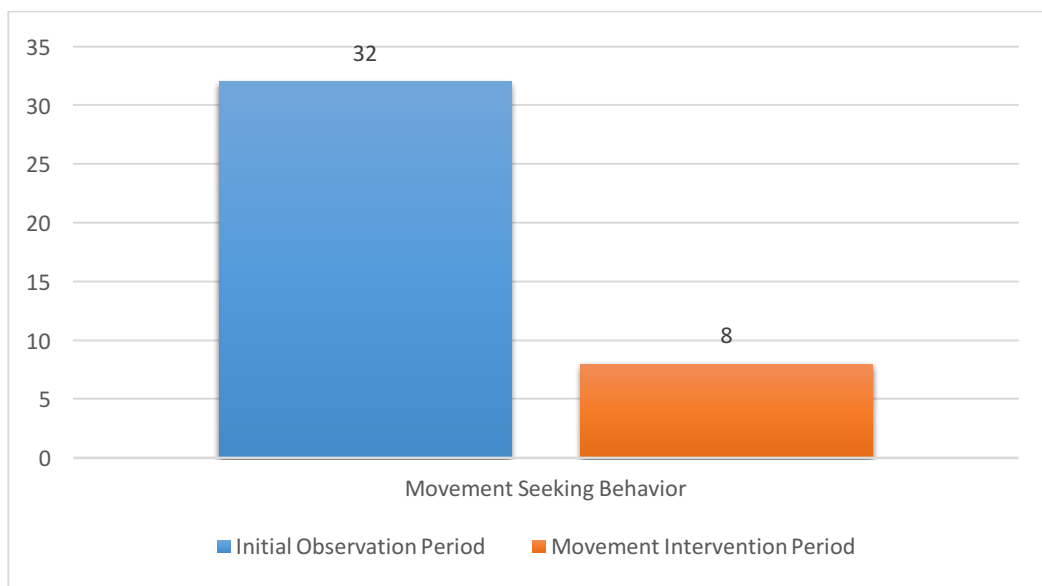


Figure 3. Movement Seeking Behavior Results

Interrelationship of Results

The Incomplete Work was the category of off-task behavior that had the most dramatic decrease during the movement intervention period. I think this is because the decrease in reminders and movement-seeking behaviors that also happened during this movement intervention period, allowed students to be more engaged in their assignments and complete their task in the allotted amount of time. We didn't have to waste as much time responding to those needs for redirection or getting the wiggles out since we took care of them right away; and therefore, students could get their work done.

Take A Break Chair

The Take A Break Chair is a part of the Responsive Classroom model, which my elementary school follows as part of our behavior management plan. The purpose of this chair is a place for students to go to calm down, refocus, and reflect on their choices. The chair is placed in an area apart from the rest of the class but close enough to the teacher to be able to follow the whole group lesson. The Take A Break Chair is not intended to be a negative consequence, but rather a chance to pause and join back in the learning when the student is ready. Despite these good intentions, students frequently associate negative feelings with the Take A Break Chair. In the attitude survey, 100% of students circled the sad face when asked about the Take A Break Chair. Some students put up a fight and cause a bigger disturbance when asked to "Take A Break" and some students start to cry. Some students do not appear bothered at all by this request.

In my initial two-week observation period during independent work time, students were asked to "Take A Break" seven times over the course of ten days during the ten-minute observation period. This data is show in Tables 2 and 3. Of these seven visits to

the Take A Break Chair, only twice did they result in a positive change immediately following the visit to the chair that sustained through the independent work time. Of the three students who made up these visits to the Take A Break Chair, two students did not respond well to this intervention. It was difficult to get these students to “Take a Break” and it took them awhile to recover from this request. One student responded well to this request and was able to pause, refocus, and transition back to work.

Movement Corner

The Movement Corner was introduced the final week of my observation period. I introduced this place to my class as a space to get our wiggles out so our bodies and brains can be ready to learn. I wondered if this could be used as an alternative to the Take A Break Chair and better address the issues that influenced a student’s need to take a break. In the Movement Corner there was a giant Lazy 8 on one wall, a picture of feelings on another wall, and a series of photographs of myself doing the steps to the following Brain Gym® movements: The Owl, Cross-Crawl, Brain Buttons, and Hook-Ups.

Students were excited about the Movement Corner and thought it was super cool that there were pictures of Mrs. Lay over there! Throughout the day students would go over to the Movement Corner. I noticed more students would go over during whole group instruction when we were seated on the carpet in a circle. I wonder if this was because we were physically closer to the Movement Corner during that time or if it was because students were asked to sit still with their hands to themselves during these lessons. I noticed the most used movement was the Lazy 8s. 100% of students circled a smiley face when asked how they felt about the Movement Corner in the attitude survey.

No students were asked to visit the Movement Corner during the ten-minute observation period during independent work time. It seems the additional recess and guided movement break before the independent work time were sufficient for most students in getting their wiggles out. This connects with Dr. Jensen's research from Chapter Two about how our brains function better when given the opportunity to exercise.

