

## **Abstract**

ALLEN, AMANDA HUDSON. What do the Teachers Have to Say? A Phenomenological Study of the Use of Stationary Movement Devices in Elementary and Middle School Classrooms. (Under the direction of Dr. Stanley B. Baker and Dr. Adria Shipp Dunbar).

The purpose of this phenomenological study was to explore and describe the experiences of elementary and middle schoolteachers who have used stationary movement devices (SMDs) in their classrooms. A phenomenological approach was as a foundational exploration of SMD use in the classroom setting because there was a lack of directly related research. Consequent of limited prior research, the theoretical framework: Bandura's social cognitive theory was chosen as a way to explain teachers' decisions pertaining to SMD use in the classroom. Teachers from an elementary and a middle school located in a suburban area of a southeastern state were selected for interviews and study participation based on two criteria: their choice to give students access to SMDs and their willingness to describe the lived experience of using SMDs in the classroom setting. Interview data were analyzed via phenomenological reduction, imaginative variation and synthesis in order to explore and isolate themes. At the conclusion of data analysis processes, three themes and 13 subthemes were established. The shared experiences of teacher participants were grouped into three themes: (a) teaching philosophy, (b) decision and structure surrounding SMD use, and (c) observations after introducing SMDs. Limitations to this study included participants' relationship with the interviewer, the general nature of self-reporting information, temporal conditions of the formal classroom observations, and the limited quantity of SMDs available for teachers' use. The implications of findings can be applied to practices and future research relating to the roles of school counselors, teachers, and education leaders. Some practical recommendations for school counselors include the use of SMDs directly or indirectly as a

coping mechanism to assist students with de-escalation at times of anxiety, frustration, or high energy. Recommendations for teachers include making SMDs available to all students, setting clear expectations before SMDs are distributed, and the use of SMDs as a tool for improved fitness, student motivation, or classroom intervention. A strong consideration for education leaders was the importance of presenting SMDs to staff as an option rather than requirement for classroom adoption, which may increase initiative and ownership taken by teachers interested in using SMDs. Future research implications include studying each of these practical recommendations, as well as seeking outcome data relating to thematic findings of this study.

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What do the Teachers Have to Say? A Phenomenological Study of the Use of  
Stationary Movement Devices in Elementary and Middle School Classrooms

by  
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## **Dedication**

This dissertation is dedicated to the man with whom I look forward to spending tomorrow.

Tyler, your love, support, humor, and compassion have carried me through the best and worst of times. I love you and I look forward to all our journeys that have yet to come!

## **Biography**

Amanda Hudson Allen earned her Bachelor of Science in Elementary Education, with a concentration in mathematics, from North Carolina State University in 2009. She received her Master of Education in School Counseling from North Carolina State University in 2011. In 2012 she entered the doctoral program in Counselor Education at North Carolina State University. During Amanda's time in her doctoral program she continued her professional work as a full-time elementary school counselor; presented at various local, state and national conferences; was awarded six grants for supplies to enhance her school counseling program; was awarded first place in a graduate student poster contest; gave birth to her first child and conceived her second. Out of all the work done during her doctoral studies, the birth of her first child, conception of her second child, and finding time to go on adventures with her daughter--Isabel and spouse--Tyler were her most proud accomplishments.

## Acknowledgements

With the tremendous group effort required to complete a doctoral program, including the dissertation, I'm not quite sure where to begin – so I'll start from with my foundation.

My grandma, "Pat" Arnette, has been my biggest cheerleader since I was given the honor of being her first-born grandchild. Without her encouragement and belief in my ability to get my work done, I may have lost hope along the way. I'm still not quite sure which parent I got my "smarts" from and based on the stories I've heard about things Dad did as a boy, they must have come from Mom. But then again, Dad always knew how to make me smile and that seems pretty smart to me. Regardless of which one passed along beneficial genetic traits, I'm so thankful to have had both of my parents, even for a short time. The person I am today is a product of the environment and love in which I lived as a child. Thank you to everyone who had a hand in raising me: Mom, Dad, Grandma, Clare, Bobbie, Vern, and everyone else who let me stay over for a little while.

For the better part of a decade, I've had the love and support of the most amazing man I've ever met and for that I am eternally grateful. Tyler, without your overabundance of patience and unconditional love, I'd probably still be working towards my bachelor's degree. You've spent so many days and nights watching the baby (who is no longer much of a baby) or keeping the house silent so I could write. Seriously. You are a phenomenal father and an extraordinary husband. Now it's your turn to be the student.

I would also like to give a special thanks to all of the individuals who still allow me to call them friends, even though we haven't really spoken since I fell into the dark abyss that

was this dissertation. I look forward to lots of long phone calls and meetings at coffee shops once this document is deemed complete!

Additionally, my co-workers have been so compassionate as I've asked for their assistance in numerous ways through my doctoral program and dissertation process. I can't name each of you specifically because you may have been part of this study, but you know who you are and I am so grateful for your support. I couldn't ask to work with a better group of teachers, administrators, and support staff. Best of all, I'll be at more staff meetings now.

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## Chapter 1: Introduction

Imagine going on a tour of occupied classrooms in an elementary and middle school. After a few moments of observation in your first classroom, you notice a quiet humming sound. You look around and see that some students are using stationary pedaling equipment, comparable to those found on a bicycle. As you continue your tour of classrooms, you repeatedly see the use of these stationary pedals, but each class seems to use them a little bit differently. In one class, you see four students using the pedals under their desks as they work independently on a classroom assignment. In another classroom there are only two pedals, that you can see, and you overhear one student asking another, “Can I use the pedals now?” A third classroom seems to have these pedals set up in different locations of the room, away from students’ desks, similar to break or learning stations. The last classroom you tour, that is equipped with these stationary pedals, has almost enough for each student to have their own pedal under their desks.

The scenarios just described can be observed in classrooms at two public schools: one elementary and one middle school located in a suburban area of a southeastern state. The bicycle type pedals used in these classrooms were obtained through a local grant (Allen, 2013) based on the premise that movement incorporated in the classroom will increase cognitive functioning and promote healthy living (Medina, 2008). It is also important to note that these pedals were not presented as a tool for students with certain characteristics, such as hyperactivity or inattentive behaviors. These pedals were introduced with the idea that all students have equal chances of benefitting from using them. The idea of incorporating physical movement in classrooms for the purpose of increasing student health and cognition

is not a new concept. However, because there are so many factors and variables that contribute to academic success, determining that movement is directly related to increased success can be a difficult connection to make.

Exploration of many possible phenomena that occurred when stationary movement devices were introduced to the classroom setting was conducted in a pilot study (Allen, 2014). This study was conducted to gain understanding of students' experiences and factors that may have been affected because of the introduction of stationary movement devices to the classroom setting.

### **Pilot Study on the Use of SMDs**

The purpose of the pilot study was to explore and describe the experiences of fifth grade students who were given voluntary access to stationary movement devices (SMDs) in the classroom setting. Extant data from nine student interviews at the elementary school were analyzed. The following four themes emerged: (a) structure, (b) student choice, (c) positive/desired change, and (d) negative/undesired change (Allen, 2014).

Although it was insightful to learn about the experiences of students who used SMDs in this pilot study, it was also recommended that a future study be done to capture the experiences of teachers who chose to use SMDs in their classrooms. The rationale behind this suggestion was that fellow school counselors, teachers, and education leaders interested in the use of SMDs might value the perceptions of teachers more than the perceived experiences of students. Though both perspectives are important, the present study is in response to suggested implications from the pilot study with the goal of learning about the



various ways teachers used SMDs and the perceived changes, if any, surrounding the introduction of SMDs to the classroom.

### **Theoretical Framework**

In my previous study (Allen, 2014) using SMDs in elementary classrooms, I recommended Bandura's (2006) social cognitive theory (SCT) as a theoretical framework for future studies on the use of SMDs. This recommendation was made because similarities existed between Bandura's focus on agency and students' choice to take responsibility for their learning by using SMDs to enhance their classroom productivity. Bandura (2006) explained the concept of agency when he said, "to be an agent is to intentionally influence one's functioning and life circumstances" (p. 164). Human agency consists of three different modes: (a) direct, individual, or personal agency which occurs when a person brings influence or control to a situation; (b) proxy agency or "socially mediated agency" which comes into play when an individual influences or calls upon someone else to assist in obtaining a desired outcome; and (c) collective agency which consists of a group with a shared belief working to pool every member's knowledge, skills and resources to work together (Bandura, 2001, 2006). Findings from the pilot study included indications from students that SMDs could be used as a direct mode of human agency. This could be determined because students reported having control over their use of SMDs, which served as tools to enhance their experiences in the classroom setting.

In the present study, the modes that were predicted as most applicable were proxy and collective human agency. Unlike the previous study, SMD use was investigated from the perspective of the teachers who chose to use SMDs in their classrooms. In the current

investigation, teachers were the proxy agents who offered a form of assistance to students through the introduction of SMDs. Collective agency was also applicable because the introduction of SMD use to the classroom setting had previously been shown to assist in promoting a classroom culture of responsibility (Allen, 2014). Themes of proxy and collective agency emerged from teacher interviews. Initial predictions compared to information discovered in interviews will be discussed further in study results and discussion in chapters four and five.

### **Related Literature**

Most related studies have focused on physical activity programs conducted during transitional times of the school day, that is, during specially planned lessons that required teacher training for implementation, or required students leave their regularly assigned classroom to participate in the physical activity (Hruska & Clancy, 2008; Hyatt, 2007; Peters, 2014; Ratey, 2008; Skoning, 2008). It is important for educators to choose student activities and programs for students based on research and outcome data. Unfortunately, this is not always what is practiced. These important considerations, research, and outcome data, have previously been bypassed and educators have instead relied upon online testimonials about marketed products such as the Brain Gym program (Hyatt, 2007). It can be inferred, from Hyatt's report (2007), that programs seeking participation of educators must present data, rather than testimonials, that show benefits from the adoption of such programs in schools. There is a need for studies, such as this, that give research-based evidence to practices evolved from published ideas (Medina, 2008).

**Physical movement to assess content.** Physical movement has been incorporated into elementary and middle school curriculum as a means of doing quick comprehension checks and informal assessments. Examples of this include asking students to move to a location to indicate their answer or to physically act out a response to a question (Hruska & Clancy, 2008). This supports the notion that physical activity is important to both school populations targeted within this study, especially when standardized assessments add pressure on teachers to use every possible moment on core curriculum concepts. However, suggested assessment activities that incorporate movement do not provide a physical outlet for students throughout the day, only when classroom teachers direct students to respond to classroom questioning through movement (Hruska & Clancy, 2008).

**Physical movement to teach content.** Movement also has been incorporated into learning environments to reinforce specific content being learned, such as developing or exploring a dance that represents or demonstrates a learned concept (Skoning, 2008). Additionally, dance movements were suggested as ways to transition students from one school task to the next. Students' ability to learn and recall information may be enhanced by these physical movement practices but students are not able to dictate when movement practices can be used because these are teacher lead activities.

**Physical movement to improve reading.** Unlike previously described programs that incorporated physical movement in special lessons or at transitional times, Scott Ertl, a school counselor at Ward Elementary in Winston Salem, NC, started a program called Read and Ride allowing students to move using exercise bicycles while reading (Fain, 2012). Even though this program requires little explanation to teachers and students on how to use

the classroom containing the class set of exercise bicycles, the amount of time students are actually able to access the equipment is limited to when their class is allowed to visit one of the Read and Ride rooms. Data at Ward Elementary were analyzed after the Read and Ride program began. The results indicated, “students who had spent the most time in the program achieved an 83% proficiency in reading, while those who spent the least time in the program had failing scores—only 41% proficiency” (Peters, 2014). Causality for students’ test scores cannot be determined based on one variable, such as amount of participation in the Read and Ride program, but Ward Elementary School’s test scores were similar to performance improvements reported by some student-participants after using SMDs in the classroom in the pilot study (Allen, 2014).

**Physical movement to improve learning.** The use of physical movement in educational settings can benefit students through preparing the brain to receive new information (Ratey, 2008). These benefits have been seen in Naperville, Illinois where a high school implemented a remediation program that increased the amount of time students were asked to exercise during the school day to improve their ability to learn and retain academic content. The students’ only exercise goal was to achieve an elevated target heart rate. This PE initiative for providing remedial help showed great growth in student performance, causing school-wide adoption of this program (Ratey, 2008).

**Physical movement and the present study.** Each of these previous reports contained important information about movement integration in classrooms. However, the mode of physical activity differed from the present study in implementation and availability to students. In the present study, students were given access to stationary bicycle pedals,

SMDs, in the classroom setting. These SMDs were made available to classroom teachers at the beginning of the school year. Teachers who chose to use SMDs in their classroom were not given training on how to use SMDs with their students. Instead, teachers were originally told that SMDs were purchased under the assumption that these tools may assist students with classroom performance and with emphasizing the importance of physical activity for healthy living based on benefits reported about aerobic activity and exercise on brain function (Medina, 2008). Teachers were allowed to implement the use of SMDs in whatever way they felt would be best to meet the needs of their students within the culture of their classroom.

### **Statement of the Problem**

School counselors, teachers, and education leaders all share a commonality in their professional roles of assisting students through school, directly and indirectly. Each profession goes about assisting students in different ways, as is highlighted in the applicable professional standards (shown in appendices A, B, and C). However, all three professions may take interest in the results of this study because academic and personal/social benefits of using SMDs in the classroom supports goals within all three groups' professional standards (ASCA, 2005; CCSSO, 2008; NBPTS, 2014).

**Connection to professional standards.** Suggested benefits from the use of physical movement with students include emotion regulation and improved motivation (Ratey, 2008), which are both student competency goals listed in the American School Counselor Association National Model (ASCA, 2012). Academic developments such as improved cognitive functioning and information retention of students have been seen through the

incorporation of movement activities (Peters, 2014; Ratey, 2008; Skoning, 2008). Improved student academic performance is a goal included in the competencies of school counselors (ASCA, 2012), core propositions of high standard teachers (NBPTS, 2014), and standards and functions of education leaders (CCSSO, 2008). These connections between the professional standard goals of school counselors, teachers, and education leaders to previous outcomes of incorporating physical activity in educational settings can be seen in table 1 and make this study one of interest that should be considered as future practices are implemented for the purpose of supporting students’ academic and personal/social needs. Specific practical implications are discussed in chapter five.

Table 1

*Previous Outcomes of Physical Activity (PA) addressed by Professional Standards*

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<u>Profession and Standards</u>	<u>PA Outcome 1: Enhanced Emotion Regulation</u>	<u>PA Outcome 2: Increased Classroom Motivation</u>	<u>PA Outcome 3: Improved Academic Performance</u>
School Counselors (ASCA, 2012)	X	X	X
High Standard Teachers (NBPTS, 2014)			X
Education Leaders (CCSSO, 2008)			X

---

**Explanation of problem.** School counselors, teachers, and education leaders directly and indirectly assist students with learning needs, home-life needs, and interpersonal needs.

These professionals’ goals of assisting students can be addressed by meeting students’ cognitive/academic and personal/social needs. Cognitive/academic and personal/social needs

are addressed by standards of practicing school counselors, teachers, and education leaders (see table 1 and appendices A-C). Each of these sets of standards have commonalities for helping students achieve success in school and for holding educators accountable for reflecting on their practices using data to make decisions for future programs (ASCA, 2012; CCSSO, 2008; NBPTS, 2014).

Physical activity has been shown to enhance the academic setting for students when incorporated through various programs previously mentioned (e.g. Read and Ride, movement to increase heart rate to optimal levels, and teaching through dance and movement)(Peters, 2014; Ratey, 2008; Skoning, 2008). To determine the effectiveness of a practice, data must be collected and analyzed. This study addresses the gap in research on physical activity programs that can be implemented during lessons without constant direction from teachers on when and how to use the movement equipment or SMDs. This study also addresses the role of human agency. Specifically, if the use of SMDs was fostered through proxy agency or if the collective agency of the classroom was altered when SMDs were introduced (Bandura, 1986, 2001, 2006).

### **Purpose and Research Questions**

The purpose of this phenomenological study was to explore and describe the experiences of elementary and middle schoolteachers who have used stationary movement devices (SMDs) with students in their classrooms. The central question being asked within this study was: What are teachers' experiences and perceptions in using SMDs in their classrooms? This was broken down into two sub-questions that were derived from the four main themes isolated in a pilot study (Allen, 2014) on student experiences: (a) What factors

do teachers credit for decisions to introduce SMDs in their classrooms? (b) What changes, if any, do teachers perceive after introducing SMDs? These questions were purposefully left broad to accommodate all possible responses individuals gave when asked about the phenomenon of using stationary movement devices with students in classrooms. Bandura's (1986, 2001, 2006) social cognitive theory was used as a theoretical framework to explain teachers' decisions pertaining to the use of SMDs.

### **Importance of Study**

This study supports future practices and research pertaining to the incorporation of physical movement in the classroom setting. The present study benefits school counselors, teachers, and education leaders by providing first hand descriptions of SMD use in elementary and middle school classrooms. This allows others to reflect on the shared themes within this study to build more effective student workspaces, classrooms, and schools for future generations.

It is important for research-based evidence to support educators' practices, especially new practices. This study serves as foundational research on which teachers' and education leaders, such as administrators', can build with their own student populations. Future researchers are supported by the descriptions and themes that were generated from this study as a way to identify variables affected by introducing SMDs into the classroom setting. Future researchers and practitioners may be able to take the information from this study to establish the most effective ways to utilize SMDs in a classroom setting. Data were collected and analyzed in chapter four and additional research and practice implications of the findings of this study are discussed in chapter five.



## **Assumptions**

An initial assumption was made when a grant was written to obtain SMDs and when SMDs were distributed to teachers. This assumption was that the use of such devices had the potential to assist cognitive functioning while also supporting a healthy lifestyle (Medina, 2008). It was assumed that a phenomenon occurred when SMDs were introduced to classroom settings and that a noticeable change took place for students or the classroom setting, so noticeable that teachers were able to describe their experiences of what occurred.

It is important to note that once data collection and analysis began, so did the Epoche, which according to LeVasseur (2003) is the time when researchers must suspend their understanding in a reflective way that fosters creativity. This meant that any prior assumptions made in regard to SMDs and other factors surrounding this study were methodically kept out of the understanding of what might be happening in the studied situation. If teacher-participants share descriptions and lived experiences that aligned with initial assumptions, the information was still analyzed for its true meaning rather than jumping to conclusions based on listed assumptions. More details pertaining to data collection and analysis of this study are presented in chapter three.

## **Definition of Key Terms**

Key terms used throughout this study are defined as follows:

**Agent.** An agent is a person who intentionally made something happen with his or her own actions (Bandura, 2001). Bandura (1986, 2001, 2006) emphasized that all human beings are agents.

**Education leaders.** The term education leaders is used to represent leadership positions held in the field of education such as school administrators, superintendents, and other supervisors or directors typically employed by a school system.

**Epoche.** A time in which “we set aside our prejudgments, biases, and preconceived ideas about things” (Moustakas, 1994, p. 85).

**Essence.** “That which is common or universal, the condition or quality without which a thing would not be what it is” (Husserl, 1931, p. 43); the principle of the series “that which must be able to be manifested by an infinite series of individual manifestations” (Sartre, 1965, p. xlviii).

**Personal/social development.** “Maximizing each student’s individual growth and social maturity in the areas of personal management and social interaction” (ASCA, 2012, p. 142).

**Special needs.** Within the context of this study, special needs are defined as needing academic and emotional support beyond what could be provided in a larger classroom.

**Stationary Movement Device (SMD).** For the purpose of this study SMDs are stationary bicycle pedals with an adjustable resistance knob. These devices are small enough to fit underneath a standard student schoolroom desk and can be pedaled forwards and backwards at varying levels of resistance. Stationary movement devices are referred to as SMDs, pedals, and peddlers throughout the content of this document. Teacher participants knew and referred to SMDs as pedals or peddlers. A visual representation of the type of SMD used in this study can be seen in Appendix D. For future practices and research, the

term stationary movement device could be used for any device that allows for movement to occur, while an individual remains in one standing or sitting location.

**Trigger.** (noun) “Something that causes something else to happen” (“Trigger,” n.d.).

### **Organization of Study**

The initial concept of using stationary movement devices or SMDs in elementary and middle school classrooms, as determined by the classroom teacher, was introduced in this chapter. The statement of the problem, purpose and research questions, importance of the study, limitations, assumptions, and definitions of key terms were also included within the first chapter. A comprehensive review of pertinent literature and previously conducted studies surrounding the use and importance of movement in academic settings is followed by relevant information about the chosen theoretical framework – SCT in chapter two. The methodology established to conduct this study is found in chapter three. The findings or results are in chapter four and discussion and conclusions based on the findings and results of the data analysis are in chapter five.

## **Chapter 2: Literature Review**

School counselors, teachers, and education leaders all share a commonality in their professional roles of directly and indirectly assisting students' cognitive/academic and personal/social needs. The primary goal of the present study was to explore teachers' experiences and perceptions of what happened in their classrooms after introducing SMDs to students. A secondary goal was to explore the use of SMDs as a potential way to assist students by supporting their cognitive/academic and personal/social needs. Related literature to the use of stationary movement devices in a learning setting is limited and there was no direct research found on the use of movement devices in the classroom setting. Research and related literature are presented within this chapter as a way to establish background information. Following the related research, the theoretical framework of Bandura's social cognitive theory is presented to set the foundation for this study.

Pertinent literature is reviewed in this chapter to gain an understanding of how the use of physical movement has previously assisted with the cognitive/academic and personal/social needs of students. The review is organized into five sections: (a) an introduction to educational neuroscience, (b) information about physical movement as it relates to cognitive and academic needs, (c) additional information about physical movement as it relates to personal/social needs, (d) an overview of the chosen theoretical framework—social cognitive theory, and (e) a summary of the literature reviewed.

### **Introduction to Educational Neuroscience**

Physical movement in educational settings has been introduced and discussed by neuroscientists (Cotman & Berchtold, 2002; Medina, 2008), educators (Dennison &

Dennison, 1994; DuBose et al., 2008; Grant, 1985; Griss, 1994; Hruby, 2012; Hruska & Clancy, 2008; Hyatt, 2007; Jensen, 2000; Kibbe, Hackett, Hurley, McFarland, Schubert, Schultz & Harris, 2011; Manske, 2006; Pica, 2006; Skoning, 2008) and medical doctors (Ratey, 2008; Whitt-Glover, Ham & Yancey, 2011), all of which provide unique insight to the emerging field of educational neuroscience. There is limited research on humans in the field of neuroscience because of ethics, therefore human implications must be inferred when the brains of animals have been studied (Cotman & Berchtold, 2002). Neuroscientists have reported that after participating in physical activity, brains of mice have shown notable changes in areas of the brain that are most closely associated with cognitive functioning (Cotman & Berchtold, 2002). Neuroscientists have used Cotman and Berchtold's results (2002) to infer that physical activity can improve the human brain's cognitive functioning. Insights of educators have included that physical activity, when incorporated into the learning process or educational setting, keeps students engaged, motivated and on task (Griss, 1994; Jensen, 2000; Skoning, 2008). Medical doctors have also promoted physical activity as a way to improve students' ability to think and concentrate, especially when information is taught soon after students are actively engaged enough to get their heart rate up to an optimal level (Ratey, 2008).

**Educational neuroscience as an emerging field.** One reason for this study was the need for research on the effects of physical activity on children's ability to learn and function cognitively. There is a lack of research on this topic and an applicable theory has not yet been identified. Hruby (2012) presented this area of study, calling it educational neuroscience, as a new field of interest that may be ready to blossom. However, its existence

cannot be justified unless three requirements are met: a capacity for consistent intellectual coherence, scholarly expertise, and a demonstration of ethical commitment (Hruby, 2012). As this new field of interest is considered, one must take caution to prevent misuse of information. This is especially true for how educational neuroscience may be used for educational policy and practice (Hruby, 2012). To provide clear, useful findings in educational neuroscience one must consider all factors surrounding the neurological concept being studied. This demand for clear and carefully presented findings supports the need for a foundational exploratory study, such as the present one, to establish what occurs when tools, thought to help neurological functioning, are introduced to a learning environment.

**Foundation for use of SMDs in classroom setting.** Developmental molecular biologist, John Medina (2008), is responsible for the text that originally inspired the concept of using SMDs in classrooms as means of supporting students' academic needs. Medina's text contains key concepts that hypothetically improve the brain's ability to function. One of these concepts is that *exercise boosts brain power*. Within the chapter addressing this concept, real case studies were presented with the purpose of supporting the idea of exercise prolonging brain plasticity, as well as longevity. While Medina's ideas were intriguing and thought provoking, only a few empirical studies were specifically related to children and adolescents. One of the researchers quoted by Medina (2008), was Dr. Antronette Yancey who said, "Kids pay better attention to their subjects when they've been active" (p. 18). Dr. Yancey went on to say children are less disruptive and have raised self-esteem, less depression and anxiety all because of increased physical activity. Yancey was an advocate

for children's health and wellness and collaborated on research that studied the effects of additional physical activity integrated into the school day (Whitt-Glover et al., 2011).

**Rationale for current study.** Whitt-Glover et al.'s study (2011) introduced a program incorporating 10-minute instant recesses to eight schools in Forsyth County, North Carolina as a way to integrate the need for additional recess time into time needed for academics. This was done in response to local policy increasing recess time requirements because of childhood obesity rates, which continue to increase when students are asked to stay sedentary in the classroom setting. Observation results included an 11% increase in students' time on task after a 10-minute recess was introduced to students' classrooms. Although the original goals of this study sought only to increase in-school physical activity, students' time on task was also improved; supporting the notion that physical activity can assist with cognitive functioning such as focus and attention. Unfortunately, the physical activity requires teachers to attend training and cannot be done continuously during all lessons (Hruska & Clancy, 2008; Hyatt, 2007; Skoning, 2008).

After reading about the Whitt-Glover et al. (2011) study, one may wonder why SMDs have been given to teachers for use with students rather than merely employing evidence based practices such as Brain Gym (Dennison & Dennison, 1994), TAKE 10! (Kibbe et al., 2011), or Physical Activity Across the Curriculum (PAAC; DuBose et al., 2008). Brain Gym consists of simple movements that can be taught by teachers to activate both sides of the brain (Dennison & Dennison, 1994). TAKE 10! is a program that provides 10 minute curriculum-aligned physical activities for teachers to use with students throughout a school week (Kibbe et al., 2011). Physical Activity Across the Curriculum trained teachers on how

to incorporate physical activity into academic lessons. The PAAC program recommended 90-100 minutes of physical activity time be integrated into the classroom setting each week (DuBose et al., 2008).

Although all three of the previously described programs have value in integrating physical movements/activity into academic settings, there were important reasons behind studying SMD use instead. First, while all of these models for integrating physical activity into the classroom were effective when executed with fidelity, participating teachers had to attend required training to implement these models. Second, there were parameters in place on when each of these movement programs could be and should be used, in the school day, which might not fit the needs of some students or teachers.

In contrast, SMDs could be made available in classrooms at any time, and the integration of SMDs to the classroom setting did not require teacher instruction on how or when to use them. These are important differences to know about the use of SMDs in this study compared to how movement has been previously introduced to the classroom setting. These differences kept the foundations of this study in previously uncharted territory.

### **Physical Movement and Cognitive and Academic Needs**

Physical movement has been studied in the context of cognitive and academic performance benefits. Authors of some of these studies have implied that when cognitive functioning improves, academic performance does as well. To avoid relying on implications as founded results, this section has been divided into two sections; the first section focuses on physical movement and cognitive functioning and the second section focuses on physical movement and academic performance.



**Physical movement and cognitive functioning.** Aerobic activity increases the amount of oxygen in the bloodstream, providing more oxygen to the brain, which has been found to improve cognitive functioning (Medina, 2008). Pedaling using SMDs was initially assumed capable of facilitating this aerobic activity needed to increase oxygen flow to the brain. There is a lack of studies targeting human subjects that obtained consistent results when looking for empirical support for Medina's (2008) findings. Previous links found between physical activity and cognitive functioning have either been in reference to studies conducted on animals (Cotman & Berchtold, 2002) or have ended in mixed results with human studies (Davey, 1973; Gupta, Sharma & Jaspal, 1974; Gutin & DiGennaro, 1968a; Gutin & DiGennaro, 1968b; Hammerton, 1971). Therefore, additional research is needed pertaining to physical movement and cognitive functioning in humans.

Voluntary exercise can increase the cognitive functioning of rats and mice in a short period of time, as was found by Cotman and Berchtold (2002), which is promising when thinking about implications of voluntary exercise, such as students' use of SMDs, as it relates to humans' cognitive functioning. In Cotman and Berchtold's (2002) study, a few days of volunteer running on the wheel resulted in increased levels of brain-derived neurotrophic factor or BDNF mRNA in the hippocampus region of the animal subjects. Based on knowledge of the functions of BDNF and DNA associated molecules such as mRNA and learning that the increase was found in the hippocampus, Cotman and Berchtold (2002) were able to conclude that voluntary exercise increased cognitive functioning for their subjects' in a very short amount of time. Although these results may imply voluntary exercise improves cognitive functioning of humans, it is important to view such findings with caution as was

suggested by Hruby (2012). Assumptions cannot be made based on previous findings that were not specifically related to human subjects, making the following research review important additions to this field of interest.

Exercise can “facilitate or impair performance on the same cognitive test depending on the level of physical fitness of the subject and the point at which the subject is tested”, according to an extensive review of studies on the effects of exercise on cognitive processes (Tomporowski & Ellis, 1986, p. 344). These studies varied by method of exercise, duration, intensity, cognitive performance evaluation, and the time cognitive evaluations were conducted. Tomporowski and Ellis’s (1986) findings suggest a need for further research in this field of study because the results reported from multiple studies were inconclusive.

**Physical movement and academic performance.** High-intensity aerobic activity significantly increases performance when done for time spans of five minutes or less and decreases performance when done for any longer than five minutes (Davey, 1973; Gupta, Sharma, & Jaspal, 1974). However, investigators have not been able to consistently confirm a decrease in ability because of intense aerobic exercise (Gutin & DiGennaro, 1968a; Gutin & DiGennaro, 1968b; Hammerton, 1971). These findings are important to consider because they are related to the effects of movement on academic performance, but the same results cannot be assumed for the present study because the use of SMDs provided a means of low to moderate aerobic activity, unlike the high intensity movements used in the previous studies. In addition, results on tests can be altered by many factors such as the test setting, test anxiety, or information retention to name a few factors that can prevent or allow

maximum test performance. Some of these factors may have influenced findings of studies that focused solely on aerobic activity and test performance.

Even though academic interventions can be difficult to study because multiple factors contribute to learning and student success, there is still great value to innovative ideas that are executed in classrooms. The following information presents support for the need for change and innovation in the way students are taught in the public school system. In 1983, Howard Gardner presented his theory of learners having multiple intelligences. While Gardner's theory was not based on research, it has inspired others to search for empirical support of the specific intelligences concept. The intelligence type presented by Gardner that is most applicable to this study is kinesthetic learning, which involves the use of movement and physical activity as a learning preference.

Incorporating kinesthetic learning into the classroom "is often a magical key" (Griss, 1994, p. 80) for students who cannot typically remain in their seats. This allows students to release some of their pent-up physical energy and can result in enhanced concentration and focus. In addition there are implications of improved student behavior because students who present challenging behaviors may be kinesthetic learners (Griss, 1994; Skoning, 2008). Skoning suggested that teachers might notice that these children (kinesthetic learners) are not able to do as they are told when asked to stay in their seat and face the front. Instead, they may need a fidget to complete work independently at their desk.

The traditional focus of classroom lessons remains on audio and visual learners. When this occurs teachers are not using techniques that fully meet the needs of all learners, especially learners with disabilities (Manske, 2006) and those who learn best through

movement and tactile activities. Gardner's (1983) kinesthetic intelligence remains the most challenging component for teachers to incorporate into the classroom (Pica, 2006). Prior to my pilot study (Allen, 2014) on SMDs, attempts to incorporate and research effects of kinesthetic movement were limited to quick activities done during transitions between lessons (Skoning, 2008) or specially planned lessons that provide movement methods at specific times during the day (Peters, 2014; Ratey, 2008), even though lessons taught to a range of learning styles have potential to meet a more broad range of student needs.

In support of the use of a range of learning styles Grant (1985) used kinesthetic approaches to teach first grade students stating, "the physical movement of this method causes such a strong attraction for the young child" (p. 461). When thinking of the energy level of some younger children it is not surprising that movement is an appealing addition to students' lessons. Beyond this appeal for first grade students, Jensen (2000) argued that humans have only been stationary and sitting in daily movements for the last 500 generations. Our predecessors used their physical abilities to move in order to survive. For these reasons, our bodies suffer when we are confined to sitting in traditional chairs all day; making it even more important to introduce movement whenever possible into daily routines. As another benefit of students moving, dopamine, which can be released through gross motor repetitive movements arouses learners, gives students more energy, and "improves their information storage and retrieval" (Jensen, 2000, p. 35).

### **Physical Movement and Personal/Social Needs**

Personal/social development is defined as "maximizing each student's individual growth and social maturity in the areas of personal management and social interaction"

(ASCA, 2005, p. 152). Many needs of an individual fall within this area of development, such as the need to regulate one's own emotions, to cope with stressful situations, and to behave appropriately in various settings. Mental health issues such as depression, anxiety and sensitivity to stress can prevent one from being able to regulate, cope, and behave appropriately. Because of the close link between one's personal/social needs and mental health, emotional and behavioral needs, these three areas will be discussed as each relates to physical movement. Physical movement has been shown to assist individuals as an intervention for mental health issues (Folkins & Sime, 1981; Martinsen, 2008; Strohle, 2009; van der Waerden, Hoefnagels, Hosman, Souren, & Jansen, 2013), emotional or psychological wellness (Collingwood & Willett, 1971; Thayer, 1996) and behaviors in children with ADHD (Allen, 2014; Verret, Guay, Berthiaume, Gardner, & Beliveau, 2012).

**Physical movement and mental health.** Physical movement has been implemented as an intervention for individuals with depression, anxiety, stress sensitivity, or other mood states. Some of these intervention methods included: two to four 20 minute length aerobic exercise sessions per week for two weeks, which consisted of warm-up stretches and brisk walking or jogging (Broman-Fulks et al., 2004); three 20-40 minute length walking sessions per week for six to 16 weeks (Craft & Perna, 2004); and three to five 15-20 minute length exercise sessions using treadmills or stationary bicycles for 12 weeks (Dunn, Trivedi, Kampert, Clark, & Chambliss, 2005). The rationale for these uses of movement activities has been the prevalence of the targeted mental health issue as well as the related costs as was pointed out by Craft and Perna (2004). "Depression has been ranked as the leading cause of disability in the United States" and costs over \$40 billion each year because of individuals'

time spent out of work for treatment costs (Craft & Perna, 2004, p.104). The professional literature reflects a focus on how physical activity impacts people with depression or anxiety in a number of related reviews (Azar, Ball, Salmon, & Cleland, 2008; Brosse, Sheets, Lett, & Blumenthal, 2002; Craft & Perna, 2004; Folkins & Sime, 1981; Martinsen, 2008; Paluska & Schwenk, 2000; Salmon, 2001; Stathopoulou, Powers, Berry, Smits, & Otto, 2006; Strohle, 2009) and research studies (Broman-Fulks et al., 2004; Brown, Ford, Burton, Marshall, & Dobson, 2005; Dunn et al., 2005; Hassmen, Koivula, Uutela, 2000; van der Waerden et al., 2013).

Individuals' depressive symptoms are inversely affected when exercise or physical activity is introduced. Most studies reported that when physical activity is measured based on four or five leveled categories, all but the lowest amount of activity have a significant effect (Brown et al., 2005; Dunn et al., 2005). However, even the lowest or smallest amount of exercise, done regularly, had desirable affects in terms of preventing and reducing depressive symptoms (Azar et al., 2008; Hassmen et al., 2000). Similar findings have been established about anxiety symptoms, that both low and high intensity aerobic exercise reduced anxiety sensitivity (Broman-Fulks, Berman, Rabian, & Webster, 2004). Anxiety sensitivity was described as, "a known precursor of panic attacks and panic disorder" that is "conceptualized as an enduring fear of anxiety and anxiety-related sensations" (p.126).

Aerobic training and strength or flexibility training have been equally effective as methods of treating symptoms of depression and anxiety (Paluska & Schwenk, 2000). The current study focuses mostly on SMD use as an aerobic activity, however the resistance knobs on the top of the SMDs allowed for some amount of strength training to occur as well.

To further support the use of SMDs, importance is placed on the actual physical activity rather than resultant cardiovascular fitness for “improving mental health symptoms and mood”, which differs from what physicians might recommend when looking at exercise or physical activity as it pertains to physical fitness (Paluska & Schwenk, 2000, p.177).

Many of the studies and reviews that focused on depressive symptoms as related to physical activity also looked at the relationship between physical activity and other mental health issues such as anxiety, stress sensitivity and other mood states. Emphasis has been placed on the use of physical activity as a preventative measure for anxiety and depression, but regardless of when the treatment was introduced it proved cost effective for treatment of anxiety and depressive disorders (Martinsen, 2008). As additional support for the use of physical activity (PA) as a treatment method, “trials of PA as a treatment for anxiety and depression have found PA to be as effective as antidepressant medication or psychotherapy for mild to moderate anxiety and depression” (Beaulac, Carlson, & Boyd, 2011, p. 399). This makes exercise and physical activity a good alternative for individuals who do not want to take medication or who have not found medication effective or feasible (Salmon, 2001).

Treatment for mental health issues using exercise has been paired with counseling or psycho-educational elements of support. Exercise, with or without the accompaniment of psycho-education, can be used as a prevention option against stress and symptoms of depression for women with low SES or low level of education (van der Waerden et al., 2013). When used in conjunction with counseling for male youth offenders, physical training decreased symptoms of anxiety, depression, anger, fatigue, and confusion. Reports related to tension and vigor did not decrease (Hilyer et al., 1982). The results of physical

training without counseling for male youth offenders cannot be determined based on the experiment conditions of this study. Even though these results incorporate a counseling/psycho-educational element that is not related to the present study, the outcomes of these studies create a valid argument for looking at what occurs when any type of physical movement or physical activity is applied to the classroom setting. Findings from several studies indicated that a very small amount of activity, done regularly, resulted in decreased symptoms of depression and anxiety, which means it was possible to observe similar outcomes with students in classrooms or reported by teachers.

After participating in aerobic activities for two days a week for a month, high school students showed a significant reduction in anxiety (Heidary et al., 2011a). Similarly, when put in aerobic and anaerobic exercise treatment groups, high school students reported a significant reduction of anxiety (Heidary et al., 2011b). It was determined, “that a single bout of 25-60 minutes of aerobic exercise (at low, moderate or high intensities) increases positive mood feelings while also decreasing negative mood feelings” (Heidary et al., 2011b, p. 2418). These findings support the incorporation of regular exercise as a means of positive enhancement of mood feelings, which is discussed in more detail in the following section.

**Physical movement and emotional or psychological well-being.** Multiple factors play a role in the emotional and psychological well-being of an individual. Typically, when emotion and psychological well-being are discussed, pertinent factors are an individual’s mood, attitude, or self-concept. All of these factors are important, especially when thinking about students in the school environment. Some students who struggle to behave in the classroom may be experiencing difficulty with mood regulation, which has been found to



improve with the use of exercise as a mood regulator (Thayer, 1996). Similarly, students who were interviewed after using SMDs voluntarily in their classrooms reported improvement in concentration, focus and mood regulation (Allen, 2014).

Pre and post measurements showed that teenage male participants of a YMCA program experienced a significant decrease in physiological ratings like weight and resting pulse rate, and a significant increase in “physical fitness performance, positive body attitude, positive self attitude, self-acceptance and significant decreases in real versus ideal self discrepancy” (Collingwood & Willett, 1971, p. 412) after exercising and attending group counseling over three weeks. Even though the physical fitness training conducted in this study was more intensive than what is likely to take place in classrooms through the use of SMDs, it is still important to note that attitudes such as body/self attitude and self-acceptance can be improved through the use of physical activities.