Attitude Survey

The results from the attitude surveys are inconclusive due to the fact that 20 out of 23 students simply colored in smiles for every question or colored all happy, medium, and sad face for every question. I do not believe the surveys were an accurate representation of how the students felt about each prompt. I think some students thought the right answer was a smiley face and colored that in regardless if it was how they truly felt. I think some students got lost as we were going through the questions and just started to color everything in. I think if I had an adult volunteer pull a small group of students to ask them these questions and walk them through the survey, I would have had more accurate results. I believe one question was accurately answered. 100% of students circled a sad face when asked about the Take A Break Chair. 100% of students circled a smiley face when asked about the Movement Corner.

Control Group

I observed another kindergarten classroom during my prep period for four days during my first week of observation and four days during my final fourth week of observations. Classroom observation is a common practice at my school so the students did not think anything of having another teacher observe in their classroom. I did not interact with these students and they did not participate in any additional movement

interventions. The control group of kindergarteners are located in the classroom next door to mine. There are 24 kindergarteners in this control group, 11 girls and 13 boys. I quietly observed for ten minutes and tallied redirection reminders and movement seeking behaviors during this time. This data is shown in Tables 6 and 7. I did not tally incomplete work since I was not present for the whole work time for this class. This observation period took place at 1:45pm and students were able to have their daily 25-minute recess before lunch on every day I observed. I wanted to see if any changes I observed in my classroom over my four-week period of action research was a result of the additional movement opportunities incorporated in the last two weeks or if any changes I observed were simply a result of kindergarteners becoming more familiar with our school routines and expectations.

I observed a slight improvement in the numbers of redirection reminders given and movement seeking behaviors from the first week to the last week of my action research period. The number of redirection reminders decreased from 20 to 18 and the number of movement seeking behaviors decreased from 15 to 14. However, these improvements were not to the magnitude of the improvements I observed in my classroom with the additional movement opportunities provided during the last two weeks of observation.

There are a few differences that are important to note between the control group and my kindergarten class. The control group was only observed four times the first week and fourth week. My kindergarteners were observed ten days during the initial two-week observation period and ten days during the final two-week observation period with additional movement opportunities. The control group was observed during an art

or project extension of a book while my kindergarteners were observed during an independent writing period. The control group was observed at 1:45pm and my kindergarteners were observed during 2:30pm. These differences play a role in the results for each group. The results from the control group are tallied in Table and compared in Figure 4 below.

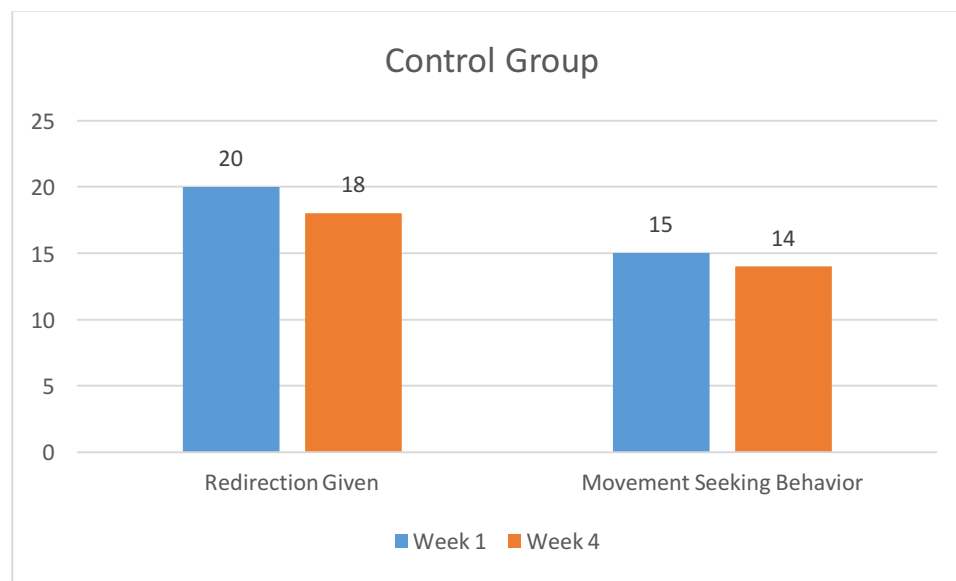


Figure 4. Control Group Results

Additional Recess Observations

My kindergarten students loved having an additional afternoon recess! This extra recess was only ten-minutes long and increased their total minutes of daily recess to 35 minutes during the two-week movement intervention period. This extra recess was strategically placed during the part of the day that was the most difficult for my students to be engaged in their work. We had our afternoon recess at 2:30 and this was when I would usually notice the most movement seeking behaviors and a lack of focus. This was the time of day when I would feel like we were just holding on and barely making it to the end of the school day. This was the time of day when one student would begin to

have a daily tantrum, another student would begin chasing others around the room, and one student would begin to grow very frustrated with his work. I would also feel more stressed during this time in response to these extra behaviors. The additional ten-minutes of outside recess felt like a much-needed breath of fresh air for both my students and myself. The rest of the afternoon felt much more manageable when we came back inside from recess.

Teachers at my school do not supervise daily lunchtime recess so this was the first time I observed my students at recess. Some students ran around the entire time, playing tag with others, chasing games, or simply running laps around the playground. Other students climbed, swung, spun, or tackled the monkey bars. I noticed some of my quietest students come alive and join in the games with others during recess time. I noticed some of my most struggling learners light up and play freely without any signs of the frustration and hesitation that I would observe in the classroom.