Individuals who exercise at least two to three times per week experience less depression, anger, cynical distrust, and stress (Hassmen et al., 2000). Regular physical exercise has been consistently associated with enhanced measures of psychological well-being, as well as decreased symptoms of mental health issues (Hassmen et al., 2000). Consistent with this, physical fitness training results in improved mood, self-concept, and work behavior (Folkins & Sime, 1981). These findings as well as those from the studies by Collingwood and Willett (1971) and Hassmen et al. (2000) suggest that mood, self-concept, attitude, and psychological well-being may be improved with the introduction of physical activity such as the use of SMDs in the classroom setting.

**Physical movement and behavior.** Physical movement, in the form of physical training, has been proven to improve work behavior (Folkins & Sime, 1981). When behaviors and cognitive functioning of children with attention deficit hyperactivity disorder (ADHD) were investigated as related to physical activity, improvements were found in parent and teacher behavior reports as well as information processing (Verret, Guay, Berthiaume, Gardner, & Beliveau, 2012). Behavior checklist ratings specifically indicated improvements reported by parents in “total problems, social problems, thought problems, and attention problems”, while teachers reported improvements in the areas of anxiety-depression and social problems (Verret et al., 2012). This supports the use of physical activity with students in the school setting that have been diagnosed with ADHD or students who present similar symptoms.

### **Theoretical Framework: Social Cognitive Theory**

As was stated in chapter one and at the beginning of this chapter, Bandura’s social cognitive theory (SCT) is the theoretical framework of this study. SCT had been recommended for future studies on the use of SMDs because in the pilot study Allen (2014) found that similarities existed between Bandura’s focus on agency and students’ choice to take responsibility for their learning by using SMDs to enhance their classroom productivity. Consequent of limited prior research and because of SCT’s focus on agency, this theory was chosen as a way to explain teachers’ decisions pertaining to SMD use in the classroom. Additionally, findings from a study by Ramirez, Kulinna and Cothran (2012) support the use of SCT with children as a “model for examining the sociocognitive constructs of physical activity in children and youth” (p. 304). Ramirez et al. (2012) examined the relationship

among five constructs of SCT (i.e., self-efficacy, outcome expectations, social support, barriers, and goals) and physical activity behaviors of fourth, fifth and sixth grade students. While these results do not necessarily support the present study, the use of SCT in the Ramirez et al. (2012) study suggests that children and youth are an appropriate population in which the desired agency can be studied.

**Key constructs and definitions of SCT.** The following key constructs and terms are important in understanding Bandura's SCT and how it applied to the present study.

**Agent.** An agent is a person who intentionally made something happen with his or her own actions (Bandura, 2001). Bandura emphasized that all human beings are agents.

**Human agency.** The term agency refers to the specific act being done intentionally (Bandura, 2001). Human agency consists of three different modes that were identified as being needed to survive through each and every day. These modes are: (a) direct, individual or personal agency which occurs when a person brings influence or control to a situation; (b) proxy agency or "socially mediated agency" (Bandura, 2006, p. 165) which comes into play when an individual influences or calls upon someone else to assist in obtaining a desired outcome; and (c) collective agency which consists of a group with a shared belief working to pool every member's knowledge, skills and resources to work together (Bandura, 2001, 2006).

Findings from the pilot study (Allen, 2014) on students' use of SMDs, included indications from students that SMDs could be used as a direct mode of human agency. This could be determined because students reported having control over their use of SMDs, which served as tools to enhance their experiences in the classroom setting. In the present study,

the modes that are most applicable are proxy and collective human agency. Unlike the pilot study, SMD use data was collected and analyzed from the perspective of the teachers who chose to allow SMDs in their classroom. In the present study, teachers are the proxy agents who offer a form of assistance to students through the introduction of SMDs. Collective agency was also applicable to this study because the introduction of SMD use to the classroom setting has previously been shown to assist in promoting a classroom culture of responsibility (Allen, 2014).

***Triadic reciprocity.*** The word reciprocal refers to “the mutual action between causal factors.” The triadic factors among which there is proposed mutual action are “behavior, cognitive and other factors, and environmental influences,” and they are said to “operate interactively as determinants of each other” (Bandura, 1986, p. 23). In the present study, triadic reciprocity was suspected to take place because of the environmental influence of the introduction of SMDs to the classroom setting. Triadic reciprocity was inquired about through teacher interview questions pertaining to changes that occurred because of the introduction of SMDs in regards to the classroom setting and community.

***Four core properties of human agency.*** The four core properties of human agency are listed and described as follows: (a) intentionality which involves the formation of an action plan and supporting strategies developed by an individual, pair or group with common interests (Bandura, 2006); (b) forethought is the idea that the future is not a material certainty and visualizing and predicting certain outcomes influences behavior and motivation of humans (Bandura, 2006); (c) self-reactiveness refers to the need for an agent to motivate and self-regulate because once a plan has been made, it will not be executed if one sits back and

becomes inactive (Bandura, 2001); and (d) self-reflectiveness is a metacognitive activity where motivation, values, meaning of pursuits and soundness of one's thoughts and progress are reflected and assessed to address any existing conflicts that may prevent the execution of action plans or success of goals (Bandura, 2006). No assumptions were made on which, if any, of these core properties of human agency emerged from participant interview data. These individual core properties are revisited and further discussed, in relation to study findings, in chapter five.

**Premise of SCT.** Bandura's social cognitive theory (2006) focuses heavily on the idea that individuals are agents capable of changing and influencing what happens to them by themselves (personal or individual agency), with the aid of another person (proxy agency) or with the help of an entire group (collective agency).

**Usefulness of SCT.** One aspect of social cognitive theory that was left unclear in its initial introduction in Bandura's book (1986), *Social foundations of thought and action: A social cognitive theory*, was its potential use for practitioners. Bandura alluded to concepts similar to cognitive behavior therapy with humans being identified as agents of their own change, but implications for how this information should be used were lacking. Behavior and motivation modification was briefly mentioned, but the theory's foundational literature does not leave practitioners equipped with how to apply SCT concepts to work with an individual's presenting issues or with how to apply SCT as a model or framework in situations such as the introduction of SMDs to teachers for classroom use. Instead, his theory gives perspective of what factors may be contributing to an individual's current state and

what role the individual plays in terms of influencing and having intentionality about one's situation.

SCT was used as a model for Ramirez et al.'s (2012) study to help construct a measurement tool to investigate how SCT constructs relate to physical activity behaviors. The specific constructs being investigated were self-efficacy, outcome expectations, social support, barriers, and goals. Ramirez et al. (2012) used SCT to provide the constructs for investigation and to develop the socio-cognitive instrument. In a related study Burt, Patel, Butler, and Gonzalez (2013) used SCT to construct a model for leadership training to reduce aggressive behaviors of elementary and middle school-aged students. Both of these studies provide a context for using SCT in school-based field research. However, the utilization of SCT as a theoretical framework for the current study differed from how it was used as a model in both studies. In the current study, SCT was used to give a theoretical perspective to what occurred when teachers were given access to SMDs for their classrooms and what occurred, according to teachers, when these SMDs were introduced to students.

**Advocacy.** Bandura (1986) maintains that individuals have control and ownership of their experiences. This supports social justice initiatives to empower individuals to advocate for themselves and to speak up if there is something undesirable, unfair or oppressive occurring within their realities. Standing up for one's self and the soliciting the support of others as allies through proxy or collective agency makes SCT compatible and supportive of having control over one's own situation.

## Summary

Research connecting human cognition to physical activity was limited and conclusions were inconsistent. Some consistencies established were that studies primarily focusing on movement in schools were conducted in response to student health, and interventions required teacher buy-in and training in order to conduct the physical activities. It was established that some students benefit from having movement added to lessons or at transition times during the day. On the other hand no reports were found of research on the use of movement consistently throughout the day, when the teacher is instructing. Hruby (2012) offered thoughts and recommendations for educational neuroscience as a field of its own and established it is important to treat previous findings in neurosciences with great caution in order to ensure that ethical practices are developed, rather than gimmicks introduced to take advantage of consumers.

When studying how physical movement is related to factors that contribute to personal/social needs, consistency was seen in regular exercise or physical activity improving symptoms related to depression, anxiety, mood states, and psychological well-being. If physical activity was not administered consistently these improvements were less likely to occur. Behaviors of students were shown to improve with the introduction of movement and physical activity.

Bandura's social cognitive theory was presented in this chapter and is revisited in chapter five to discuss how human agency actually occurred in the present study. Given the exploratory nature of phenomenological studies, it was important to keep an open-mind to all possibilities and themes that emerged in teacher interviews. With all this in mind, the current

study fulfilled a need to continue to explore the potentially useful educational enhancement strategy of using SMDs in elementary or middle school classrooms from the perspective of classroom teachers.



### **Chapter 3: Method**

The purpose of this phenomenological study was to explore and describe the experiences and perceptions of elementary and middle schoolteachers who have used stationary movement devices (SMDs) with students in their classrooms and who consented to participate in this study. The central question being asked in this study was: What are teachers' experiences and perceptions in using SMDs in their classrooms? This was broken down into two sub-questions: (a) What factors do teachers credit for decisions to introduce SMDs in their classrooms? (b) What changes, if any, do teachers perceive after introducing SMDs? These questions were purposefully left broad to accommodate all possible responses individuals gave when asked about the phenomenon of using stationary movement devices with students in their classrooms. Bandura's (1986, 2001, 2006) social cognitive theory was used as a theoretical framework to explain teachers' decisions pertaining to the use of SMDs.

#### **Research Design**

This research study was qualitative in nature and a phenomenological approach was used to support the exploratory and foundational nature of this study (Creswell, 2013). Teachers at one elementary and one middle school located in a suburban area of a southeastern state were interviewed and observed to collect and validate data for this study. Subsequent to IRB approval, teacher interview data was collected, analyzed, and reflected upon to conduct phenomenological reduction, imaginative variation and synthesis in order to explore and describe the phenomenon that occurred when SMDs were given to teachers for student use in the classroom. Validation strategies were implemented such as disclosure of

researcher bias, member checking and data triangulation through observation, member checking, and interview data.

The decision to conduct this study using a phenomenological approach was based on the information being sought. The exploratory nature of a phenomenological approach is ideal for the present study because there was a lack of prior direct research on the use of movement devices, such as SMDs, in classrooms (Creswell, 2013). Therefore, exploring the phenomenon of using SMDs gives information about what has occurred, while providing a foundational study for future research on this topic. Creswell (2013) explained that the phenomenological approach is used to explore a phenomenon, which can be “phrased in terms of a single concept or idea” (p. 78). A pilot study (Allen, 2014) on the use of SMDs inspired inquiries about what occurs in classrooms of teachers who choose to use SMDs. In order to fully discover what experiences occurred and what changes teachers perceived were a result of students’ use of SMDs in the classroom setting, an exploratory, phenomenological, approach fit the purpose of the present study.

Because of the nature of phenomenological research, data were collected through interviews with teachers who had lived-experiences with the phenomenon being studied and classroom observations were conducted to validate information shared in interviews. According to Moustakas (1994), the researcher may choose to prepare questions that can aid the participants in expressing and describing their experiences, but since the interview process is open-ended and informal, these questions are likely to change as the participants share their personal stories. The interview process and the question development are further described in the interview section of this chapter.

After opening the interview with an unrelated conversation or ice-breaking activity, the participant should be asked to “take a few moments to focus on the experience... and then describe the experience fully” (Moustakas, 1994, p. 114). Moustakas (1994) also recommended beginning each interview with a social conversation or a meditative activity to provide a more relaxed and trusting atmosphere for the participants to express their full experience pertaining to the phenomenon.

### **Sites and Participants**

In the following sections the research sites are described, as well as details surrounding the initial introduction of SMDs to the elementary and middle school setting. The role of school counselors, teachers, and education leaders are described as they relate to the initial implementation of SMD use in classrooms. Participant recruitment is explained and specific demographic information about teacher-participants is shared.

**Research sites.** To best describe the school settings, general information about both participating schools’ student population has been provided herein. At the time this study began, the total population of the elementary school was 569 students who were divided into 32 homerooms, five of which were self-contained classes for students with special needs. Based on summary reports provided by the school, the demographics of the total student population were about: 63% White, 15% Black or African American, 17% Latino, 2% Asian, and 3% of the student population identified as having more than one race (PowerSchool, 2015). About 27% of the school’s total population was eligible for free or reduced-price lunch (NCDPI, 2015).

The total population of the middle school, when this study began, was 1048 students who were divided into 39 homerooms, one of which was a self-contained life skills class for students with special needs. The demographics of the total student population were about: 66% White, 12% Black or African American, 18% Latino, 1% Asian, less than 1% American Indian or Alaskan Native, and 2% of the student population identified as more than one race (PowerSchool, 2015). About 41% of the school's total population was eligible for free or reduced-price lunch (NCDPI, 2015).

**SMD implementation.** The use of SMDs in elementary and middle school classrooms that was explored in the present study took place in 25 elementary classrooms and two middle school classrooms in two public schools located in a suburban area of a southeastern state. Implementation initially began when grant funding was attained to provide 63 SMDs to the elementary setting. After the first academic year of implementation, some teachers chose not to use SMDs the following year, while others decided to try SMDs with students for the first time. Once SMDs were redistributed for use, in the second academic year of implementation, remaining SMDs were offered to the middle school. Out of the 63 originally purchased SMDs, 46 remained in use at the elementary school and 17 were used in the middle school setting. The roles of school counselors, classroom teachers, and school administrators or principals in the implementation of SMDs is explained in this section.

**Roles of school counselors.** The role of the school counselors in the participating schools varied greatly. I was the only school counselor at the elementary school and my role included obtaining grant funding for this project and introducing the concept to the

elementary and middle schools' teachers. This was something I chose to do because I wanted to collaborate with teachers on a potential new classroom intervention to meet student needs. This project aligned with my goals as a professional school counselor to meet student needs and to work collaboratively with teachers to positively impact learning in the classroom setting.

The two school counselors at the middle school setting were supportive of having a new tool for student use in some of their school's classrooms, but they did not have a leadership role in the distribution or introduction of SMDs to classrooms or specific students. The middle school counselors may have had a larger role in this project if they had been approached about being the point of contact for their school, which would have been similar to the role I played as the counselor at the elementary school. Additional information about my role as the school counselor and principal investigator is included in the positionality statement found within this chapter.

***Roles of teachers.*** Teachers at the participating elementary school were initially provided the opportunity to use SMDs in January 2014. SMD use at the middle school began the following school year when teachers were given the opportunity to use SMDs beginning in September 2014. SMDs were obtained in a limited quantity based on grant funding. Distribution of SMDs was based on teacher interest and, thereafter, based on demand and availability. When SMDs were distributed in September of 2014, all the teachers at the participating elementary school were emailed a two question survey asking if they wanted pedals or balance cushions to use in their classroom for the 2014-2015 school year. Teachers were also asked how many of each they would like and they were informed that this quantity

would be provided if it were available. The balance cushions are not being discussed in this study, but were another movement tool introduced to some elementary classrooms that allowed students to wiggle while sitting in their seats.

SMDs and balance cushions were distributed to elementary classrooms as survey responses were received. After all of the SMD requests were honored some were left unused, which was how the middle school was given access to SMDs without additional grant funds being obtained. SMDs were distributed to both an elementary school and a middle school to obtain a broader understanding of how SMDs are used and perceived in different school communities and with children of various ages and grades. Of the 32 homerooms in the elementary school, 78% had access to at least one SMD when they were offered in January 2014. When all SMDs were redistributed in September 2014, 41% of the 32 elementary school teachers and 5% of the 39 middle school teachers chose to use SMDs in their classrooms. The percentage of teachers who chose to use SMDs in middle school classrooms may have been higher if more SMDs had been available for distribution.

***Roles of school administrators.*** When SMDs were introduced as a new tool to be used within teachers' classrooms, it was important to first have the support of the school administration. Without administration support, SMDs might not have been allowed in teachers' classrooms or teachers may have been hesitant or unwilling to use a tool that was not supported by their administration team. Before grant funding could be initially sought to obtain SMDs, the principal of the elementary school had to give approval for the proposed idea of having SMDs in her school. She was supportive of this project and was enthusiastic

to try a new approach to meet student needs. After the first year SMDs were used at the elementary school, a new principal was assigned.

The new principal of the elementary school was supportive of the SMDs being used within the school setting and shared that his initial impressions were positive about what was happening in classrooms that used SMDs. He reported being a running enthusiast who previously implemented fitness programs at his past schools, so he hoped to see teachers continue to use SMDs in the classroom setting. Since teachers did not know this principal's views on the use of SMDs in September when SMDs were re-distributed, I do not think his enthusiasm over physical fitness influenced who chose to use SMDs this year. However, statements made by the elementary principal such as SMDs are "something different, something outside the box, I like that" and "personally, I like to see them being used", may influence teachers to try these devices in future years (personal communication, April 9, 2015).

When asked about why she allowed SMD introduction and use in her school, the middle school principal shared that she has ADD (attention deficit disorder) and understands that some children can only learn when they are doing a second activity simultaneously. She thought the concept of using pedals in the classroom was interesting and she is "all for giving students what they need" to stay tuned to the teacher and to learn (personal communication, April 10, 2015). One of the biggest influences on the SMDs being allowed into the middle school was one teacher's desire to use them in her classroom. A teacher, who worked at the elementary school when SMDs were first introduced in January of 2014, got a job as a 6<sup>th</sup> grade teacher at the participating middle school for the 2014-2015 school year and wanted to

bring the pedals with her. This teacher's transition can be credited for the middle school's participation in this study. Her continued use of the pedals was supported by the elementary school's supply of SMDs, once all elementary teachers who requested were given SMDs for their classrooms.

After seeing the SMDs being used in a couple of classrooms within her school, the middle school principal shared that the school may expand on this experience with pedals in the future. She explained that the use of SMDs had been enough of a change maker for some of the students that pedals should move up from 6<sup>th</sup> grade with these students. When asked if her impressions of a teacher would be changed if a teacher chose to or not to use pedals in their classroom, the middle school principal said, "No", because different teachers had different levels of expertise and if pedals were added to the classroom of a new teacher this might be "more detrimental to the teacher than it would be helpful to the students" (personal communication, April 10, 2015). The only time that she said she might suggest a teacher, who previously opted not to use pedals in their classroom, try them, would be if the teacher had a student who previously succeeded with the use of pedals. Pedals or SMDs would then be recommended as a way for the teacher to connect with the student. Overall, the principal of the middle school supported the use of SMDs in her school and had not received any negative feedback from parents or teachers. This initiative was not big enough of a change to warrant a letter be sent home to students, however, the middle school principal explained that if someone had a problem with the pedals being used in the classrooms, she would have heard about it (personal communication, April 10, 2015).



**Participant recruitment.** Schools recruited for participation were chosen because SMDs had been introduced to both the elementary and middle school setting. Teachers at both schools were approached for participation in this study. All teachers who previously chose to use SMDs in their classrooms, as well as those who did not choose to use SMDs in their classroom, were given the opportunity to participate in an interview to share their lived experiences. However, only teachers who chose to use SMDs for at least one semester constituted the population of the study. Polkinghorne (1989) recommends that five to 25 individuals who have experienced the phenomenon be interviewed for phenomenological studies. An initial goal of obtaining consent to interview 10 individuals was set based on Polkinghorne's recommendations. This goal was met and exceeded after 12 teachers volunteered to participate in an interview and 11 of these teachers met the participation requirement of having used SMDs in their classrooms for at least one semester. Of these 11 participants, 10 were teachers at the elementary school and one was a teacher at the middle school.

Upon IRB approval, emails were sent to the principals of the elementary and middle school that were targeted for this study. All documents that were approved by North Carolina State University's IRB and were used in the recruitment and data collection process are included in appendices E – I. These emails asked permission to approach teachers at both schools during a mutually agreed upon time for the purpose of asking teachers to participate in this study. Teachers at the elementary school were approached during a whole-staff meeting. Middle school teachers, who had used SMDs in their classrooms, were approached individually. This was done instead of approaching the whole staff because few staff

members had been given the opportunity to use the limited number of SMDs that were given to the middle school. When teachers were approached, they were read the informed consent document and each staff member present was given a copy of the informed consent along with an envelope. Teachers were asked to check “yes” or “no” on the informed consent document, seal their form in the provided envelope, and put it in a designated spot within the following week. A total of 39 teachers were informed about this study and were asked to participate. Of those 39 people who were initially approached, 30 people returned their informed consent documents after one reminder email was sent and 12 checked “yes” agreeing to participation.