I noticed some students were able to play nicely with others without any assistance while others needed support with taking turns, including others in their play, or stopping before play got too rough. I noticed a need for some teaching on appropriate play and kindness during our recess. I reflected on Dr. Rhea's observations from Chapter Two about the importance of teaching those social skills and how recess can aid in that development. In response to what I observed during our recess time, I began reading the book, *How Full Is Your Bucket? For Kids* by Tom Rath and Mary Reckmeyer to my class. This story is about treating others with kindness and how this makes us feel happy. We read this book a few times throughout the week and talked about how we could be a bucket-filler. Before going to recess, we discussed how we could be bucket-fillers at

recess. I noticed this reminder and frame of reference before play was the extra support and guidance some students needed to have a happy play time with others.

Chapter Summary

In this chapter, I shared the results of my four-week long action research project in my kindergarten classroom in an effort to answer my driving question: *How will regular movement opportunities impact student engagement in a kindergarten classroom?* I observed the engagement of my 23 kindergarteners during a ten-minute independent writing time in the afternoon. I observed engagement by tallying the number of incomplete assignments, redirection reminders given, and movement seeking behaviors during this independent work time. This data is recorded in Figure 5 in the blue Initial Observation Period. I also noted how many visits to the Take A Break Chair occurred and if a positive change was observed after this visit.

I then began a two-week movement intervention period where I added an additional ten-minute afternoon recess to our daily schedule and lead my students in a series of guided Brain Gym® movements before independent work time. During this two-week intervention period, students had two recesses every day, for a totally of 35 minutes of outdoor recess. Again I tallied student engagement by looking at the number of incomplete assignments, redirection reminders given, and movement seeking behaviors during this independent writing time. This data is recorded in Figure 5 below in the orange Movement Intervention Period.

During my final fourth week of my action research, I introduced the Movement Corner as an alternative to the Take A Break Chair. Students had a much more positive attitude towards the Movement Corner than they did with the Take A Break Chair, as is

depicted in the difference among attitude surveys from the first week to the final week. Zero students were asked to visit the Take A Break Chair during the ten-minute independent writing time during the last two-weeks of observation.

I noticed a major improvement in the engagement of my class during independent writing time during the two-week movement intervention period, in terms of number of incomplete assignments, redirection reminders given, and movement seeking behaviors. I compared my results to a control group of kindergarteners. I observed a similar class of kindergarten students during week one and week four of my action research. I tallied the number of redirection reminders given and movement seeking behaviors observed during a ten-minute period in the afternoon. While I observed a slight improvement in these scores, it did not match the impressive results that occurred from the additional movement opportunities integrated into the day for my class of kindergarteners.

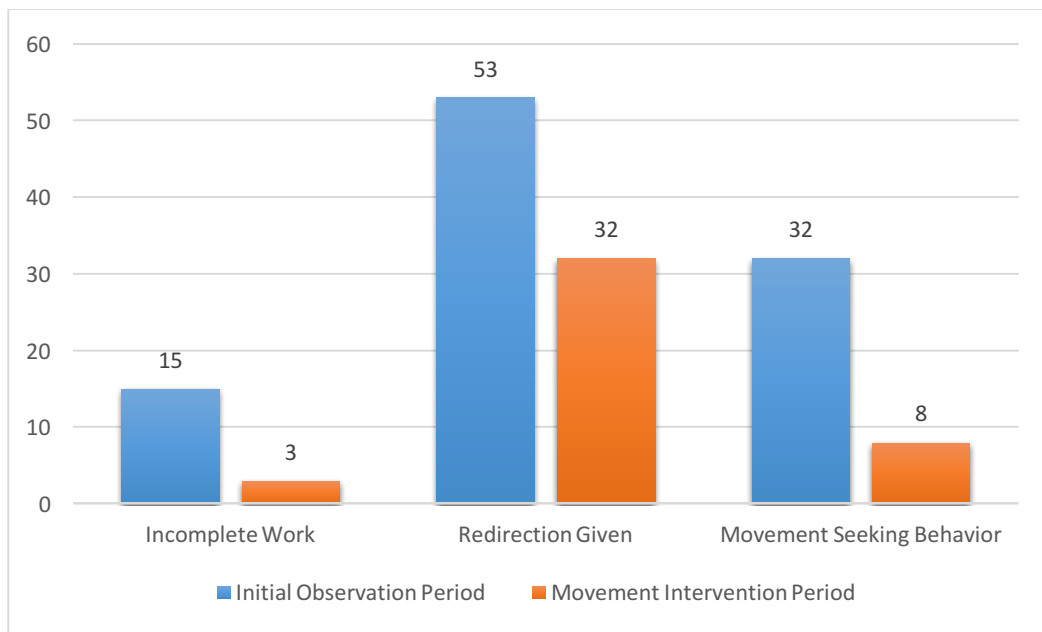


Figure 5. Summary of Results

Introduction to chapter five. In the following and final chapter of this paper, I will synthesis my learning from this extensive action research project. I will connect my results with the information presented in the Literature Review in chapter two. I will talk about the validity of this action research and room for improvement in the future. I will reflect on my learning from this experience and describe the implications of this new learning. I will share my goals for continued growth and utilization of this new learning. I will detail how I plan on sharing my results and new learning with others in an effort to make a positive change on our school practices.