The 12 teachers who agreed to participate were contacted in person or via email to determine the most convenient time to conduct an interview. When contact was made via email, participants were asked to provide their availability for a meeting. To keep confidentiality about research participation, no reference was made to the present study in email conversations about meeting availability. When interviews were scheduled, participants were given demographic questionnaires to complete. The demographic information requested included each teacher’s: (a) pseudonym, (b) sex, (c) ethnicity, (d) years of teaching experience, (e) current grade(s) taught, (f) years of SMD use in their classroom, (g) degrees/licenses held, and (h) strategies used in the classroom to meet student needs. The specific demographics of the teachers who were interviewed are provided in table 2. Specific strategies used by teacher participants to meet the needs of all students can be seen in table 3.

Table 2

*Demographics of Teacher-Participants Listed by Pseudonym*

<u>Pseudonym</u>	<u>Sex</u>	<u>Ethnicity</u>	<u>Years of Teaching Experience</u>	<u>Current Grade/Subject Taught</u>	<u>Years of SMD Use</u>
Audrey Hepburn <sup>abc</sup>	F	White	20	2 <sup>nd</sup>	2
Grape Ape <sup>ac</sup>	F	White	20	4 <sup>th</sup>	2
Margret <sup>c</sup>	F	White	24	3 <sup>rd</sup>	2
Marie <sup>d</sup>	F	White	5	K – 1 <sup>st</sup>	1
Miss Early <sup>acd</sup>	F	White	17	4 <sup>th</sup>	2
Nature Nut <sup>ce</sup>	F	Latino/White/ American Indian	19	5 <sup>th</sup>	1
Penny <sup>d</sup>	F	White	2	K – 5 <sup>th</sup>	1
Steelers Fan <sup>d</sup>	F	White	12	2 <sup>nd</sup>	2
Wilma <sup>e</sup>	F	White	20	3 <sup>rd</sup>	2
Wonderful World <sup>c</sup>	F	White	11	6 <sup>th</sup>	2
Zola <sup>acf</sup>	F	White	8	4 <sup>th</sup>	1

*Notes.* Degrees and credentials in addition to a standard bachelors degree and K-6 North Carolina Teaching License have been indicated using the following footnotes. <sup>a</sup>Master's Degree. <sup>b</sup>National Board Certification. <sup>c</sup>AIG Certification. <sup>d</sup>Special Education Teaching License. <sup>e</sup>Additional Reading Certification. <sup>f</sup>Technology Teaching License.

The classroom strategies listed on the teacher demographic questionnaires were included to get a better understanding of each teacher's classroom environment and what strategies each teacher already had in place to assist students in accessing learning. The specific strategies listed on the demographic form were chosen because these strategies are available for teachers to implement in the participating schools' settings. Additionally, these strategies relate to physical movement and meeting student needs beyond what is typically seen in a traditional classroom.

Table 3

Classroom Strategies used by Teacher-Participants to Meet Student Needs

<u>Pseudonym</u>	<u>Balance Cushions / Yoga Ball</u>	<u>Water at Desk</u>	<u>Stimulating Foods (e.g. mints)</u>	<u>Food at Desk</u>	<u>Fidget, Stress Ball, or Velcro</u>	<u>Other</u>
Audrey Hepburn	X	X				Wiggle Breaks
Grape Ape		X	X	X	X	Brain Breaks
Margret	X	X			X	Stand at desk
Marie					X	Stand at desk, Heavy work
Miss Early		X		X		Stand at desk, Brain Breaks
Nature Nut	X	X	X		X	Stand at desk
Penny	X	X	X	X	X	
Steelers Fan	X	X	X	X		Stand at desk or sit on floor
Wilma	X	X		X		
Wonderful World		X	X	X	X	
Zola	X	X			X	

*Note.* All teacher participants encouraged physical movement at recess or during physical education time and used physical activity such as sending a student on an errand, to get water, or to pass out papers to redirect energy. None of the teacher participants reported use of stretchy bands on chair legs.

### **Positionality: Role of the Researcher**

It is important to consider my position as the researcher at the time this study was conducted. I was the only school counselor at the participating elementary school. I was also the author and recipient of the grant that provided funding for all the SMDs used in the elementary and middle school represented in this study. Over my five years of working at this elementary school, I have had daily contact with the majority of the teachers who participated in this study. My work with these teachers included, but was not limited to collaborating, addressing parental concerns, providing professional resources, and working directly with their students on personal, social, academic, and emotional needs. It was my perception that this constant involvement, collaboration and interaction with teachers allowed interview participants to feel safe and comfortable in a one-on-one interview setting with me.

To provide more personal demographic information, I am a white female with an undergraduate degree in elementary education. However, other than 600 hours of student teaching experience and lessons taught in my role as a school counselor, I have never been a full-time teacher. Instead of working as a classroom teacher subsequent to my student teaching experience, I went directly into a counselor education masters program. This was prompted by a realization that my interests were more closely tied with conducting individual work with students who experience issues or barriers in and outside of school.

During the summer break subsequent to my first full year as an elementary school counselor, I became intrigued with the ideas in *Brain Rules* (Medina, 2008). While reading this book on the beach during a summer vacation my excitement grew about the possibilities of introducing Medina's ideas to public schools to enhance students' abilities to function

cognitively. By the end of the book, I had made the personal decision to return to graduate school to obtain my doctorate and to acquire the knowledge needed to research the ideas proposed in Medina's (2008) text.

### **Data Collection**

Subsequent to IRB research approval, data were collected through teacher participant interviews and classroom observations. The main sources of data in this study were the interview transcriptions. Classroom observations were conducted as a way to triangulate and validate what teachers shared in interviews. These observations are explained further in the validation strategies included at the end of this chapter. The following sections explain how and why interview questions were developed, the protocol of each interview, and the data storage method used.

**Instrumentation.** Interviews can follow a variety of structures in phenomenological studies (Creswell, 2013). Semi-structured interview questions were used for teacher interviews in the present study for two reasons. First, to assure interviews had a skeleton to guide conversation as teachers shared their experiences. Second, to inquire about teachers' perspectives related to major themes that emerged in the SMD pilot study (Allen, 2014). Krueger's (1998) guide to developing questions based on category was used to construct questions that fostered the most informative conversation. It was recommended that different categories of questions be used for distinct purpose at different points in the interview. Based on these recommendations an opening question, an introduction question, two transition questions, three key questions with supporting probes, and an ending question were created and used in each teacher interview (Krueger, 1998). The full list of structured

interview questions can be referred to in Appendix I. In addition to these structured questions, follow-up questions were asked based on what information was shared during each interview. Active listening, paraphrasing, and summarizing were also used to further explore information reported by teachers.

**Interview protocol.** The audio of each interview was recorded using an application called Voice Record Pro on the investigator's iPad. Prior to the start of the interview, the participant was shown how to pause and stop the audio recording so that at any point they could choose to stop the recording. Pseudonyms were determined before the audio recording began to protect participants' identities. In addition to the use of pseudonyms to protect the identities of participating teachers, teachers were asked to use pseudonyms or initials for students if they chose to mention specific situations in their interview to protect confidentiality.

At the conclusion of each interview, memos were taken to document initial impressions that were obtained during interview conversation. Memos were also taken during and after each interview was transcribed and coded to continue documentation of impressions and patterns that emerged throughout the data collection and analysis phase of this study.

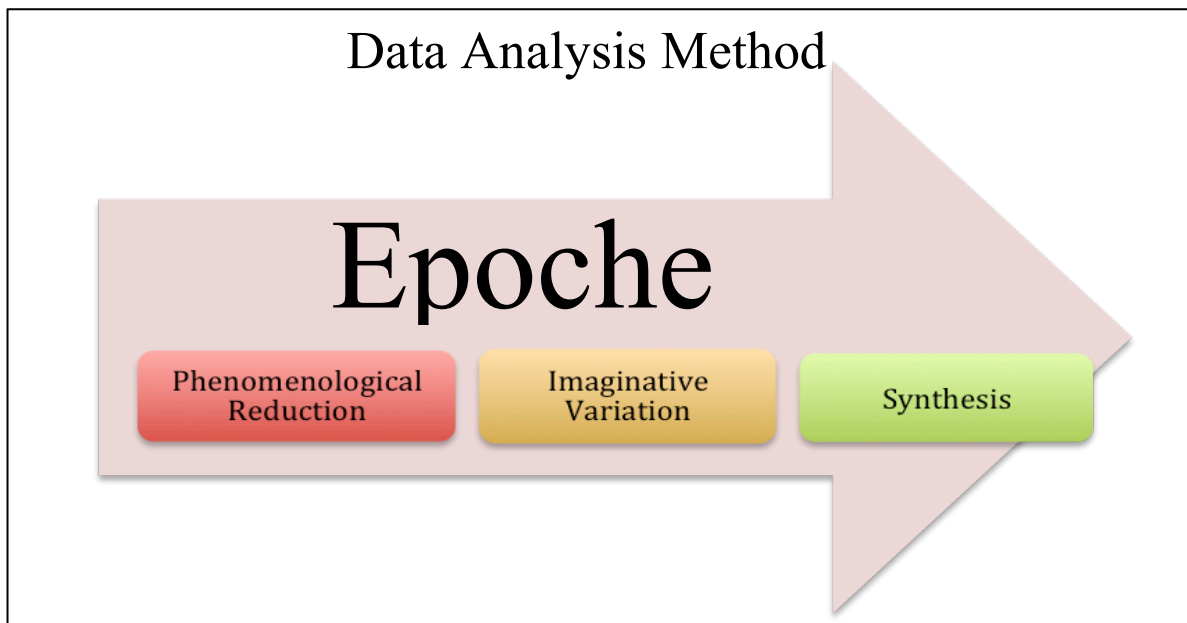
**Data storage.** At the close of each interview, the recorded audio file was immediately uploaded to the investigator's secure university Google drive. The files were later transcribed and saved along with memos and observation notes, using pseudonyms to protect participants' identities. During interviews, if a teacher accidentally referred to a student or colleague by name, the name was omitted or changed during the transcription



process. Since pseudonyms and secure storage space were used to protect the identities of participants, only the audio files will be deleted upon publication of this study.

### **Data Analysis**

A phenomenological approach was used to explore the essence of what teachers thought occurred when SMDs were used with students in the classroom setting. The phenomenon was determined by first obtaining, transcribing, and reading over individual interviews to prepare for the data analysis method subsequently shown in figure 1 and discussed in table 4. Quirkos (Turner, 2015), qualitative data analysis software, was used to organize data as it was analyzed. Each of the steps shown in figure 1 and included in table 4 are further explained within this section. Validation strategies used to strengthen this study included clarifying researcher bias, observation, member checking, and data triangulation. These strategies are described at the end of this chapter.



*Figure 1.* Data analysis method. This figure illustrates that the epoche is a state in which the researcher stays until the data analysis method is completed.

Table 4

*Data Analysis Method*

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<u>Steps</u>	<u>Description</u>	<u>Examples using hypothetical data:</u> <u>“The pedals help students focus.”</u>
1. Epoche	Preparation practice to look at data without prior judgment or predisposition.	Read through “The pedals help students focus” with awareness that you may have a prior assumption about what is being said in this statement, that is different from what is meant by the participant.
2. Phenomenological Reduction	Describing the specific qualities of the experience and how the phenomenon’s qualities are received and perceived internally.	After considering interview discussion that led to and came from the statement, “The pedals help students focus”, it may be appropriate to code this comment in categories such as benefits, helping and/or focusing.
3. Imaginative Variation	Information is looked at from varying points to view to assure all possibilities on how phenomenon came to be have been explored.	Considerations at this stage of analysis: Did knowing one had access to pedals help with focus or was it the actually pedaling that assisted with focus? In this stage it may be decided to add the code impressions of using pedals to make sure all possibilities are considered.
4. Synthesis	All information collected is reflected upon, to establish “a unified statement of the essences experienced in the phenomenon as a whole” (Moustakas, 1994, p. 100).	It can be concluded that participants perceive pedals as helpful with some of students’ tasks, but it is unclear of what specifically makes the pedals helpful.

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**Epoche.** In phenomenological studies, it is imperative to approach the investigation with a clear mind, ideally without prior assumptions about what will be discovered in data analysis. This preparation process is called the *Epoche* and was described by Moustakas (1994) as a chance to see the situation “as if for the first time” (p. 85) without prior judgment or predisposition. This process consisted of physically going to a place that allowed concentration and reflection in order to think only about the experiences described by teachers who had used SMDs in the classroom setting. During Moustakas’ (1994) *Epoche* preparation process all prior thoughts, opinions, and ideas about the topic of this phenomenological study should be put aside in order to receive information with an open-mind during the data analysis.

This process took multiple reflective sessions to fully recognize, address, and set aside prior assumptions, opinions, judgments and information related to the phenomenon. Some of the assumptions, opinions, and information that was recognized and set aside when preparing to analyze data on the perceptions of teachers who chose to use SMDs included: (a) all able-bodied students have the ability to use an SMD, (b) students are able to use SMDs while focusing on another task, (c) teachers who chose to use SMDs are more open-minded about innovative teaching methods than others, (d) teachers who chose to use SMDs are highly-engaging educators, (e) teachers who introduced SMDs to their students would do so in a way that was well-managed and organized, and (f) teachers would find that some students would have improved classroom behaviors or academic performance with the use of SMDs. Each of these opinions and prior assumptions were recognized as existing before the data analysis process began and were set aside with knowledge that this information was not

accurate for the present study unless later supported by emerging themes after exploring each stage of this data analysis process.

**Phenomenological reduction.** According to Moustakas' (1994) phenomenological research approach, the step after Epoche is phenomenological reduction. Phenomenological reduction consists of describing the specific qualities of the experience that can be observed and also how the phenomenon's qualities are received and perceived internally. During this process, "reflection becomes more exact and fuller with continuing attention and perception, with continued looking, with the adding of new perspectives" (Moustakas, 1994, p. 93). By engaging in such careful reflection to fully discover what has occurred, these phenomenological reductions make it possible for the "mind to discover its own nature" (Kockelmans, 1967, p. 222) with constant focus on one's conscious awareness of occurrences pertaining to the phenomenon. Memos were kept and constantly updated with reflections about what was really being said in the collected data to aid in fully exploring each step of this data analysis process.

**Imaginative variation.** The third step in the phenomenological research process is imaginative variation. In imaginative variation information that has been discovered thus far is looked at from varying points of view. This step assisted in making sure all possibilities about "how" this phenomenon came to exist, were explored. Specific steps have been established by Moustakas (1994) and were used as a guide through this stage of the process. These guiding steps are as follows:

1. "Systematic varying of the possible structural meanings that underlie the textural meanings;

2. Recognizing the underlying themes or contexts that account for the emergence of the phenomenon;
  3. Considering the universal structures that precipitate feelings and thoughts with reference to the phenomenon, such as the structure of time, space, bodily concerns, materiality, causality, relation to self, or relation to others; and
  4. Searching for exemplifications that vividly illustrate the invariant structural themes and facilitate the development of a structural description of the phenomenon”
- (Moustakas, 1994, p. 99).

During this step of data analysis, initial assumptions and opinions that were recognized in the epoche were compared to preliminary findings. Any preliminary themes that supported a prior assumption or opinion was re-analyzed with the goal of making sure the information had been thematically grouped accurately, without bias. Imaginative variation was also conducted by reviewing all of the initial themes and subthemes for perspectives or interpretations of the data that might have existed. When a new perspective or interpretation arose during imaginative variation, data was sought to provide supportive evidence. If supportive data was found, themes and subthemes were altered to reflect the newest analysis.

**Synthesis.** The final step in the phenomenological approach is synthesis of meanings and essences of the phenomenon. In this step, while the “essences of any experience are never totally exhausted”, all that was experienced was reflected, perceived and described to establish “a unified statement of the essences experienced in the phenomenon as a whole” (Moustakas, 1994, p. 100).

**Validation strategies.** Creswell (2013) described validation as “an attempt to assess the accuracy of the findings, as best described by the researcher and the participants” (p. 249-250). Validation of data collection and analysis determines how trustworthy the findings are to future readers, which made the incorporation of validation strategies a vital step in conducting this study. The specific validation strategies that were used included clarifying researcher bias, observation, member checking, and triangulation.

**Clarifying researcher bias.** Clarification of researcher bias is typically done by providing information during the study about the researcher’s position within and related to the study and study participants. This information was presented in the positionality: role of the researcher section of this chapter. The purpose of providing a context for the researcher’s position was to allow readers to come to their own conclusions about how this role might have influenced the findings of this study.

**Observation.** As was explained in the positionality statement, I had a prior work-related relationship with each of the research participants through my role as a school counselor at the elementary school. A prior relationship even existed with the middle school participant because she previously worked at the elementary school. As part of my role, I regularly visit classrooms to formally (i.e. social/behavior assessments) and informally observe students within the classroom environment. These observations began prior to the study. My prior exposure to each participating teacher through a pre-existing work-related relationship or formal and informal observations gave me a basic understanding of each participant’s classroom and teaching style. This information was used during interviews to ask in-depth follow up questions that pertained to what I already knew about each teacher.

An example of this occurred when Marie commented that it was difficult for her students to use SMDs in a productive way. With my prior knowledge about Marie's typical schedule, I was able to ask a follow up question about the amount of time each of Marie's students were exposed to SMDs, since they were only in her classroom for up to three hours each day. I also had the prior knowledge that Marie's Kindergarten and 1<sup>st</sup> grade students were in a homeroom class, in addition to Marie's class, which allowed for the possibility that students used SMDs in more than one of their classroom settings.

Once staff members were approached about research participation and the 11 study participants were established, one formal observation was completed in each classroom. Each observation was scheduled and conducted upon completion of the teacher participant's interview. Handwritten notes were taken during observations and summaries were written immediately after each formal observation concluded. Data from formal observations were used to gain current contextual information about classrooms of teacher participants and to look for discrepancies between interview data and what could be observed in the classroom setting. If discrepancies occurred, they were noted in findings in chapter four.

***Member checking.*** Member checking, which further supported the rapport sought through observation between teacher-participants and myself, was conducted subsequent to the interview and formal classroom observation. Each teacher-participant was emailed a bulleted summary comprised of information collected through observations, interviews, and study memos relating to her classroom. In these emails, teacher-participants were asked to review the listed information for accuracy. Each email recipient was encouraged to reply by noting any inaccuracies or by adding information if needed. All 11 teacher-participants

confirmed that the bulleted summaries emailed to them accurately depicted their perceptions and impressions of SMDs and the nature of their classrooms. Each of the bulleted summaries sent to teacher participants can be found in Appendix J, arranged alphabetically by pseudonym. The purpose of this validation strategy was to affirm teachers' voices were heard and interpreted accurately.

***Triangulation.*** The last validation strategy used in this phenomenological study was triangulation. Triangulation occurs in qualitative research when multiple data sources are confirmed to “shed light on a theme or perspective” (Creswell, 2013, p. 251). The data being corroborated in this study were interview transcriptions, classroom observation data, and teacher feedback from member checking. Once interview data were coded and analyzed, findings were checked for validity and consistency in comparison to what was learned during classroom observations, and member-checking communications. As was previously stated when discussing member checking, teacher participants confirmed the accuracy of bulleted summaries (found in Appendix J) without removing or adding any additional information to what had been collected and summarized from observations and interviews. All results presented in chapter four and discussed in chapter five were closely analyzed and checked for validity using each of the previously stated steps and strategies.



## **Chapter 4: Results**

The purpose of this phenomenological study was to explore and describe the experiences and perceptions of elementary and middle schoolteachers who have used stationary movement devices (SMDs) with students in their classrooms and who consented to participate in this study. The central question asked in this study was: What are teachers' experiences and perceptions in using SMDs in their classrooms? This was broken down into two sub-questions: (a) What factors do teachers credit for decisions to introduce SMDs in their classrooms? (b) What changes, if any, do teachers perceive after introducing SMDs? In the previous chapter the research design, sites and participants, data collection, and data analysis methods were described. This chapter presents the results and findings that emerged after each interview transcription was coded using phenomenological reduction and imaginative variation to synthesize the true essence of this phenomenological study. The results presented herein are organized by three themes: (a) teaching philosophy, (b) decision and structure surrounding SMD use, and (c) observations after introducing SMDs. Subthemes are reported within each of the major themes.

### **Teaching Philosophy**

Each teacher participant was asked to share her teaching philosophy at the beginning of the interview. The rationale for this opening question was to gain contextual understanding of each participant's beliefs as a professional teacher and the way in which learning takes place within her classroom. Even though some teachers appeared taken aback when asked to explain their teaching philosophy in an interview primarily focused on the use of SMDs, once the descriptions began each teacher mentioned and revisited their philosophy

multiple times throughout the interview process. Out of all 11 interviews, many quotes were related to participants' philosophy of teaching. The sub-themes that emerged from these quotes related to (a) meeting learning needs, (b) making learning fun, (c) creating a safe environment, (d) fostering student responsibility, and (e) providing experiential lessons.

**Meeting learning needs.** Of the teaching philosophies shared six participants included the importance of meeting students' specific learning needs. Margret shared, "I'm willing to do whatever it is that that child needs in order to be more successful". Marie mentioned meeting students at their specific levels when she said she wanted to "be able to teach them on each of their levels" so children could "learn the way that they learn best". Miss Early talked about the importance of meeting student needs when she explained she is "always looking for new things for different children, cause there's not one fix all for everybody." Audrey Hepburn, shared her belief "That every child is able to learn. However, they all learn differently." She continued to explain how this affects her teaching style:

As a teacher, we need to understand what their learning strengths are and we need to meet their needs at their strengths. They're all at different levels. You have to train them and teach them on the level where they are and we have to make learning a challenge... but it has to be fun.

**Making learning fun.** Within these quotes, Audrey Hepburn mentioned a couple points that were common themes in other teachers' philosophies such as the idea that all children can learn and the importance of learning being fun. Miss Early and Wilma shared in Audrey Hepburn's belief that all students can learn and Wonderful World and Marie both discussed the idea of learning being fun as a part of their philosophy. Even though

Wonderful World specifically said her approach to learning was not all about students having fun or her being an entertainer, the way she chooses to teach allows for maximum student engagement:

I do want to be engaging, but I think with kids... if you can tap into their curiosity, then they think it's fun because your tapping into a part of their brain that... is natural for them because kids are naturally curious.

The importance of fun was mentioned in Marie's interview as she repeatedly talked about how important it was to her that her students loved school and had fun while they were there. Her rationale for this philosophy was that students have a long way to go in school, especially since her students ranged from five to seven years old. Additionally, Marie wanted her students to "be happy and feel like this [school] is home too, because some of them [students] have rough home lives... I hate that for them". This statement alluded to her desire for students to feel safe and comfortable in school, which is the focus of the next section.

**Creating a safe environment.** The importance of students feeling safe and comfortable in order to learn was discussed in interviews with Grape Ape, Margret, Marie, Nature Nut, Wilma, and Wonderful World. Nature Nut mentioned Maslow's hierarchy of needs as she explained how students needed to have basic needs met first and needed to "feel comfortable and... able to move how they need in order to learn their best". Margret shared similar thoughts when she said, "I think that children need to feel safe and happy about themselves... in an environment to where they're not afraid in order to learn most... so I try to nurture them a lot." Grape Ape started her interview by saying, "I think that children learn

best when they feel comfortable. I think that if they know that I care about them then they'll learn." In her eyes, an ideal learning environment for students required a positive relationship between the teacher and students, such as the rapport Grape Ape felt she had built with her students. Whether it was specifically discussed, alluded to, or observed, the teacher-student relationship was different in each of the teacher-participants' classrooms. Some teachers maintained a traditional teacher-student relationship where students appeared to be completely dependent on the teacher. However, the majority of teachers fostered student independence and responsibility for one's own learning.

**Fostering student responsibility.** When observing the classrooms of Zola, Wilma, Wonderful World, and Margret students were seen taking initiative by getting up on their own when they needed something around the room. These students spent very little time asking questions, and they seemed to understand their role within the classroom community. When Zola was asked how students reached their level of independence within her classroom she responded:

It takes a while. It takes probably like a month or so and I always let them [students] do it [classwork] by themselves and then most of the time... they flop and they see their grades and they see that they have to... do it [classwork]... I'm not gonna sit there and do it for them and once they see that they have to do it or their grades are gonna suffer, then they end up doing... what they're supposed to be doing.

Zola went on to explain that students who had behavior problems when they were allowed to work independently within the classroom had some of their independence revoked and much of their day became teacher directed. In similar fashion, Margret and Wilma

integrated a program called the daily five in their classrooms. The daily five program was designed to keep students working independently at different centers or stations, while allowing time for the teacher to work with small reading groups. When talking about students' levels of independence and how long they could work at each station within the daily five program, she shared:

It's amazing. The first time we did it... you take about five weeks to model all the things so it was like October the first time we did it and they picked their stations. I just called their name and they'd pick where they want to go, I was at the back table and... I said 'okay go' and I set the timer. It was silent in here and I was just walking around- I was amazed... I was like, 'I love this! This is the best!' You know, its kind of another name for centers or whatnot, but just taking the time to do the little lessons of what it looks like and what it doesn't look like... what it sounds like and what it doesn't sound like really worked. It was really good.

**Providing experiential lessons.** In regards to how it was mentioned in teacher interviews, experiential lessons include lessons taught by teachers that related to real-life experiences or that integrated multiple learning styles. Penny talked a lot about making her lessons hands-on and teaching real-life skills that students will need to succeed after high school. The inspiration for her teaching methods to be focused on real-life skills is because she teaches students who require "a very small classroom so a lot of their one-on-one needs are met". Some of Penny's students are non-verbal and are taught from an alternative curriculum to what is taught in standard education classrooms. Even though her standard education 4<sup>th</sup> grade class had much different needs from Penny's class, Grape Ape similarly

emphasized hands on learning: “I do a lot of hands on things, I try to fit all of their multiple intelligences so that their learning style is met so that I can tap into how they will be successful”.

The technology used in some classrooms provided students with real-life problem-solving skills. Nature Nut reported trying to “incorporate more technology as we go along because I know that that’s where we’re headed and they [students] need to be ready for the workplace.” While it was not a part of her interview other than mentioning that kids learn through “exploring things on their own”, Zola’s classroom was physically set up and managed to foster student collaboration, problem-solving, and independent exploration through technology. Zola allows her students to bring their own electronic devices to school. Instead of lecturing, she facilitates learning through student exploration of stations and activities she has set up through classroom computers, Google Chromebooks, and students’ own personal devices.

### **Decision and Structure Surrounding SMD Use**

Within the major theme titled, decision and structure surrounding SMD use, three sub-themes emerged. These subthemes were: (a) use decision, (b) use introduction, and (c) use time. Each sub-theme is further explained in the following sections. Discussion about teachers’ decision to use SMDs in their classrooms constituted a great number of quotes from interviews. The structure put in place for SMD use, such as introduction, schedule, and time of use was the focus of the majority of teacher-participant quotes. This large number of quotes about procedures and structure associated with the use of SMDs was not surprising because each teacher structured their SMD use differently and these differences had to be

explained for contextual understanding within each interview. The final subtheme explained within this theme includes changes and reflections teachers made after implementing SMDs in their classrooms. This subtheme contains valuable lessons learned from teacher-participants.

**Use decision.** When asked to share about their decision to use SMDs in their classrooms, teachers gave responses that fell within five categories. Teachers decided to introduce SMDs to their students for the five following reasons, which are listed in order with most frequent response first: (a) to try something new, (b) to burn student energy, (c) to improve focus, (d) to improve behavior, or (e) to offer entertainment.

***Try something new.*** Marie, Miss Early, Penny, Steelers Fan, Wilma, and Wonderful World all mentioned being open-minded to trying new concepts in their classrooms and this was one of the factors that led to their decision to introduce SMDs to their classrooms. The phrase, “Why not?”, was mentioned in multiple interviews. Wonderful World explained, “the whole reason I got started into it was, ‘Why not?’ Like if it could help my kids and I don’t see it as something that could distract then it’s worth a try.” Similarly Marie said:

I just am willing to try anything honestly that is meant to help children learn. So I just was like, ‘Sure, I’ve never tried that before so I would love to see if it works or not or just anything. Trial and error’... that’s why I did it. It’s just like, ‘Sure why not? I’ll try anything’.

To further emphasize how frequent the goal of trying something new was discussed, the following quote was said during Penny’s interview:

I was a brand new teacher last year, I thought ‘Why not?’ in all honesty. I mean at that point I was just trying to figure out what was best for our- my students and... I do a lot of fidgets, I do a lot of timers and I thought well why not bring the pedals in... let’s see and I thought ‘why not?’. I mean okay, if they don’t work we just take them out of the classroom... It wasn’t like a permanent thing and I just wanted to try them and they worked.

***Burn energy.*** The same amount of teachers, six participants, referenced the need for their students to have an outlet to burn excess energy as a contributing factor to their decision to use SMDs in their classroom as teachers who were motivated to try something new. Some teachers who talked about the need for students to burn energy explained that they had students in their classrooms that were fidgety, had ADHD, or were very energetic. These teachers made the decision to use SMDs in their classrooms with specific students in mind. The following quote from Grape Ape includes reference to specific students who needed to burn energy:

I noticed that my ADHD children and my ADD children needed to get some energy out and I’d tried things like I’d take brain breaks and we’d like dance around the room and we’d do all kinds of stuff and then we’d stop and sometimes... I’d literally take them [energetic students] outside and have them run a distance and come back. So, when you said the pedals I thought, well that would be a way to get them to get their energy out and stay at their desk and stay focused.

Miss Early’s decision to try SMDs with her students seemed to be founded on factors similar to those of Grape Ape when she shared:



I have some that are just fidgety and you try to look for different ways to let them get rid of that energy without distracting all of those around them. So we use different things... We have the fidgets, the widgets in their hands, and the stress balls... Those work for some kids but there's not one fix all for everybody.

Both Grape Ape and Miss Early were referring to 4<sup>th</sup> grade students who needed to burn energy, but Marie shared similar concerns about Kindergarten, 1<sup>st</sup>, and 2<sup>nd</sup> grade students' activity levels when she said:

I have just lots of different needs in my classroom. So I've got lots of little busy ones and I just thought that this would have been great to you know, let out some of their energy other than running around the classroom, or tapping, or just doing anything that was making noise and disrupting others. So, that's why I thought that these [SMDs] would be great.

Other teachers spoke about their desire to use SMDs to allow students to burn energy. Audrey Hepburn had a specific time of the day in mind that children could benefit from refocusing their energy. This was illustrated when she talked about DEAR (Drop Everything And Read) time routines in her class: "DEAR time isn't really DEAR time like it should be in here. It's very active. They're [students] getting up, they're moving around, and I want them to focus on reading."

***Improve focus.*** As was mentioned in quotes presented in the previous section, Grape Ape and Audrey Hepburn wanted to use SMDs in hopes that this tool could help students, "stay at their desk and stay focused" and "focus on reading". Audrey Hepburn also mentioned that she was willing to "try anything to keep them [students] focused". Grape

Ape and Audrey Hepburn were the only teacher-participants to mention improved student focus as one of the reasons they decided to use SMDs. The focus improvement that was anticipated by both teachers was related to active students being able to use SMDs to burn energy.

***Improve behavior.*** Two teachers, Margret and Marie, mentioned student behaviors as being factors for them to use SMDs in their classrooms. When Margret was asked to share her experiencing deciding to use SMDs, she shared about a specific student:

I had a child that everyone since Kindergarten had tried everything with... he was always up and running around the room and causing problems and when I got the pedals... I told him those were his pedals. They went to his desk and no one else could use those pedals. They could share the other set, but those were his. And sometimes he used them. I mean sometimes he didn't use them, but most of the time when he was in his desk, those feet were moving and I noticed an incredible difference in him.

This quote from Margret alluded to her being one of the teachers that were willing to try anything to help this student. However, rather than depicting her openness to try new things, this quote shows that she was most motivated to try SMDs to improve this student's behavior. Comparably, Marie discussed behaviors she hoped the use of SMDs might dissuade students from doing, such as "running around the classroom", "tapping", "making noise", and "disrupting others".

***Offer entertainment.*** When asked about her decision to introduce SMDs to students in her classroom, Zola's response did not fit in a category with any of the other participants.

This teacher had seen SMDs used in classrooms the year before, but did not have a class of students with which to use them. When talking about her decision to use SMDs, Zola shared:

So you had them last year and I got really excited 'cause I think they're really cool... I mean I think its just good to give the kids something else... its not like they're focused on them [SMDs], but it makes what they're doing a little more entertaining then if they were just sitting there... I just thought it was a good idea. Kids like to move so I thought they would like them.

**Use introduction.** During teacher interviews, additional questions were asked to gain understanding about how SMDs had been introduced to students. When looking at the responses of all participants, three introduction methods were found. Some teachers chose not to formally introduce SMDs to their students, while others introduced SMDs as a tool that could assist students in some way or as a fun privilege students would get a chance to try. Each method teachers used to introduce SMDs is shown below by order of most frequently response.

**Classroom tool.** Margret, Penny, Steelers Fan, Wonderful World, and Zola all shared that they formally introduced SMDs to students by explaining that they were tools that could be used to benefit students in some way. The nature of students' needs in Penny's classroom prevents any of her instruction from being given to the whole group, so her introduction and use of the SMDs was individualized for each student:

Some of them [Penny's students] used them with their arms. We did that sort of as a physical therapy type approach- because some of them may have... weak core or weak arms. So you know, we would be sitting at the table and I may be reading to

them, but their arms were moving. Um and some other students used their legs. It just depended on the student- if it was for energy out or calming and then if they used their arms or their legs. So last year you could walk into my classroom and see two different students having two different emotions using those [SMDs] two different ways. So it was... very differentiated for each child.

When Margret introduced SMDs to students during the year the interviews were conducted she said:

We have these pedals and sometimes, you know, you wanna just move and its not recess. So you can use the pedals if you feel like you need to move at that time. And of course for a week everybody always had to have them. And then it died away, but the ones that really need it still will go and I'll look over there and they're just pedaling away. They don't have to have permission to use them [SMDs].

Steelers Fan, Wonderful World, and Zola gave more specific introductions to their whole class of students. When students in Steelers Fan's class were first shown SMDs, they were told, "This is kind of a neat little thing", and were asked if students had used the pedals the previous year in 1<sup>st</sup> grade. After allowing students to share some of their previous experiences with SMDs, Steelers Fan went on to say:

You know there really is a study that your brain works at a different rate and kind of brings your oxygen...I kind of explained all of that in the best way that I knew how to, but kind of putting it that way to them [students]. Saying that there is a rhyme and reason for this, it kind of adds to your brain... So the kids were like "cool we'll try it out".

Steelers Fan continued her introduction by sharing:

When it's you're independent time and when it's your free-time or it's your small group time and you two wanna do... discussion with each others' group, you can sit there and pedal till your heart's content. But we do get to alternate. I said, 'you know-sharing- we have two of them, so pass the love to everybody else.' Everyone wants to have a turn at it.

Wonderful World gave the most detailed explanation of how she introduced SMDs to her students the first year they were used in her classroom:

So, last year when we introduced it to them, we introduced it with guidelines like here's how it's gonna be used, here's how it's not gonna be used. We're not gonna use it on top of tables... we're not gonna pedal on somebody else's [SMD] - like we're not gonna reach the person- [demonstrated reaching feet to get another person's pedals under table]. You set them out with clear guidelines, but we also set it out by saying, 'Here's kind of what they're used for... it can be used to help you focus, it could be used sometimes when you just feel a little antsy. Everybody feels antsy every now and then. I feel antsy every now and then. So like, it put everybody's guard down because they realized well everybody feels this way every now and then... Sometimes in the morning I feel a little bit like that and so, some kids were like, 'Well, I need one right now'. So I think by the way we approached it in the beginning it didn't seem like it was something special for special kids, it was just a tool that anybody could use at any point in the day when they felt like they needed it.

Zola introduced SMDs to students in a similar way to Wonderful World by outlining her expectations for their use of SMDs and briefly mentioning how they could be used:

I just told them that if they felt like they needed to use them, if they felt like they needed get energy out, they could use them. They had to take care of them, if they didn't take care of them they weren't gonna be allowed to use them. And that was basically it and I told them they could use them during station time and they had to make sure that they shared and switched.

***Classroom privilege.*** Three teachers (Audrey Hepburn, Grape Ape, and Wilma) chose to give less information about why SMDs might be used in class and instead presented them as a fun activity that students would get a chance to use when it was their turn. Audrey Hepburn explained this when she said, "I did not tell them what it was for. It was just special for them to be able to use it." Audrey Hepburn also shared how students were chosen to use SMDs:

They saw them and thought it was a fun toy, so I had to have a schedule... We have magic numbers in here. Monday, you know if your magic number was 1-4 then you had a peddler or you got the little bouncy pad or you could sit in my rocking chair and they had a choice. It wasn't just the peddler it was their special day for DEAR time. Everyone else could sit on the floor where they wanted, but they [magic number student] got the special chairs or the peddlers.

Similarly, Wilma reported:

I said, 'everybody gets a chance to try these' and we did... They were all wanting to try them. We had a little schedule... That was more formal because we had to make

sure 'did you use them yesterday? Well, then it's someone else's turn'. And it was during mainly reading time.

Grape Ape initially introduced the SMDs to specific students and explained how the SMDs could be helpful. After these students had time to use them, she made SMDs available to her entire class, who viewed using them as a treat:

I kind of tried it with, you know, I'd rotate it like to these two kids today and then the next day I'd rotate it to two more. Then it became like a 'I wonder who Ms. Grape Ape is gonna give it to today?' So I did that for about two weeks and then I would take it and I'd put it under the board and I'd open it [SMD use] to everybody. So I didn't make it seem like, 'well this child can't sit in their seat so they're gonna have to use the pedals'. It was all about, 'okay, lets see who I choose today'. So they saw it as a treat or a reward. They didn't know I did talk to those kids privately and I told them, 'I'm gonna put something underneath your seat to kind of help you focus on things, but if you don't- if its not your thing, you don't have to use it.'

***No formal explanation.*** Three teacher participants (Marie, Miss Early, and Nature Nut) talked about how students were allowed to use SMDs, but did not fully explain what language was used to introduce SMDs to their students. Marie explained that students used SMDs in her classroom when they needed to take a break:

If there are times when they can't focus... we have break cards. If they need a break this was an option that they could do. Or if I felt they needed a break and they weren't sure they needed a break, then I might ask them... We'd use a timer on it... I'd ask them to use the pedals.

Miss Early shared some details about how she introduced SMDs to students, but her introduction method was intentionally informal to protect some students who needed additional support in the classroom:

I didn't make a big deal about them [SMDs being in classroom]. Because you don't want to single people out. So you just say, 'You know, Sam, why don't you try that?... We have these in our class now'... My kids are so used to like different people doing different things that it didn't really phase them... but you know there's just some kids that when they see someone else doing stuff, they like to try it because that's just kids in general. So what do you do in those instances? We try to work out some kind of rotation so they can test it out.

Based on her number of students with active or inattentive characteristics, Nature Nut chose to put a rotation schedule in place for students to use movement tools such as SMDs or balance cushions:

I had so many ADHD kids and kids with other focus and attention issues and then kids that just needed to get some energy out whether they were labeled or not. So I wanted to make it fair for everybody. So I alternated and I systematically went down my role and would offer, 'Would you like to use a pedal or a cushion today?' and then everybody wanted to try them, at least at first. Then as I went through the list there was a certain group that it obviously benefited more than others. Some really took to either the cushion or the pedal and some found it more of a distraction I guess. So then... we kind of worked it out. I'd still offer it to the others, but they'd say, 'Yes



please' or 'No thank you', and that's kinda how we worked as I went through systematically.