CHAPTER FIVE

Conclusions

Introduction

In the previous chapter, I shared the results from my action research in my kindergarten classroom. I observed the level of engagement during a ten-minute independent writing time in the afternoon by tallying off-task behaviors such as incomplete work, redirection reminders, and movement seeking behaviors for four weeks. During the last two weeks of the study, I integrated additional movement opportunities into the school day by adding a ten-minute afternoon recess and guided movement breaks prior to independent work. The final week I added a Movement Corner to our classroom for students to visit when they felt wiggles in their bodies. I compared the results from the two-week initial observation with the results from the two-week movement intervention in an effort to answer my research question: *How will regular movement opportunities impact student engagement in a kindergarten classroom?*

In this final chapter, I will use my data and research to answer that question. I will look at how my action research connected with the information presented in the Literature Review chapter. I will discuss the fidelity of my action research and suggestions for improvements. I will detail my plan for sharing my learning with others in an effort to make a positive change in our school practices in regard to movement

opportunities throughout the school day. I will conclude this paper with highlighting my learning, results, and implications from this action research project.

Analysis of Results

The graph below displays the results from my action research project. The number of off-task behaviors decreased from my two-week initial observation period when compared with my two-week movement intervention period. This data is represented in Figure 5 below. From the initial baseline data, the number of incomplete tasks decreased by 80%. The number of redirection reminders given during the independent writing time decreased by 40%. The number of movement seeking behaviors I observed decreased by 75%. Using this data, I can answer my research question: *How will regular movement opportunities impact student engagement in a kindergarten classroom?* This data proves that increased movement opportunities decreases the number of off-task behavior during independent work time in a kindergarten class.

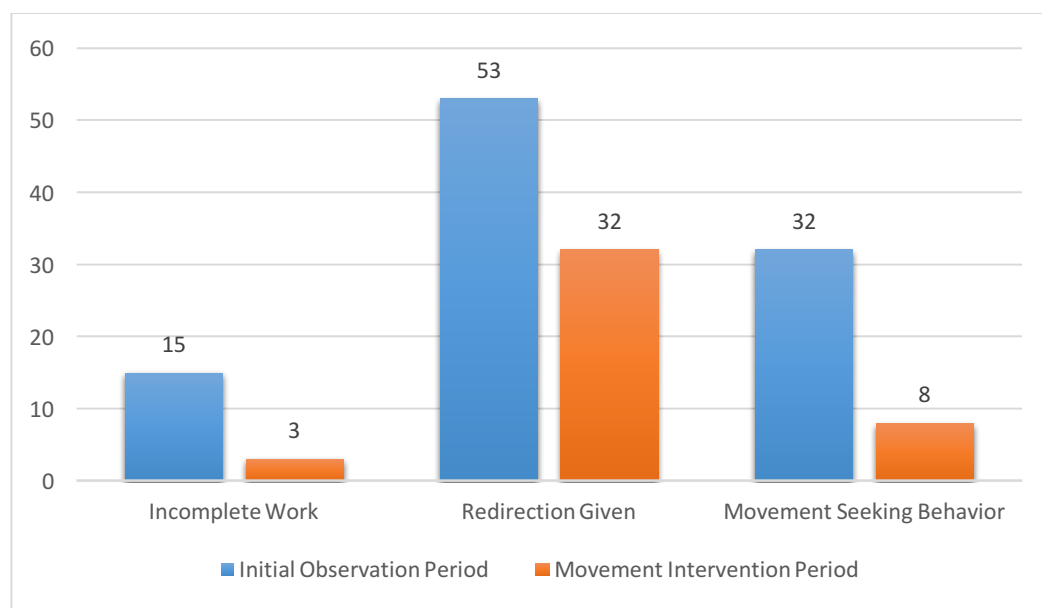


Figure 5. Summary of Results

I analyzed the results from my control group of kindergarteners and compared these results with my kindergarten class. From week one to week four, with no additional movement opportunities provided, the control group of kindergarteners decreased their movement seeking behaviors by 7%. The number of redirection reminders given decreased by 10%. This data is show again in Figure 4 below. The results from the control kindergarten class highlights that kindergarteners improve in their off-task behaviors as they become more familiar with our school routines and expectations and grow in their stamina for the long school day. While the control group decreased their off-task behaviors, they did not improve as dramatically as the kindergarten class who received the additional movement opportunities did. Using the data from my kindergarten class and the control group, I can conclude that additional movement opportunities integrated into the school day can dramatically decrease the off-task behavior observed during independent work time in a kindergarten classroom. Students are more engaged in the task before them when they have had the chance to move their bodies and get their brains ready to learn.