**Use times.** As teachers shared their experiences, the times at which students were allowed to use SMDs was shared. From the 11 interviews, five specific times were shared as preferred for when students could use SMDs. These five times are further explained in the following sections and will be referred to as: independent work, silent reading, student directed, needed breaks, and after work completion.

***Independent work.*** Some teachers mentioned times they preferred students did not use SMDs, such as during direct instruction or small reading groups. These teachers felt the use of SMDs during whole class or small group instruction had potential to distract the student who was pedaling, nearby peers, or the teacher. Wilma shared this concern when she said she always tried to permit students to use SMDs, "unless I'm doing a small group where I have to concentrate, which I can't sometimes if I hear a little peddler." Wilma, as well as other teachers who preferred students did not pedal during instruction, mentioned that during independent work was the most ideal time for students' SMD use. Steelers Fan shared:

I just think that when I'm teaching, like core teaching, and if it's just like 15-20 minutes... it's distracting to them. But after that and it's their [students'] group time or their independent time they can come over and get them [SMDs]... If there is a lot of distraction, a lot of stimuli going on, even though they're constantly doing it... it kind of stirs the pack... So when I'm teaching we don't come and do it, but when you're independent time and when its your free-time or its your small group time... you can sit there and pedal till your hearts content.

Zola was okay with a select few students, but not all using SMDs during her instruction to students:

Most of the time if I'm up there teaching there's a few of them [students] I don't mind if they use them [SMDs]. But there are a few of them [students] that it kind of distracts them if I'm up there, but if they're working independently they can use them and work... So some of them have a hard time using them and listening, but they can use them and work by themselves.

In contrast, Margret and Miss Early did not discuss SMD use being a distraction during instruction. Instead, both teachers observed that students seemed to use SMDs most during independent assignments. In reference to SMD use, Margret said, "Most of the time... its usually when they're doing their independent work that they're having a hard time on their own... staying focused, and so they'll just use it [SMD] at their desk." Miss Early did not mention student motivation when she shared her observation of SMD use:

[Students] had a hard time writing and it [SMD use] got in the way when they were at their desks... So they didn't really do it while they were writing, but if they were like reading, I saw them doing it a lot. During group work they didn't use it, so it was more like during independent work time.

***Silent reading.*** All of the 2<sup>nd</sup> and 3<sup>rd</sup> grade teachers who participated in this study (Audrey Hepburn, Margret, Steelers Fan, and Wilma) found silent reading times, such as DEAR and Daily Five's Read to Self, to be appropriate times for SMD use to be incorporated. DEAR time, which is a time students are instructed to drop everything and

read, was one of the first times that came to mind for Audrey Hepburn to integrate SMD use in her classroom:

I wanted to use them basically just to start out as free time, maybe DEAR time, just to see how it would work, to see if that could help them focus when they were reading... And I really have liked them for reading. That's basically what I use them for.

Wilma did not intend for reading to be the primary time students used SMDs, but she observed that her students asked to use the pedals most routinely when they were asked to read to themselves silently. She also mentioned that students had trouble completing other classwork, such as math, while using SMDs:

They ask when its read-to-self time. They don't use them at their desks. Just I don't really think there's even room or we never have. So when they're off somewhere and when they read to self they can go wherever they want. And if they want to use a peddler they'll just usually pull a chair somewhere and do it off in the room, kind of away from the other kids. And that's just kinda, about the only time... Somebody was trying to do it and have a lap-desk to do some math, but it wasn't working out real well for him because it was hard. Maybe they were too short or something- couldn't reach them. And they couldn't do their math so mostly during reading time.

Margret, who was supportive of SMD use anytime students were working independently, said she specifically gave some students an SMD during a reading time:

This year I've tried it... I've used it with a couple of children, while they're reading because they couldn't sit still to read... This year, its usually been at silent reading time and that's anywhere in the room... they can use them.

Similarly, Steelers Fan was supportive of SMD use during independent time, but also noticed students frequently preferred using SMDs at reading time:

They love to use it when they do the pair reading... partner reading with each other. They'll sit next to each other and for some reason, I don't know if they sit down and say 'Hey you wanna read together and partner?' and sooner than later they're burning that- like pedals... and they're reading to each other... Because during my reading group time, they have partner reading... So they can come over and get them [SMDs] and if they're not sitting with me and reading in group time, they can kind of take the pedals and go out there.

***Student directed.*** When talking about times students were allowed to use SMDs, three teachers left this decision entirely up to the students. These teachers were Grape Ape, Nature Nut, and Wonderful World. The only guideline added by Grape Ape was the need for students to share when others wanted to use an SMD:

I would put it [SMDs] under my chalkboard and it was open to any student in the classroom. So they would come, but the rule was if someone else asked you for it, you had to give it up within like... I had to share them within 20 minutes.

Nature Nut created a schedule to assure all students got the opportunity to use an SMD for a day, but during that day the students were permitted to use the SMDs at any time they chose. When Nature Nut reflected on what this use looked like, she shared:

Some of the kids, even if they wanted it and they wanted them to use, they'd peddle initially and then they'd... I noticed they'd stop. And they wouldn't use them throughout the whole class. So it was just different strokes for different folks I guess.

Unlike Nature Nut's distribution schedule and Grape Ape's requirement that students share with one another, Wonderful World allowed students to be responsible for when they got an SMD and how long they chose to use it in one day:

This year we have a peddler parking lot. So at the end of each block they park them back in the parking lot to where when the kids come in- the first ones in the door- because they were fighting over them. The first ones in the door are the ones who can have the first options for them [SMDs].

In addition to being the only teachers who did not restrict the time of day SMDs could be used, these three teachers were also the only participants that spoke of students using SMDs while taking tests. This may have occurred because other teachers who had more restrictions on times SMDs should be used felt test taking times were inappropriate and therefore, had nothing to say about students using SMDs while testing. Teachers' referring to students testing while using SMDs may also be an indicator that students felt SMDs were helpful to use at that time, since use in these classrooms was dictated by the students. Grape Ape reported that she suggested some students use SMDs during tests to assist with worries or anxieties:

I've had children who have just... they would get worried over testing. I knew they had testing anxiety, so during a test I would give it [SMD] to them and that would help them get their mind off of the fact that 'Oh my gosh, I'm taking a test', and they would be concentrating more on pedal, pedal, pedal.

More consistent with SMD use being completely student directed, Nature Nut mentioned that she could observe that some students were benefitting from using an SMD

during a test. However, the choice to use it was made by the students and was not suggested by the teacher:

If they were taking a test, there were some that you could really tell it [SMD use] helped because they would just be pedaling away, pedaling away, working away. I mean just getting that nervous energy out. It was really helping some of them.

*Needed breaks.* The two teachers who reported using SMDs during times that students needed to take a break, were also the only participants who were special education teachers at the time of this study. The students and the teachers in these classrooms were both able to dictate when students needed to take breaks. Marie explained:

If there's times when they can't focus... we have break cards. If they need a break card this [using an SMD] was an option that they could do. Or if I felt they needed a break and they weren't sure they needed a break... then I'd ask them to use the pedals.

When speaking of her experiences using SMDs with her students, Penny emphasized that needing to take a break in her classroom was not a way to avoid doing work. She mentioned that it was important for her students to use the SMDs while they were working to discourage their use of SMDs as a method to get out of doing classwork. Penny explained her students' use of SMDs when she said:

We used them last year for students that had ADHD to help them focus while they were working. So their body was moving, but they were still at the desk working. Or students that had some, maybe anger issues that didn't know how to respond to their emotions. So if they were to get frustrated with me or another student they would go

over and pedal it out, as we called it. We pedaled it out and they would pedal, pedal, pedal until they got that energy out and then it was a calming mechanism a lot of times too... For the most part there was one student I had who would tell me, 'I gotta pedal!' and he would grab it and I'd say, 'Okay' and then even though he was pedaling we were still working because I didn't want him to think, 'if I pedal I don't have to work'. So he was still pedaling at the table with me and we were still working.

***After work completion.*** In addition to allowing students to use SMDs when they needed a break in her class, Marie tried using SMD use as a motivator for students to complete their work. Marie shared about using SMDs to improve some students' work completion:

Sometimes I would say, 'If you finished your work you can go pedal' and so, they would like just slop down something... So that was another trial and error. They just wanted to get to the pedal, which they loved.

### **Observations After Introducing SMDs**

Teacher participants described experiences and perceptions that occurred subsequent to introducing SMDs in their classrooms. When analyzed, five subthemes emerged from these descriptions: (a) classroom community, (b) positive experiences, (c) negative experiences, (d) neutral experiences, and (e) teacher impressions.

**Classroom community.** In order to understand how SMDs influenced all aspects of the classrooms in which they were integrated, teachers were asked to discuss any changes they thought occurred to their classroom community or classroom culture after SMDs were

introduced. Teachers responded with experiences that have been grouped into five categories that are explained in the following sections. These five teacher response categories include:

(a) no influence, (b) rapport, (c) communication, (d) need recognition, and (e) mood shift.

*No influence.* Of the 11 interviewed teachers, four reported that they did not observe any change to the overall community of their classrooms. In three of these instances, the teachers went on to explain that there had always been alternative learning or coping strategies used in their classrooms, so the SMDs fit with the pre-established community. One teacher, Miss Early, experienced a shift in her classroom community between the two years she used SMDs. However, this change was accredited to the different personalities and characteristics of the students she had each year. When explaining that she tries to foster a familial environment in her classroom, Miss Early spoke about her students both years:

We try to do like a family unit. So I think last year was more of a community family unit where they were working together and very accepting and if I was done with this [SMD], you can have this [SMD]. So it was very much a community. Whereas this year, they were not much of a community and working together... I wouldn't blame the pedals at all. It's just this group of children.

Grape Ape mentioned that the use of SMDs could have caused some community shift at the beginning of the school year, but only because her students were transitioning from 3<sup>rd</sup> grade where their teacher may have had different classroom practices. Grape Ape went on to talk about how the school in which she teaches fosters the use of different strategies and tools that can increase students' comfort and ability to learn in the classroom:



In my room I don't think it's changed very much because they're used to doing different kinds of things. So it might have been a shift at the beginning of the year based on where they came from, in a 3rd grade classroom. It could have been that they had a teacher who had that same philosophy as I did. And most of our teachers are more willing to let kids be more comfortable in the classroom and its not necessarily straight rows because our school is that way. But you know, if they had a teacher who was, 'You have to stay in your spot. You have to do this', and they felt that anxiety then that was a major shift. But for the most part I wouldn't say that changed the dynamics of the classroom, because the way my classroom is set up they're already doing those types of activities. It was just another piece in the puzzle.

Margret perceived that SMDs did not influence her classroom community because children in her room were already very accepting of differences among others. When specifically asked what ways her classroom community as a whole had changed since introducing SMDs, Margret responded:

Not a whole lot. But I think they're [students are] just accepting of kids needing certain things at certain times and they don't question it you know. They're not saying, 'Why did you give it to him?' You know? They're just, 'Oh, okay'.

Wonderful World described some of the other things she allowed her students to do in class when she explained that the SMDs fit in with what was already happening in her classroom. She also described that students understood that what she allowed them to do in class was to help them:

It fit right in with what we do already... because there are already so many kids who do so many different kinds of things. Whether they have a stress ball or they have something else that I allow. Whether I let them eat or water or something else, there are so many other things that we're doing to help them that... I think for them it probably just felt like another thing... 'Oh that's just another thing she's letting us try to see if it helps us'.

**Rapport.** Zola perceived that the use of SMDs in her classroom improved her rapport with students. This may have also occurred in other classrooms, but was only mentioned by Zola when she discussed change in classroom community:

I don't know. I almost feel like they think it's nice that I let them [students] use them [SMDs]. You know what I mean? Instead of being a teacher that's like, 'No, I don't want any of that stuff in here'. They actually feel like its nice that I'm allowing them to do that [use SMDs]. Because I don't know if there's some [teachers] that don't allow them to or wouldn't allow them to [use SMDs], its almost like... at the beginning of the year its almost one of those things where you're trying to build their respect from them. I mean I don't necessarily care if they like me, but I do care if they think that I care about them and I think that its one of those things that they're like, 'Oh, she's doing this for us'.

**Communication.** Experiences shared by Wilma, Audrey Hepburn, and Steelers Fan described an observed improvement in classroom communication. Wilma explained that it was important to her that students ask permission before using things and students learned to do this because they knew the SMDs would be taken from them if they failed to ask

permission to use them. Problem-solving skills also seemed to be improved as students learned to solve issues of whose turn it was to use the SMD. Both of these student communication skills seem to be results of the classroom culture put in place by Wilma, in response to having SMDs in her classroom:

Wilma: They have to communicate with me... So that's kind of procedural, but they know they have to ask. Because sometimes they'll grab them [SMDs]... Well a couple of them in particular will. I say, 'Did you ask?' they say, 'No'. So they don't get to do it, if they know. It's usually the same one. They have to communicate with each other, if they get to it first or at the same time. So problem solving and just following expectations. I think, its been good, because I've threatened, and I don't mean that in a bad way, 'I'm gonna make a schedule for that [SMDs]... Because if they start arguing, I say, 'Okay, we're gonna take them away.' Then, 'No!' I'll say, 'Well then, figure it out' and then, they have. They've got their own little system for those.

Even though she did not specifically say communication was effected, Audrey Hepburn's report of improved sharing among students included details about students being able to respond verbally in appropriate ways individual's turn to use an SMD:

One thing- they've learned about the sharing and the taking of turns. They know automatically that if it's not their day, then they don't even ask for them. And if they do ask, they can accept the 'no'. Not just that student, others are like 'No, it's not your day', 'Oh, that's right'. Even though they knew. I mean so basically that's

really, that's the main thing. Just with taking turns and sharing, which I know we still have issues with in 2nd grade.

Dissimilar to Wilma and Audrey Hepburn's experiences with communication changes in their classrooms, Steelers Fan saw a notable change among students' communication with one another. She explained that the use of SMDs brought students together, in a non-threatening setting, and allowed conversations to happen between students who otherwise would not have spoken to one another:

I think it has allowed kids to kind of communicate with each other. They will sit together in groups, but like I said before, when they sit on the pedals they're not communicating like 'Okay, how were you over the weekend?' but communicating like stories and processing. Things that are key essentials of books because we do a lot of like shared reading and let's talk about what we [read]. They have questions that they have to do, so they sit on the pedals and answer the questions verbally instead of written. So I think it has allowed them to communicate a bit better, because they're sitting there and they're concentrating instead of worrying about what is going on and the dynamics of the room... It kind of allows them to communicate with other people where they maybe wouldn't have. And kind of builds friendships, because it's like we're here, we're stuck with each other. You're either going to like the person, you might not like everything they do... but we're kind of gonna have to live with each other. Yes, so I think that allows them, as they're pedaling, a way of talking with each other or a way of communicating.

***Need recognition.*** When reflecting on how the introduction of SMDs affected Marie's classroom, she shared that students began recognizing when their peers needed to take a break. This occurred after SMDs had been in the classroom long enough for students to see Marie redirect students who needed to take a break. Marie was impressed with the way students were able to recognize what their peers needed. This was further explained in Marie's response to being asked about changes that occurred to her classroom community:

The only change I can think of is that, I almost felt like... other students could tell when it was sort of like time for another student to use one [an SMD]... They could tell when another student was getting frustrated or overactive. It was almost like they were telling them, 'Okay maybe you should get on the pedals', just from watching me... tell them, 'Do you want to be on the pedal?' So I feel like they just had more understanding of honestly the misbehavior of some students because they realized... 'Okay he's running around the room'. They understood that it was helpful to that student because, instead of him running around the room and bothering them, he was on the pedals... They would even suggest to me, 'I think this student needs to pedal'... And so whenever they would come to me and say that, I would go figure out what the situation was and determine myself, but I just thought that was cool of them.

***Mood shift.*** There were two classroom communities out of the 11 targeted for this study that shifted moods after the introduction of SMDs. One was Penny's classroom that went from feeling tense and aggressive to feeling more peaceful:

I will say at the beginning of last year it was, I wouldn't say a very angry classroom, but it was an agitated classroom... a lot of hitting and punching of the students hitting

the teachers. So, introducing the pedals we saw the hitting, the spitting, the kicking, the screaming- that went down dramatically. So the overall feel of the classroom was a much more calmer environment, which then helped me teach, helped the students learn because they're not gonna learn if they have the neighbor whose screaming and having a tantrum or meltdown. Their focus is gonna be on that... The overall feel of the classroom calmed down, which helped me teach and learn.

The second classroom community that experienced a mood shift was Nature Nut's that was described to be reenergized and had added enthusiasm after students were introduced to SMD use in the classroom:

There was some excitement when we were using them. If I had forgotten to mention it or go through and ask students to use them they'd come in each day and say, 'Well who gets to use the pedals today? Who are the pedal people today?' 'Oh yeah, let me check.' So there was definitely excitement and enthusiasm and an interest in using them.

**Positive experiences.** During interviews, teachers were asked to share experiences they perceived to be positive or negative. Positive experiences could be grouped into three categories: academic performance, personal/social development, and physical needs. One perceived positive experience that did not specifically fit within any of these categories was students' enjoyment of using SMDs. Five teachers (Audrey Hepburn, Marie, Nature Nut, Steelers Fan, and Wilma) shared that students thought SMDs were fun and they enjoyed having access to them. Audrey Hepburn reported that using SMDs, "was something

different, it was something fun, but something that they [students] didn't realize that actually had a positive impact on their learning.”

*Academic performance.* Some of the positive changes or benefits teachers experienced from using SMDs with their students related to students' ability to learn and perform academically. Teachers reported that students showed improvement in their ability to focus on tasks, engage in classroom discussions, read for a sustained amount of time, and complete class related duties.

Improvement in students' ability to focus or concentrate on tasks was referenced in relation to using SMDs by eight teachers during interviews. Miss Early shared that, “a couple [students] that were having difficulties concentrating were able to concentrate better,” with the use of SMDs. Zola and Grape Ape shared that using SMDs may have aided students' ability to focus because it decreased the amount of time spent walking around. This was explained when Grape Ape said:

Academically, some of them [students] were more successful because they were more tuned in to what they were doing versus one roaming around the room and just kind of staring off in space... It kind of brought them where they were able to concentrate a little bit better. So they would retain information and be able to assess or perform the way that I needed them to do in class. So if I gave them an individual activity, to kind of do a check up to see if they understood what we had done during the lesson, they would be able to spill back what we had done.

Penny reported similar observations of students' academic performance improving because of movement that assisted their focus. Penny was discussing her observations of academic performance changes when she said:

More of like the ability to focus if their feet were moving or their arms or whatever. And then the ability to maybe not verbalize what they learned, but... I could read them this book about weather. They would be moving and I would go over and say, 'Okay, find me the sun.' 'Sun.' And before if they had been sitting still, they may not have been able to do that. So just the small academics that may not mean much to other teachers here, but that's one of their IEP goals is maybe finding something the teacher is asking them to find.

In continuation of teachers' reference to focus when the SMDs were used, Audrey Hepburn speculated that the rhythm of pedaling assisted in students' ability to maintain focus while using SMDs:

I think it's like the rhythm of the wheel kind of helps them. Not just the movement but the rhythm of the wheel helps them tune out all of this [class distractions] and they're focused here. Which is kind of what works for them [students].

Steelers Fan shared that when students were able to focus while using SMDs, it was difficult to break their concentration:

It's to the point that no interruptions could deter that [students' focus]. So they're involved completely. It's amazing to kind of see that. It's almost that they're the little hamster on the little wheels and I'll say to them, 'Hey we're starting something' and



they realize, ‘Oh, okay yeah’ because they’re so involved in it. So that’s a positive thing.

The use of SMDs was also associated with students’ engagement in classroom discussions as was shared by Grape Ape:

I have done like, where we would sit sometimes and we would do math discussions and I would have a group in a circle and we’d just be sitting in a chair, including myself and we’d pedal. And we could have discussions while we were pedaling and it [using SMDs] just kind of helped them engage a little bit more in what we were discussing.

Just as Grape Ape experienced conversation engagement in math, in reading Steelers Fan noticed that when it was students’ turn to use an SMD, “they just aren’t sitting back here exercising, they’re reading and doing something else... either having a conversation about a book- partner to partner and talking about what we did in class.”

Three teachers reported benefits of SMD use during reading times. Just like a previous quote by Grape Ape explaining that students stay seated longer when using an SMD, Audrey Hepburn shared:

They love it. I mean they can’t wait for their day to use it and honestly when they have that [SMD] in their hand they don’t get up to get another book. They sit there and they read and they stay focused on the book and they enjoy it.

Continuing her reference to SMDs being related to level of students’ engagement in conversations, Steelers Fan shared:

So it's not just more of getting off the energy, it's more of reading a book. That seems to be their fun little place to go and read while that's happening... When they're reading a book together and they're pedaling away and wanting to share the book. They pass the book and here they are pedaling away... They're sitting and actually kind of enjoying reading and conversing with each other, which it's nice to see that in 2nd grade about a book.

When Wilma discussed changes that may have occurred because SMDs were introduced, she shared about one student who was able to sustain reading for a longer amount of time:

I have one in particular. He can sit there for the longest period of time and just go to town on those peddlers and he reads. I think it just keeps him in one place. If he's not on a peddler he's up and down, up and down, getting books, getting books, and not really reading... He's having fun pedaling but he's also reading.

Wilma went on to explain that when this student did not have access to an SMD during reading time he was, "up and down, up and down. It's like a flipper- someone who just flips the pages." This student was not the only individual in Wilma's class that enjoyed using SMDs while reading. The option of using SMDs at the classroom station called "read-to-self" was incentive for students to choose the option to read independently:

Its something fun, it helps. For some of them, it makes them choose read-to-self more often then they would. So it gives them something, a little added benefit, something to look forward to if they know they can use their peddler that day because some of them would never choose read to self.

Finally, on the topic of reading and the use of SMDs, Wilma shared the following when discussing her thoughts on change to her students' academic performance after introducing SMDs:

Since mainly that's when we use them [SMDs]- reading time... I certainly hope and venture that there's a good connection with sustained silent reading is helping them become a better reader... Some of those certain ones that would get up and down, they wouldn't just walk to the reading center, they'd go and bother someone or talk to someone so that would be causing distractions. I think it [using SMDs] just helps them, its part of their learning style... Just to be active and moving while they're doing things so I think that definitely carries over to the academics.

Marie, Miss Early, and Wonderful World pointed out other ways SMDs may have assisted in the completion of classroom tasks. Marie tried to motivate students to complete their work more quickly by saying, "If you finished your work you can go pedal". However, she was not pleased with the outcome. Students were highly motivated to complete their work in order to use SMDs, but instead of turning in quality work, "they would just slop down something... They just wanted to get to the pedal".

On a more positive note, Miss Early reported that her students, "felt better about being able to perform in class because they felt like they were able to control themselves and release some of their energy" through the use of SMDs. In addition, Wonderful World's students were so motivated to use SMDs that their desire to obtain an SMD got students to class earlier than required. Wonderful World explained that she had so many students trying to use SMDs that she decided to put a first come, first serve rule in place. She taught middle

school students and to make it fair, she allowed the first students in her class after transitions to have first option of using SMDs. Wonderful World shared:

We had to start the first to the rooms gets it [an SMD] because there was no other way to make it fair. So then it was good because it got them to class on time. So that was great, because there would be a mad rush for kids to get on time.

***Personal/social development.*** Within the category of personal/social development, positive experiences included improvements of students' behaviors, social interactions, coping with emotions, and being comfortable in the classroom.

Four teacher participants mentioned that student behaviors improved during or after SMD use. Marie explained students, "enjoyed it and it tired them out and stopped their bad behavior for a little bit." Audrey Hepburn gave more specific details about the behaviors that were improved when she shared:

I have some in here that are very active, that have a hard time during DEAR (drop everything and read) time because I let them choose to sit where they want and they tend to gather back here. I have to constantly remind them, 'you know you can't sit there. You can't sit with your friends and talk and play. It's time to just Drop Everything And Read.' But if it's their day [to use an SMD], they honestly take it and go find their own spot. And that's perfect. I don't have to speak to them one time.

Margret's report of improved behavior did not specifically pertain to reading time, but it related to Audrey Hepburn's experience of students requiring less redirection from the teacher. Margret shared that she could tell the SMDs helped her students, "by their behavior.

They calm down or they, they focus more. And they're not, I don't know, running around the room joking and it calms them down. I'm a firm believer in the pedals."

In contrast to the behaviors seen by Audrey Hepburn and Margret, Steelers Fan saw students become more annoying to their peers when they had energy that needed to be burned. So Steelers fan noticed that instead of annoying someone at their desk, students would use the SMDs to get out energy:

I think this age group is awesome because they realize that have nervous bottled up energy, 'I've got to release it some way or I'm going to become kind of ugly', kind of taking over. And when I say ugly, I mean just annoying somebody else. I think its starting to click for them realizing I don't want to make bad choices... I think they start to realize that I need to release this energy kind of feeling.

Margret also noticed that students were less likely to bother their desk-neighbors and peers when using an SMD, but the developments she saw were more significant than just an improvement in behavior. She saw that these students were less annoying to their peers and therefore, were more accepted and included socially:

I think the personal/social development is the other kids aren't saying/telling them [students using SMDs] to 'Stop, he's bothering me!' as much. And so the child doesn't feel quite as, I don't know, set aside and pulled apart from everyone. That no one's picking on him or calling him out on stuff all the time... Because they're not being as annoying, exactly! And I think that if it gets- it can get to be like a virus going around that people would be constantly saying 'So-and-so's bothering me, so-

and-so's bothering me!'... I think that this [use of SMDs] has helped so much to just let them be and the other kids just let them pedal. And they're more accepted.

Comparably, Nature Nut observed that students' improved level of focus positively attributed to their behavior and social involvement:

They were more on task because they were pedaling. Then they weren't getting in trouble, so they weren't distract- other than the pedaling they weren't distracting their peers, they weren't bugging their peers. They were being a productive member of their collaborative group... they were more socially involved in the class culture and like whole group discussions... Things like that because they were more on task.

Another social interaction that was observed through students' use of SMDs was students' ability to share with one another. Miss Early and Steelers Fan both mentioned observing interactions during one of the semesters they used SMDs. Miss Early said the first group of students to which she introduced SMDs was seen, "positively interacting with each other. They would share. Somebody said, 'Can I use those pedal?' they would say, 'I've had these long enough, you may use them.' or 'Here would you like these? I'm done with these.'"

Steelers Fan felt the use of SMDs actually assisted in students learning how to share, which was a fundamental skill for her 2<sup>nd</sup> grade students to learn. Additionally, students in Steelers Fan's class often had conversations with peers they did not usually talk with because groups rotated to use SMDs:

We constantly change the groups so they kind of have, not that they're forced to sit there and talk to each other, but it kind of allows them to communicate with other

people where they maybe wouldn't have. And kind of builds friendships, it does, because its like, *we're here, we're stuck with each other.*

One of the positive experiences mentioned most often in the category of personal/social development was students' improved ability to cope with their emotions through their use of SMDs. Six teachers reported that introducing SMDs to their classroom resulted in students being more aware of their emotions or better equipped to regulate their emotions. Marie felt that by the end of the year, her students were, "definitely were more aware of their emotions and what needs to be- what I [the student] can do in the classroom to you know, stop feeling that way."

Penny's students showed tremendous growth in their ability to cope with emotions during the time SMDs were used in their classroom. The progress made by one of her students after SMDs were introduced was explained when Penny said:

I really liked the fact that they learned a coping mechanism that they wouldn't have used before. I mean the fact that we went from a child who was hitting constantly the year before, punching walls, going home and punching holes in their walls, and things to a child who is now able to verbalize, 'I need the pedals' or 'I need the room' [the classroom break area]. That's huge progress just for one student.

The students in Penny's classroom had limited ability to verbalize information, which further supports that the growth Penny described was exceptional.

Grape Ape and Nature Nut observed that using SMDs assisted some students in coping with nervous or anxious emotions. Grape Ape shared:

I've had children who would get worried over testing. I knew they had testing anxiety, so during a test I would give it [an SMD] to them and that would help them get their mind off of the fact that, 'oh my gosh I'm taking a test' and they would be concentrating more on pedal- pedal- pedal. And then their performance would be a little bit higher on the test.

In support of what Grape Ape experienced, Nature Nut shared:

If they were taking a test, there were some that you could really tell it helped because they would just be pedaling away, pedaling away, working away. I mean just getting that nervous energy out. It was really helping some of them.

Although testing time was not specifically mentioned, Steelers Fan related that students showed fewer signs of nervousness or restlessness when they had access to an SMD. Wonderful World attributed these emotional benefits to the fact that using SMDs was a type of physical activity for students to do. She explained:

Physical exercise, regardless of what it is, is proven to help kids in their moods and level their moods out. And I've seen that and it has helped several of the kids out in here, just with their moods. And there are huge benefits to that. And then, you've got some kids, like this one particular kid that uses it every single day. He doesn't have an extra energy issue, he doesn't have a focus issue, its just a kid who you would never ever think would use it, I just think he likes it. It makes him feel good to do it. So again if that's a mood thing, if it just makes him feel good to do it then why not. So it doesn't hurt anybody, it doesn't distract anybody. So again its just giving kids a little bit of choice in embracing how they're made, in their learning



environment to help them learn better... But just my perception from my opinion, I would say moods have improved on some of the kids.

The final positive experiences related to personal/social development included students feeling comfortable in their classroom. Grape Ape speculated that some of her students, “felt more comfortable because of the fact they had the pedals and they were able to release some of their energy or anxiety or whatever.” Nature Nut received similar feedback when she asked students about their perceptions of SMDs:

I did ask for their feedback and how they liked them and what they thought about them. They reported that- well the ones that were using them consistently that liked them reported that they enjoyed using them, they felt more comfortable, they felt like they were getting some energy out, and they were able to focus more. I noticed for those certain individuals the same thing.

***Physical needs.*** In addition to benefits of SMD use reported by teachers that related to academic and personal/social issues, there were also positives relating to students’ physical needs. Two teachers reported that the use of SMDs assisted students in staying awake and five teachers reported other observations of ways SMDs benefited students in meeting their physical needs.

Grape Ape shared that she previously had a student in her class who took medication to stay awake. She gave this student access to an SMD because she felt it could be used as a tool to keep her student awake by increasing blood flow. Grape Ape explained, “if you’re stressed out, if you’re tired, you’re lethargic, you need to get your blood flow going back to your brain. So these are some strategies that you can use.” Zola felt movement through the

use of SMDs assisted with keeping students awake. She said, “I think it keeps them awake. The kids don’t get as- you know when you’re just sitting there, you kinda get tired, but it keeps them awake and alert.”

In contrast to the use of SMDs to keep students awake, Nature Nut and Steelers Fan shared that SMDs can be used to calm students down. Nature Nut shared that, “the group that really benefited from it [SMD use], knew that it was helping them and they were getting their energy out and really being more productive.” Steelers Fan also said that using SMDs “has tremendously helped” when students “needed to burn that energy off”. Grape Ape reported that the use of SMDs assisted with calming students down and allowed them to redirect their energy when they showed signs of aggression towards others and themselves.

When talking about physical outcomes from SMDs being introduced to the classroom, Penny and Marie shared that there were some benefits similar to outcomes of their students’ physical therapy sessions. Marie shared that pedaling on an SMD could have similar effects, allowing students to find release, to doing heavy work, which can be done multiple ways including having students carry books or walk with a weighted book bag to release energy. Penny described how her students used SMDs to build strength and shared her experience of one student who showed improvement in using his core muscles:

Some of them [students] used them [SMDs] with their arms. We did that sort of as a physical therapy type approach, because some of them may have core issues, like weak core or weak arms. So we would be sitting at the table and I may be reading to them, but their arms were moving and some other students used their legs... The student that... was doing his arms, it helped build his core up, which I mean that’s

just a performance in and of itself because you know, he goes to occupational therapy, he is in physical therapy so just trying to build that core up and him from going to sitting in the “W” on the floor to not needing that anymore because his core was strong from the pedals. That’s a huge thing, it may not be academic or social but it’s an improvement in performance in my book.

**Negative experiences.** Similar to the way teachers’ positive experiences could be described within academic and personal/social categories, negative experiences fell within these categories as well. In addition to negative experiences relating to academic and personal social issues, there were also situational drawbacks reported about availability and students’ ability to use SMDs. All of the negative experiences shared by teachers have been further explained in the following sections.

*Academic performance.* When reviewing all of the shared experiences of teachers, some issues relating to academic performance were reported. These issues included that SMDs were distracting to some students and teachers, as well as the benefits of their use being short-lived.

Wilma and Nature Nut shared that they were distracted at times by SMDs, specifically when Wilma was trying to work with small groups and Nature Nut was trying to teach her class. In response to this issue, Wilma allowed her students to use SMDs, “unless I’m doing a small group where I have to concentrate, which I can’t sometimes if I hear a little peddler.” Nature Nut disclosed:

Personally, with my ADHD, I find that movement distracting sometimes so I’ve had to adjust my, I guess, my thinking or just I’ve had to learn to cope with that...like

with specifically with the pedals, especially if they were squeaking or if one was off kilter a little bit or sometimes they break or a piece would pop-up or whatever. So the squeaking or if they weren't quite adjusted right and their knees were hitting the table or whatever, I had to get used to that. And actually some of the other kids that weren't using the pedals had said the same thing, it did distract some of them, but it's like we just, you know, get over it.

Nature Nut explained that some of her students found the movement and noise from the SMDs to be distracting, just as she had. Students in Marie's class were also distracted by SMDs, but this was not because of the noise or movement. Manipulating the SMDs or using them improperly sometimes distracted Marie's students. Some of this improper use was shared when Marie said:

They would pedal backwards, which is okay too. Its fine, but some of them didn't know what to do. They would unscrew all the little things on it, they would want to put it under a table and their knees would hit it every time and they enjoyed that part of it. So that was the problem. Some of them would pedal with their hands, which I didn't care at first, but then it just was like others would see them do it and they were just abusing them [the SMDs] really.

Although they were not obvious to her at first, Marie was able to share some benefits from her students' use of SMDs. Unfortunately, these benefits were short-lived, decreasing the SMDs value as a classroom tool for Marie's students. Marie explained that she wanted students to work out their energy on the SMDs, so it was beneficial for them to get tired, but

it might not have been beneficial enough for the negative outcomes surrounding her students' use of SMDs:

The kids got tired when they would pedal. They did get tired, but I mean I guess I did [benefit] a little bit, for a short period of time. So that's good, I mean for a short- maybe like 15 minutes they were like whew- 'Okay, I can listen now', so that was good. But then its like okay after the 15 minutes- back on the bike... It wasn't long enough and while they were doing it they were making noise at the same time. So that was bad for the other students. Like just distracting, because they're like, 'Oh I wanna be over there riding the bicycle too'.

***Personal/social development.*** Experiences relating to students' misuse of SMDs and arguments that arose among peers about who got to use SMDs fell within the category of personal/social development issues.

As was discussed in the previous section, Marie's students treated SMDs like toys rather than a classroom tool. This may have been because Marie taught kindergarten, 1<sup>st</sup>, and 2<sup>nd</sup> grade students. Misuse of SMDs in older students' classrooms, such as Grape Ape and Zola's 4<sup>th</sup> grade classrooms, cannot be excused or explained by young age. Grape Ape and Zola both experienced students trying to gain attention of their peers by pedaling as fast as possible, which could result in an SMD breaking or students becoming distracted. Grape Ape shared her experience when she said:

Sometimes they would use the pedals for attention seeking. So I guess that would be a negative. They would speed up really fast and try to pedal them and get attention, but then I would give them a glance and I would give them one warning and I'd say,

‘You know its like baseball, three strikes and you’re out’. And I would go and tap the desk and you know just lay my hand on the desk and it [SMD use] would settle down. I think I took pedals away maybe one or two times from a student and then I’d say, ‘You know, when you’re ready to act like a 4th grader you can have them back’.

Rather than attention seeking behavior, Zola attributed students’ misuse of SMDs to not knowing or wanting to take proper care of their classroom tools. Zola shared, for her a:

Negative would be there are a few kids who still don’t know how to take care of stuff and we have to have that whole discussion of taking care of what your doing and they’ll be over there like pedaling 500 miles per hour... So just being goofy with them.

Miss Early described another way students’ misuse of SMDs sometimes caused damage. She explained that she had to redirect students from trying to stand up on the SMDs and pedal. When students did this before she could correct their behavior, it resulted in the SMD breaking and becoming unusable.

Just as some misuse sometimes caused damage to the SMDs, the misuse of one of Penny’s students actually caused him damage. Penny shared:

Sometimes they would get going so fast that, if they weren’t focusing, especially the ones that [pedal] their arms... like I had one student who loved doing it with his arms, but then he’d look away and like smack himself. That was the only negative because we didn’t like putting a lot of weight, like we didn’t like doing a lot of resistance because... we wanted them to enjoy doing it as well. So that was probably the only drawback.

Just as some teachers were able to observe social improvements after SMDs were introduced to the classroom, some special interactions were more strained. This was caused by arguments that arose when several students wanted to use the same SMD. Arguments over the use of SMDs were the most frequently reported negative experience. Seven teachers shared that this occurred at some point after they first introduced SMDs. Grape Ape described her negative experience by saying, “It would be some arguments over who would get it, not wanting to give it up, then not having pedals”, which was eventually the case when her SMDs broke from student misuse.

Audrey Hepburn and Margret referred to students’ comments about obtaining pedals as fussing or whining. In both classrooms the issue was resolved by the teacher intervening by clarifying whose day it was to have the SMDs or by taking the SMD away entirely. Steelers Fan and Wilma experienced similar comments from students, but rather than correcting the issue, they both used the conflict as a teachable moment and pushed their students to work it out on their own. Steelers Fan would explain to her students, “I’m not the referee. So you all figure it out on your own.” Most of the time her students were able to work it out and sometimes came back to ask for assistance with setting a timer for their SMD use. Wilma’s students reacted similarly when the same issue arose. She shared:

If more than two people want to use them I say, ‘You need to work it out’. I’m not in that argument, go have a conversation. And for the most part they do. So that’s the only negative, they’ve fussed sometimes to begin with. But they’ve worked it out.

Students in Miss Early’s 4<sup>th</sup> grade class were less vocal in their attempts to obtain the use of SMDs. Instead of talking about whose turn it was to use an SMD or taking this issue

to the teacher if it could not be resolved among peers, Miss Early's students decided to take SMDs the moment a student left one unoccupied. She attributed this behavior to the competitive nature of her students:

This last group that I have- there's a lot of competition and they were not so nice with each other and the pedals. So as soon as somebody got up to go to the bathroom, they were snatching the pedals from them. So we had to remove the pedals for a while.

***Situational issues.*** Some of the negative experiences shared by teachers could have been alleviated if resources or situations had been different. Situational issues were reported by teachers that pertained to the amount of space available for SMD storage or use, the availability and durability of the SMD model, the amount of time it took for students to adjust to the presence of SMDs, and the inability of less coordinated students to use SMDs appropriately.

Margret, Nature Nut, and Wilma mentioned that they lacked the amount of space to properly store SMDs in their classroom. Margret and Nature Nut actually wanted to utilize more in their rooms, but were deterred because of lack of space. Nature Nut said, "with my room storage is an issue too. I've just got so much stuff." A lack of space in Wilma's room caused a safety hazard when students were unable to walk around the SMDs. Wilma shared, "well right now they're not in a good place. We have to remember to put them out of the way. People fall and trip over them sometimes. We have to kind of watch that."

Teacher participants reported that the availability and durability of the SMDs was an issue at times. Wonderful World stated that during the, "first few weeks, once we got them [SMDs] here, was like a mad rush for them", and because the same SMDs were used



constantly throughout the day, maintenance of the SMDs became an issue, such as, “being able to keep them held together. So some of the welding has come apart and I mean literally the metal comes apart.” Breakage was an issue for Grape Ape as she shared by saying, “the negatives would be the breaking. Constantly we would have pieces coming off of them... then not having pedals.” So the quality of the SMD’s original construction was a contributing factor to the negative experiences shared by Wonderful World and Grape Ape, but Marie experienced issues with SMDs coming apart that were unpreventable by any manufacturer:

[My students] just like to fidget with every little thing and they want to take off all little bolts and everything they can get to and so they just didn’t take it seriously.