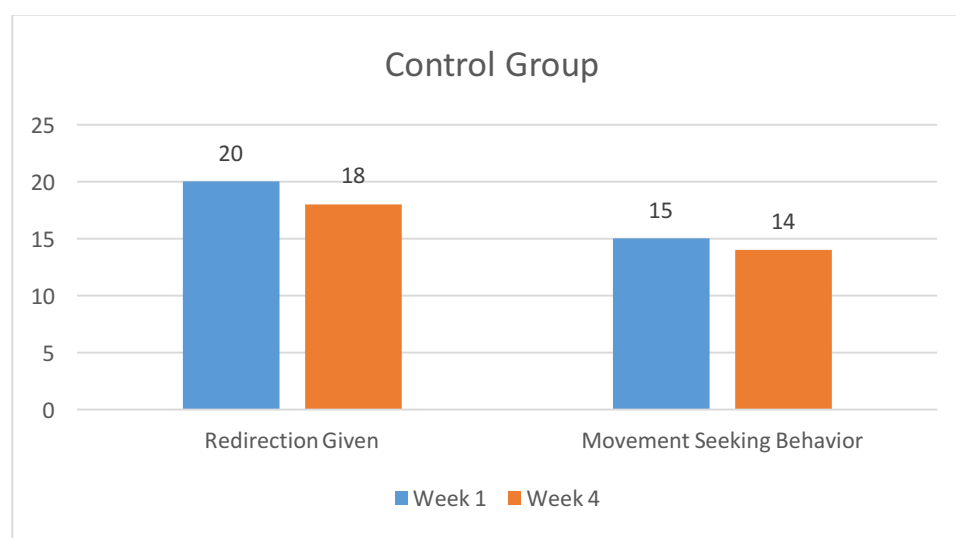


Figure 4. Control Group Results

Literature Review Connections

The Literature Review section in chapter two explained the importance of movement in learning. Throughout my action research I often reflected on the quote by Dr. Mary Rivkin, “Moving is as natural to learning as breathing is to living. Movement is a legitimate way of learning” (2006, p34). This seemed to relieve any worry about taking away a few minutes of direct instruction on an academic task and lead a guided movement break. The body and the brain are powerfully connected. When we respond to the need of one, we are benefitting the other. Professors Reilly, Buskist, and Gross state “Physical activity promotes biological changes in the brain that enhance adaptability and connections between brain cells; this brain activity is necessary for learning as well as for the growth of new brain cells” (2012, p63). This powerful statement not only removed any worry about how each minute of the school day is used but it encouraged using time at school for physical activity in order for our brains to work at their fullest potential.

Throughout the movement intervention period of my action research, I thought often of the quote by Professors Shoval, Sharir, and Shulruf, “When the teacher turns the children’s chosen movement into mindful movement through organizing their learning environment and directing their activities, she also changes movement into a useful tool for attaining learning goals” (2013, p282). By integrating guided movements, the Movement Corner, and an additional recess into our school day I felt I was removing any negative feelings surrounding the need to move that my students were displaying. Movements were viewed as a way to get our brains ready to learn instead of a negative behavior. When I saw students wiggling on the carpet, instead of reminding them to sit

crisscross applesauce, I would ask them to go to visit the Movement Corner to get their brains and bodies ready to learn. I feel this helped form a more positive classroom environment.

Suggestions for Improved Action Research

While I am proud of my research and believe my data is a true reflection of the level of engagement of my students during independent writing time, there are some pieces of this action research that could be improved on if it was replicated in the future. It was difficult being an active participant observer, teaching my class and observing them at the same time. While I tried to step back and accurately observe the level of engagement of my students during independent writing time in the afternoon, there were times when my students needed my assistance and I may have missed out on some observations. My school was short-staffed this year so there was no teachers available to come into my classroom to make these observations for me on a regular basis. If it had been possible to have another teacher record observations for me, I think this would have improved the fidelity of my research.

The results from the attitude surveys are inconclusive due to the fact that 20 out of 23 students simply colored in smiles for every question or colored all happy, medium, and sad face for every question. I think some students thought the right answer was a smiley face and colored that in regardless if it was how they truly felt. I think some students got lost as we were going through the questions and just started to color everything in. If I could do this part again, I would have an adult volunteer pull a small group of students to ask them these questions and walk them through the survey in order to gather more accurate data.

I would have liked to observe my control group of kindergarteners for a longer period of time and during the same part of the day that I observed my class of kindergarten students. I observed my kindergarten class during the part of the day that was the most challenging for them to be engaged in independent work. Due to schedules, I was only able to observe the control group during my prep period. During this time the control group kindergarten class was working on art projects or extensions of a story they read together. These activities were more engaging for kindergarteners to work on and therefore, I did not see as many off-task behaviors as I observed in my classroom during writing time. I wonder if my results would be different if I observed both classes during independent writing time.

It would have been interesting to continue this research project for a longer period of time. I wonder if even more significant improvements in student engagement would be observed with having movement opportunities become more frequent and familiar in my students' school days. It would be interesting to continue tallying off-task behavior after the movement intervention period ended to see if students regressed in their levels of engagement during independent writing time without having the movement opportunities they had before. I would also have liked to dig in deeper into the student interactions I observed during our additional afternoon recess. I think there is a need for teaching and guidance on how to play appropriately and problem-solve during play time. I noticed some students did well with this and some students needed support in these skill areas.

Implications for the Future

I believe my action research results and literature review findings support my answer to my research question: *How will regular movement opportunities impact student engagement in a kindergarten classroom?* I would answer that regular movement opportunities make a powerful and positive impact on student engagement levels in a kindergarten classroom. There was a major decrease in incomplete work, redirection reminders, and movement seeking behaviors during independent writing time when there was an additional afternoon recess provided and guided movement breaks before working time. I feel strongly that I need to continue offering these additional movement opportunities throughout the school day for my kindergarten students in order to respond to their needs and provide the best learning environment possible.

I plan on sharing my results from this action research with my principal in hopes that she will also see the need and benefit of additional movement opportunities throughout the day for kindergarten students. I would like the permission that was granted to me for this action research project of an additional afternoon recess be extended throughout the whole school year and to all classrooms. It was very difficult to go back to our typical daily schedule after witnessing the improvement the additional recess had on my students. My kindergarteners still ask when we can go outside for an afternoon recess and it feels wrong to deny them of this when I have the data to support the need for it.

I have continued using the Movement Corner and guided movement breaks in my classroom. I believe this continues to better support the needs of my students and helps get their brains and bodies ready to learn. I would like to share these strategies for

increasing movement opportunities in the school day with my school colleagues, either in a professional development meeting or through posting on our staff resources webpage. I feel it is so important to share this new learning and advocate for what our students need. Even if we are not granted permission to add an additional recess into our daily schedules, there are some simple movements we can incorporate into our daily routines that will benefit student engagement.

Conclusion

My experiences from my childhood, my undergraduate education program, as a kindergarten teacher, and through my master's classes sparked my desire to learn more about the connection between movement and student engagement. Through these experiences I saw the power of movement and the need for more movement in our schools. These experiences lead me to my research question: *How will regular movement opportunities impact student engagement in a kindergarten classroom?*

During this year-long capstone journey, I dove into the research from a variety of leaders in the world of education, brain research, movement, and engagement. I learned about how the brain works and the role movement plays in brain development and cementing our learning. I learned the benefits of movement on our brains, our bodies, our emotional well-being, and on our levels of engagement. I learned about the research process and collected data to answer my research question.

My action research revealed that providing additional movement opportunities decreased the number of incomplete assignments by 80%, decreased the number of redirection reminders given during the independent writing time by 40% and decreased the number of movement seeking behaviors I observed by 75%, when compared with the

baseline data. Using the learning from other experts in the field as displayed in the Literature Review in chapter two and the data from my action research, I can answer my research question with confidence and state that providing additional movement opportunities can significantly improve kindergarten students' engagement during independent work time.

This year-long capstone journey has greatly influenced my own teaching practices. I have been very intentional about applying my new learning into my classroom and feel I have become a more effective teacher as a result of this experience. I feel I have a deeper understanding of what my students need in order to reach their fullest potential and have a new confidence supported by research to advocate for my student's needs. I believe the learning gathered from the Literature Review and my action research can have a powerful impact on student learning and must be shared with others. I am committed to integrating this new learning into my classroom, sharing it with others, and advocating strongly for increased movement opportunities for our students.

TABLE 2 – Week 1 Observations During Independent Work

Two-Week Observation During Independent Work

Date	Outside Recess	Incomplete Work	Redirection Given	Movement-Seeking Behaviors	Visits to Take A Break Chair	Positive Change after Take a Break Chair
10/3/16	1	3	4	4	2	1
10/4/16	1	3	4	5	1	0
10/5/16	1	2	6	3	0	-
10/6/16	1	2	9	6	1	0
10/7/16	1	1	5	4	0	-

TABLE 3 – Week 2 Observations During Independent Work

Date	Outside Recess	Incomplete Work	Redirection Given	Movement-Seeking Behaviors	Visits to Take A Break Chair	Positive Change after Take a Break Chair
10/10/16	1	1	7	3	1	0
10/11/16	1	0	4	1	0	-
10/12/16	1	1	5	1	1	0
10/13/16	1	2	4	2	1	1
10/14/16	1	0	5	3	0	-

TABLE 4 – Week 3 Observations with Movement Intervention

Two Week Observation Period with Movement

Date	Number of Outdoor Recesses	Type of Guided Movement	Incomplete Work	Redirection Given	Movement-seeking Behaviors	Visits to the Take A Break Chair	Positive Change after Take A Break Chair
10/24/16	2	Lazy 8	1	3	1	0	
10/25/16	2	Cross-Crawl	0	2	1	0	
10/26/16	2	Hook-Ups	3	1	0	0	
10/27/17	2	Owl	0	3	0	0	
10/28/16	2	Lazy 8	0	5	1	0	

TABLE 5 – Week 4 Observations with Movement Intervention

Date	Number of Outdoor Recesses	Type of Guided Movement	Incomplete Work	Redirection Given	Movement-seeking Behaviors	Visits to the Movement Corner	Positive Change after Movement Corner
10/31/16	2	Cross-Crawl	0	4	2	0	
11/1/16	2	Hook-Ups	0	4	0	0	
11/2/16	2	Owl	1	2	2	0	
11/3/16	2	Lazy 8	1	3	0	0	
11/4/16	2	Cross-Crawl	0	3	0	0	

TABLE 6 – Week 1 Control Group Observations

Week 1 Control Group Observations

Date	Outside Recess	Redirection Given	Movement-Seeking Behaviors
10/4/16	1	5	2
10/5/16	1	5	5
10/6/16	1	4	4
10/7/16	1	6	4

TABLE 7 – Week 4 Control Group Observations

Week 4 Control Group Observations

Date	Outside Recess	Redirection Given	Movement-Seeking Behaviors
11/1/16	1	3	3
11/2/16	1	4	4
11/3/16	1	6	3
11/4/16	1	5	4

APPENDIX A: Letter of Consent

September 12, 2016

Dear Parent or Guardian,

I am your child's kindergarten teacher and am a graduate student working on an advanced degree in literacy education at Hamline University, St. Paul, Minnesota. As part of my graduate work, I plan to conduct research in my classroom from October 3, 2016 – November 4, 2016. The purpose of this letter is to ask your permission for your child to take part in my research. This research is public scholarship the abstract and final product will be cataloged in Hamline's **Bush Library Digital Commons**, a searchable electronic repository and that it may be published or used in other ways.

I am researching the impact of movement on student engagement in our classroom. I will observe the engagement of students during an independent work time in the afternoon for two-week. Then I will integrate an additional 10-minute afternoon recess period and lead the class in a series of movements before the independent work time. I will again observe the engagement of my students and look for any changes with the movement intervention. Students will be asked to complete an attitude survey before and after this observation period.

There is little to no risk for your child to participate. All results will be confidential and anonymous. I will not record information about individual students, such as their names, nor report identifying information or characteristics in the capstone. Participation is voluntary and you may decide at any time and without negative consequences that information about your child will not be included in the capstone.

I have received approval for my study from the School of Education at Hamline University and from the principal of XXXXXXXX. The capstone will be catalogued cataloged in Hamline's **Bush Library Digital Commons**, a searchable electronic repository. My results might also be included in an article for publication in a professional journal or in a report at a professional conference. In all cases, your child's identity and participation in this study will be confidential.

If you agree that your child may participate, keep this page. Fill out the duplicate agreement to participate on page two and return to me by mail or copy the form in an email me no later than September 16th. If you have any questions, please email or call me at school.

Sincerely,

Catherine Lay

XXXXXXXXXXXXXXXX

Informed Consent to Participate in Action Research

Keep this full page for your records.

I have received your letter about the study you plan to conduct in which you will be observing students' behavior in groups. I understand there is little to no risk involved for my child, that his/her confidentiality will be protected, and that I may withdraw or my child may withdraw from the project at any time.

_____ Parent/Guardian Signature

_____ Date

APPENDIX B: Principal Letter

Dear _____,

As you know, I am currently working on an advanced degree in literacy education at Hamline University, St. Paul, Minnesota. As part of my graduate work, I plan to conduct research in my classroom from October 3, 2016 – November 4, 2016. The purpose of this letter is to ask for your permission to implement an action research plan in my classroom. This research will be catalogued in Hamline’s Bush Library Digital Commons, a searchable electronic repository and that it may be published or used in other ways.

I want to study the impact of movement on student engagement. I plan to take observational notes on student engagement during an independent work time using a tally chart with no changes made to the regular schedule of the day for two weeks. The next two weeks I will then add a 10-minute afternoon recess in addition to the mid-day recess, lead guided movements before independent work time, and introduce a movement corner in my classroom that students can visit when needed. I will again take observational notes on student engagement during an independent work time using a tally chart. Students will be asked to complete an attitude survey at the beginning and end of this period.

Families will be informed and will be given a consent form for their child to participate as soon as the 2016-17 school year begins. All results will be confidential and anonymous. I will not record personal information on individual students such as names or characteristics. Participation is voluntary and families may decide at any time and without negative consequences that information about your child will not be included in the capstone.

I have received approval for my study from the School of Education at Hamline University.

If you give your permission for me to conduct this research in my classroom, please sign your name below.

Sincerely,

Catherine Lay

Informed Consent to Conduct Action Research Study

I have reviewed your letter about the study you plan to conduct in which you will be observing students’ behavior in the classroom from October 3, 2016 – November 4, 2016 and give my permission to implement this research plan.

Principal Signature




















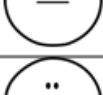




Date

APPENDIX C: Attitude Surveys

Attitude Survey Week 1

Self Evaluation

This is how I feel about...

























Writing			
I listen to directions during writing time.			
I stay on task during writing time.			
I do my best work during writing.			
I finish my work.			
I know what my job.			
Going to the Take a Break Chair makes me feel..			
I am a writer.			



Attitude Survey Week 4

Self Evaluation

This is how I feel about...

Writing			
I listen to directions during writing time.			
I stay on task during writing time.			
I do my best work during writing.			
I finish my work.			
I know what my job.			
Going to the Movement Corner makes me feel..			
I am a writer.			



APPENDIX D: Quantitative Data Recording Sheets

Two Week Observation Period with Movement

Date	Number of Outdoor Recesses	Type of Guided Movement	Incomplete Work	Redirection Given	Movement-seeking Behaviors	Visits to the Movement Corner	Positive Change after Movement Corner

Two-Week Observation During Independent Work

Date	Outside Recess	Incomplete Work	Redirection Given	Movement-Seeking Behaviors	Visits to Take A Break Chair	Positive Change after Take a Break Chair

Control Group Observations

Date	Outside Recess	Incomplete Work	Redirection Given	Movement-Seeking Behaviors

APPENDIX E: Movement Corner



APPENDIX F: Brain Gym® Movements

The Learning Menu for the Brain Gym® Course

The 26 Basic Movements

The Midline Movements

Think of an X Neck Rolls The Double Doodle Alphabet 8s Belly Breathing

The Elephant Cross Crawl Sit-ups Lazy 8s The Rocker

The Energizer The Cross Crawl

The Energy Exercises

Sipping Water

The Energy Yawn

The Thinking Cap

Space Buttons

Earth Buttons

Brain Buttons

Balance Buttons

Deepening Attitudes

The Positive Points

Hook-ups
Part I

Hook-ups
Part II

The Lengthening Activities

The Owl

Arm Activation

The Footflex

The Gravity Glider

The Calf Pump

The Grounder

Repatting:
Dennison Laterality Repatting
Three-Dimension Repatting

X II

Dennison, P. E., & Dennison, G. E. (2007). Brain Gym 101 Balance for Daily Life.

Ventura, CA: Edu-Kinesthetics.

REFERENCES

- Bassok, D., Latham, S. & Rorem, A. (2016). Is Kindergarten the New First Grade. *AERA Open*, 1(4), 1-31, DOI: 10.1177/2332858415616358.
- Brown, K. (2012). *Educate your brain: Use mind-body balance to learn faster, work smarter, and move more easily through life*. Phoenix, AZ: Balance Point Publishing LLC.
- Chandler, P. c., & Tricot, A. A. (2015). Mind Your Body: The Essential Role of Body Movements in Children's Learning. *Educational Psychology Review*, 27(3), 365-370.
- Connell, G., & McCarthy, C. (2013). A moving child is a learning child: How the body teaches the brain to think (birth to age 7).
- Creswell, J. W. (2014). *Research design: Quantitative, qualitative, and mixed method approaches* (4th ed.). Thousand Oaks, CA: Sage Publications.
- Dennison, P. E., & Dennison, G. E. (2007). *Brain Gym 101 Balance for Daily Life*. Ventura, CA: Edu-Kinesthetics.
- Fuchs, M. m. (2014). Movement Matters. *Montessori Life*, 26(4), 31-37.
- Gillen, L. (n.d.). *Yoga for Kids | Yoga Teacher Training | Mindfulness Meditation*. Retrieved April 18, 2016, from <http://www.yogacalm.org/>.
- Hannaford, C. (2005). *Smart moves: Why learning is not all in your head*. Arlington, VA: Great Ocean.

- Helgeson, J. (2011). 4 Simple Ways to Add Movement in Daily Lessons. *Kappa Delta Pi Record*, 47(2), 80-84.
- Jensen, E. P. (2008). A Fresh Look at Brain-Based Education. *Phi Delta Kappan*, 89(6), 408-417.
- Juster, F. Thomas et al. (2004). "Changing Times of American Youth: 1981-2003", Institute for Social Research, University of Michigan. *Child Development Supplement*.
- Marzano, R. J., Pickering, D., & Heflebower, T. (2011). *The highly engaged classroom*. Bloomington, IN: Marzano Research.
- Mills, G. E. (2014). *Action research: A guide for the teacher researcher* (5th ed.). New Jersey: Pearson.
- Pawlowski, A. (2016, January 8). Here's what happened when a school tried recess four times a day. Retrieved April 05, 2016, from <http://www.today.com/parents/want-kids-listen-more-fidget-less-try-more-recess-school-t65536>.
- Pellegrini, A. D., & Bjorklund, D. 1. (1997). The role of recess in children's cognitive performance. *Educational Psychologist*, 3235-40.
- Reilly, E., Buskist, C., & Gross, M. K. (2012). *Movement in the Classroom: Boosting Brain Power, Fighting Obesity*. *Kappa Delta Pi Record*, 48(2), 62-66.
doi:10.1080/00228958.2012.680365
- Rhea, D.J. (September, 2015). Why young kids need less class time — and more play time — at school. *Washington Post*.
<http://www.washingtonpost.com/blogs/answer-sheet/wp/2015/08/21/why-young-kids-need-less-class-time-and-more-play-time-at-school/>.

- Rivkin, M. S. (2006). Moving & Learning Together!. *Early Childhood Today*, 20(6), 32-38.
- Schlechty, P. C. (2011). *Engaging Students: The Next Level of Working on the Work*. San Francisco: Jossey-Bass.
- School Healthy Policies and Practices Study. (2016). Retrieved March 20, 2016, from <http://www.cdc.gov/>.
- Shoval, E. e., Sharir, T. t., & Shulruf, B. b. (2014). The Challenge Kindergarten Model: Integrating Body-Movement and Scaffolding to Keep the Child in the Center and Make Systematic Progress in Learning. *Early Childhood Education Journal*, 42(4), 279-286.
- Taylor, A. (2012). Why Finland's Unorthodox Education System Is The Best In The World. Retrieved March 19, 2016, from <http://www.businessinsider.com/finlands-education-system-best-in-world-2012-11>.
- Turner, L.1., Chriqui, J.j., & Chaloupka, F. f. (2013). Withholding Recess From Elementary School Students: Policies Matter. *Journal Of School Health*, 83(8), 533-541.
- Walker, T. (2015, October 1). The Joyful, Illiterate Kindergarteners of Finland. Retrieved April 17, 2016, from <http://www.theatlantic.com/education/archive/2015/10/the-joyful-illiterate-kindergartners-of-finland/408325/>.
- Wilson, D., & Conyers, M. (2014, March 12). Move Your Body, Grow Your Brain. Retrieved April 05, 2016, from <http://www.edutopia.org/blog/move-body-grow-brain-donna-wilson>.