Which like I said might be my fault that I didn’t explain it [how to use SMDs] well enough.

Another negative experience shared by Marie was the amount of time it took for her students to adjust to the presence of SMDs. The adjustment period was around three weeks for the classrooms of most teacher participants, but this was not the case for Marie. Her classroom had constant student traffic throughout the day because she taught students from different grade levels throughout the day. Marie’s role in the school was as a resource support teacher. She had her own homeroom of a few students who were always with her, than other students who qualified for services would visit her room throughout the day for small group instruction. Marie discussed students’ adjustment to SMDs when she said:

I guess the longer that I had it [SMDs] the less excited they were about it so when people were on it they just, they were able to focus more towards the end of it

because they'd been around for a while so it wasn't like that exciting. But it just took a while because the kids are in my room for such a short time that... it just took a lot longer than a normal or I guess a regular education classroom for the kids to not be bothered or want to huddle around it [an SMD]... It just took a long time for it not to be distracting.

The last situational issue experienced by teachers, involved students who did not have the ability to use SMDs appropriately. Nature Nut and Wilma explained that some students did not have the coordination to pedal with their legs while writing or paying attention to their surroundings. Nature Nut felt students might have preferred to use SMDs based on "ease-of-use" because "some of them [students] have had a tough time adjusting it just right to figure out how to write well, while they were pedaling." Wilma observed a student who struggled to use the SMD correctly and shared that as she watched the student:

I didn't say a word. But I did when he first started. I was like, *what is that racket?* thinking to myself, because he was kind of clumsy with it. He wasn't used to it and it was making all kinds of noise and he kept trying, he kept trying, but then he just said forget this.

**Neutral experiences.** Along with experiences that were expressed as being positive or negative for teacher participants, there were also experiences shared without connotation. These experiences included observations about student use of SMDs as well as surprises that arose for teachers. These experiences have not been grouped within categories such as academic performance and personal/social development. However, Marie and Wonderful World touched on these categories without positive or negative connotation when they

explained that improvements or declines in performance and development could not be determined because data was not tracked in relation to students' use of the SMDs. Marie explained, "It would be hard for me to say if the change came from the pedals" and Wonderful World supported Marie's words by saying:

[Academic and personal/social change] is really hard to pinpoint because I don't track it by who uses the peddlers. I mean I have that one particular kid who uses it every single day, but that was a kid who was straight A's before and he's still straight A's. So you can't really, I can't really say it increased anything.

***Student use observations.*** Teacher participants shared details about students' use of SMDs. Wilma shared that not all students cared to use SMDs after initially trying them. She described that, "some of the kids care less, it doesn't cross their mind." Nature Nut shared similar student sentiments when she said some students told her, "No, I wouldn't want to use them again, they break, or they squeak, or I hit my knees. They're not comfortable". Other students used SMDs inconsistently. Nature Nut explained this behavior by saying: "it was just different strokes for different folks I guess."

In addition to reports that some students did not want to use SMDs, Margret shared how one of her students was not able to use an SMD because it consumed too much of his attention. This was shared in a way that was neither positive nor negative, but was an interesting finding for Margret:

I don't think he could do that [use an SMD]. He would be worried the whole time if it was right and straight and he would just be spending too much time worrying about

the pedals... I tried one time... just for about 5 minutes... and he just, he just kept looking. He kept trying to adjust... So he does not use them.

In Zola's observations some students had, "a hard time using them and listening, but they can use them and work by themselves" without issue. All of these experiences with students who had difficulty using SMDs were in reference to students who were in at least 3<sup>rd</sup> grade. Marie was the only teacher who had experience with kindergarten and 1<sup>st</sup> grade students was able to confirm that younger students, such as her kindergarten, 1<sup>st</sup>, and 2<sup>nd</sup> grade students were able to use SMDs despite their shorter legs. She explained that, "Not one of them ever had any trouble as far as pedaling them."

Regardless of age and size, Nature Nut mentioned that students were unable to use or benefit from SMDs if they were not sitting long enough to use them. There was a student in her 5<sup>th</sup> grade class that she felt could have benefited from using SMDs, but he did not stay in his seat long enough to utilize them:

His use of it has become less and less consistent just because he doesn't- he has a tendency not to sit in his seat. He would be one that would stand or kneel or, you know, do this or whatever.

Penny and Grape Ape shared that, as students learned to cope with emotions through the use of SMDs, their need for SMDs decreased to the point that they did not need to use SMDs at all at the end of the school year. Penny shared: "Now, I don't think those same students that used them last year would need them this year, because we've progressed so much, but I think other students in my classroom may need them." Grape Ape speculated about why SMDs might have been needed more at the beginning of a school year:

I've seen them use it more at the beginning of the school year than they do the end of the school year... I guess it's a comfort factor and just kind of getting used to the transitions and getting used to our rules and our guidelines and feeling like *this is okay. This is acceptable. I need to pay attention to this. I need to do this* and sometimes the beginning of the year is very anxious for students and once they realize, *oh this is how this goes* and *I feel more comfortable doing this*, then... it's kind of like it's a scaffold and you're just kind of giving them- "Ok here's a layer of support", and then you kind of take it away as the year progresses. And when they feel more comfortable, I don't rip it from them and say, "no more pedals", but try to wean them off of it so that they don't become dependent because the next school year, you don't know if they're gonna have the pedals.

When sharing information about SMD use in her classroom setting, Zola commented that SMDs were not noisy and could not really be heard in her room. Similarly, Wonderful World shared that there were no adverse effects of using SMDs with students, or she would have stopped using them in her classroom. This was explained when Wonderful World said:

I can't hear them [SMDs] in the room, it's like white noise. Like once they get going you don't notice them at all. Like I don't even pay attention to who has them and who doesn't. So whether it was last year with kids with desks or this year where we have tables I don't even notice who has them and who doesn't. And neither do the other kids and it's not even a big deal, like nobody even cares who has one and who doesn't... Honestly, there's no, there's no adverse effect on the kids at all. There's not. I haven't seen any and I've used it

now for the three semesters, last year and then this year, and I haven't seen any adverse effects on the kids behavior-wise, any of that.

Wonderful World continued to talk about how her experiences had been mostly positive, but within this dialogue she shared how skeptical she once was of the use of SMDs, which, looking back, was surprising because of her present feelings:

Everything has always been positive which is why I continue. I wouldn't continue to use it if I felt like it was a negative or if it was a hindrance to my learning environment. So, I mean really, I speak very highly of the peddlers and I was skeptical at first. Like I wasn't going to take any and then thought about it and that's when I was like yeah, I think I'll take some. I think I was probably the most skeptical one in the bunch and then, I think I emailed you later and was like, 'How many can I get, can I get enough for my whole class?'

***Surprises for teachers.*** While some teachers felt they were able to accurately predict which students would most benefit or enjoy SMD use, Margret and Wonderful World reported that they were unable to predict which would use or benefit from SMDs.

Margret shared that, "It's hard to explain those things [SMDs] because I think for different children they would have different uses." This was similar to Penny's reporting that the SMDs in her classroom were used in different ways such as a coping tool for calming down frustrated students, as well as assisting other students with focusing on tasks:

It just depended on the student if it was for energy out or calming and then if they used their arms or their legs. So last year you could walk into my classroom and see two different students, having two different emotions, using those [SMDs] two different ways. So it was very differentiated for each child.

When asked if she could have accurately guessed the students who would most enjoy or benefit from using SMDs, Wonderful World responded:

No, never... I teach two blocks that have students in them that I would have really thought would have used them a lot more. And in fact, it [SMDs] gets used in my afternoon blocks (higher level math classes). I mean every single one of them is used. It's the most fascinating thing to me. Like I would have never thought that at all. It breaks everything in my thinking. It fascinates me and I like that- when things don't go what I think they will. There's no logic behind it, its just what it happens to be. There are kids in those classes that use them, in the other classes that I would have thought, but not some of the kids I would have thought, 'that kid's gonna use it'. Nope. So, I think it's just certain tools work for some kids, certain tools don't and it's finding the right tool for the right kid.

The specific students who were most drawn to using SMDs were a surprise to Grape Ape, Zola, and Wonderful World. Grape Ape was surprised to see that students with test anxiety used SMDs more than students with symptoms of ADHD. When asked if she had any surprises relating to who chose to use SMDs, Grape Ape responded:

The ones with testing anxiety. Those I did. I thought my ADHD children would really latch onto them and they really didn't. They were more comfortable using fidgets that my inclusion teacher had brought in for them. Or, um I would take balls of clay and they'd roll them in their hands... But my ones that needed it during tests, that was the big piece that I was like 'wow' because they would go and get the test- the pedals and it was like a fight who was gonna have it during the test.

Zola was surprised in a similar way, finding that some of her most quiet female students used and enjoyed SMDs, rather than SMDs being used primarily by her most active or energetic students. When asked about surprises Zola said, “Yeah, there’s a couple of the girls that are normally really quiet and they love using them, which is surprising to me.” Analogous to Grape Ape and Zola’s surprise about quiet students preferring to use SMDs, Wonderful World reported being fascinated by one quiet and well-behaved student’s constant use of an SMD in her higher-level 6<sup>th</sup> grade math class. She shared that this student retrieved an SMD and proceeded to use it through her entire class, every day, and didn’t even appear to notice that he was engaged in the process:

If you walk into one of the blocks, there’s a particular kid, it’s a particular AIG (academically gifted) student. He uses it every single day and I don’t even think he knows he uses it. He comes in, he grabs it, he puts it under his seat and he pedals the entire time. And I don’t think he even realizes he’s pedaling the entire time. It’s the most fascinating thing. And I’m just baffled by it because sometimes you’ll walk around and like, I wonder if he realizes. And its not like a fast pedal, its like a pedal- pedal- stop for a second- you’ll see him write- and then pedal- pedal- stop for a second- and you’ll see him write for a few minutes and then pedal. But that’s the entire class, every single class. It’s fascinating.

**Teacher impressions.** As teachers shared stories about what occurred within their classroom after introducing SMDs, suggestions for improvement and overall impressions were reported. This information should be considered to improve future implementations of SMDs in the classroom setting.



*Suggestions for improvement.* While explaining how SMDs were used, teachers also shared how they felt SMD use could be improved in the future. This included details about the most ideal number of SMDs to have per classroom, as well as suggestions on how to introduce and change the build of SMDs to avoid some student issues that arose.

All of the teacher participants, except for Penny, gave input on the number of SMDs that were ideal for use with a full classroom of students. Of the 10 teachers that gave input, four teacher participants (Nature Nut, Steelers Fan, Wilma, and Zola) felt that having access to four SMDs in their classroom was most ideal. Steelers Fan explained that having four SMDs would allow her to facilitate two groups of partner readers at a time. She and Wilma noticed that they typically had about three or four students wanting to use the SMDs at once. When talking about the most ideal number, Zola was the only participant that said the number of SMDs she currently had was ideal. Her rationale for choosing four, as an ideal number was that having any more SMDs in the classroom, “wouldn’t be as much of a privilege. They [students] see it as, ‘Oh, this is my chance to use it’ instead of, its an everyday thing. And they don’t get tired of it.”

Miss Early and Audrey Hepburn speculated that having access to five SMDs would be best for their classrooms. When Audrey shared her ideal number of SMDs, she had a plan for an effective way to give all her students the option to use SMDs each week. If she had a class of 20 students, Audrey Hepburn wanted to have enough SMDs that she could distribute them on a four-day rotation, just in case “we have off Monday”.

Grape Ape and Wonderful World felt that a larger number of SMDs were more appropriate. Grape Ape wanted to have access to seven or eight SMDs for her students,

while Wonderful World felt 10 was a more appropriate number. Wonderful World was one of the first teachers to use SMDs in her classroom and because of that, she was given unlimited access to SMDs before other teachers began integrating them in their classrooms. Therefore, her suggestion of 10 SMDs being the most ideal number was based on the previous experience of having access to more than 10 SMDs at once. Wonderful World shared:

I don't think, like on a given day, I don't think there's any more than 10 that's being used. Ten would probably be a good number, because in one class every single one of them gets used, but then I'm down to just working ones [eight working SMDs].

If classroom space availability was not an issue, Margret thought, "It'd be cool to have all of them [students] have them [SMDs]." Marie shared a desire to have one for every student after explaining some of the pitfalls experienced in her classroom with the availability of only two SMDs. Marie reflected, "If I had one for everyone, it might have gone differently." After sharing her rationale for wanting one SMD per student, Marie said:

I would love to have one for every child... I guess not one for every child... its not like every child even needed it... Maybe one for every child, if it became a modification on an IEP (individualized education plan) or something. That every child had that on their IEP could have their own... I wasn't thinking about making them use it. I was just thinking about it being an option only for those children who we write in the IEP like sometimes 'as needed, short breaks as needed'.

Marie, who did not have a positive experience using the SMDs, suggested most of the future improvements. All of the things she tried that were unsuccessful helped her to know

what should not be done in the future. Marie explained this by saying, “So all those things happened and I learned from all of them. So, I mean it really did help me to learn what to do differently next time.”

One of the lessons Marie learned and shared was that the SMDs should have been introduced differently to her students before they were allowed to use them. When describing what she would have changed she explained:

I would of probably researched it a little bit more... on how to tell them how to use it and to let them know in kid-friendly terms how it could be helpful. And I might of had to do it before each use for a long time or say, ‘Remember, we’re not gonna move it. It’s gonna stay here,’ or ‘When the timer’s up you’re done’ or just things like that.

In addition to having access to more SMDs, Marie suggested structural changes that might have improved her experience with introducing SMDs to her classroom:

One thing that I would think would help differently about the pedals is if it was connected to a chair. For me, that would have been way better in my classroom. I don’t even know if they make that sort of thing, but one where they couldn’t move it around and they couldn’t be sideways and all that stuff. Its like they had no option but to just sit on it and pedal... They were just wobbly, which is why I feel like if they were connected to like a chair... I don’t know how you would even do that or if they could have like clamps that somehow were stationary, then they would have just gotten more out of it.

Grape Ape also felt the structure of using SMDs with traditional school desks could be improved. Students in her class had a difficult time sitting at their desk and writing while using SMDs. This prompted Grape Ape to share:

If we had some kind of different desk or chair- I know that they can pull their chair away from their desk and I know that they can use clipboards, we tried that, but they just don't- they don't like doing that.

***Overall impressions.*** Of the 11 teachers who were interviewed, all shared that they would either continue to implement the use of SMDs in their classroom or they were willing to try using SMDs with future groups of students. The majority of teacher participants, nine out of 11, shared that their classroom experiences with SMDs were positive. Two participants (Marie and Miss Early) reported that even though there were some positive experiences, they were outweighed by the negative experiences.

When Marie was initially asked about experiences she considered positive or negative, she asked, "Okay, is it bad that I can't think of any positives?" Although she later remembered and shared positive experiences, the negatives were what she remembered most. Miss Early described her experience with the SMDs by saying:

It caused a lot of disruption, so if there were a lot of positives they were pretty much wiped out from the disruption that was caused. So there were probably a few that were sharing, but due to the other activity, it was overshadowed. Unfortunately, it only takes a few to overshadow all. That's the bad part.

Just as Marie and Miss Early had strong feelings about their negative experiences with SMDs, three teacher participants shared strong feelings about their positive experiences.

Penny shared that she liked, “the change I saw in my students through” the use of SMDs.

She continued to express her support of using SMDs as she said:

I mean I loved them. I would have so done it this year if I was able to. I would have even loved them, even if it [using SMDs] was just a way of them [students] moving because I’m such a huge, huge believer in movement during learning.

Grape Ape felt that although there were some issues, “the positives outweigh the negatives.” Regardless of some of the smaller experiences along the way, Wonderful World reflected back to her inspiration for incorporating new strategies, such as SMDs:

It’s kids like that [kids who found SMDs helped], that you go, that’s why you did it. And I would want- I think every classroom should have the option of having them, because its not a distraction to the teacher, it doesn’t distract any of the other students, I haven’t seen.

Although there is no way to confirm a link between the two at this time, Nature Nut and Penny felt the use of SMDs inspired teachers to use other innovative, less traditional, strategies with their students. Nature Nut observed:

I feel like school wide, or at least in our grade levels (4<sup>th</sup> and 5<sup>th</sup> grades) up here on this hall, I've seen a movement towards more movement. I've seen even the old school teachers who want their kids sitting on their bottoms in their seats all the time- I've seen more movement or options like giving them a choice to stand behind their chair or come to the carpet or, you know, things like that. So that's been beneficial I think... to give students those options to make them feel more comfortable.

[Interviewer asked: Do you attribute that to the pedals coming into the school?]

Not wholly, but there's a correlation there. That's part of that shift, that movement, just getting the whole idea of movement in the classroom.

Penny shared how the SMDs helped her students a great deal in the previous year by saying she, “just saw a huge change in their behavior and it may have been a bunch of different things coming at once, but it was started by the pedals. It was definitely started by the pedals.” The use of SMDs inspired Penny to reflect about what other tools might help meet her students’ needs:

Honestly, the pedals helped me think, ‘Well, okay. If they can do the pedals what else can we do?’ So we did bungee cords on the bottoms of the desk so they can bounce or we’ve done the wiggle seats a couple times. We have one student now whose doing the wiggle seat, so just, the pedals helped me think outside of the box on what we could do for our students. That was a huge positive for me.

## **Summary**

Results from interviews with 11 participants who taught in an elementary or middle school located in a suburban area of a southeastern state were presented in this chapter. The purpose of these interviews was to explore and describe the experiences and perceptions of teachers who have used stationary movement devices (SMDs) with students in their classrooms. From the experiences and perceptions shared, three major themes and 13 subthemes resulted. The first theme, teaching philosophy, gave insight and contextual information about the beliefs and teaching styles of each of the teacher participants. The second theme, decision and structure surrounding SMD use, painted a picture of how teacher participants came to their decision to use SMDs and the ways those teachers chose to

implement them in their classrooms. The third and final theme, observations after introducing SMDs, was comprised of changes and impressions shared by the teachers. Each of these themes and subthemes are presented on the next page in table 5. These findings are further explored in chapter five.

Chapter five contains synthesis of these findings as they pertain to the research questions. The findings are also discussed in relation to related scholarly literature and theory. Limitations, implications for future practice and research, and conclusions are then presented.

Table 5

*Summary of Themes and Subthemes*

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Theme	Subtheme
Teaching Philosophy	
TP1	Meeting learning needs
TP2	Making learning fun
TP3	Creating a safe environment
TP4	Fostering student responsibility
TP5	Providing experiential lessons
Decision and Structure Surrounding SMD Use	
DS1	Use decision
DS2	Use introduction
DS3	Use times
Observations After Introducing SMDs	
O1	Classroom community
O2	Positive experiences
O3	Negative experiences
O4	Neutral experiences
O5	Teacher impressions

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## Chapter 5: Discussion

The purpose of this phenomenological study was to explore and describe the experiences and perceptions of elementary and middle schoolteachers who have used stationary movement devices (SMDs) with students in their classrooms. This was done through teacher-participant interviews and classroom observations. Data were analyzed using phenomenological reduction, imaginative variation, and synthesis to establish the essence of teachers' experiences of introducing SMDs to their classrooms. The findings consisted of three themes and 13 subthemes. A synthesis of the findings, relationships between the findings and scholarly literature and theory, limitations, recommendations for practice and research, and conclusions are presented herein.

### **Synthesis of Results by Research Question**

The central question being asked in this study was: What are teachers' experiences and perceptions in using SMDs in their classrooms? This was broken down into two sub-questions: (a) What factors do teachers credit for decisions to introduce SMDs in their classrooms? and (b) What changes, if any, do teachers perceive after introducing SMDs? The central question in this study is so broad and all-encompassing that the findings will be synthesized by each of the sub-questions first with the focus then moving to the central question.

**What factors do teachers credit for decisions to introduce SMDs in their classrooms?** One of the leading factors teachers shared was related to their respective teaching philosophies. Most of the teachers identified the desire, as well as their willingness to provide tools for all learners in their classrooms in order to help their students achieve

successfully. The teachers frequently said their first thought about trying the SMDs with students was, “Why not?” or “What could it hurt?” Several of the six teachers who wanted to try SMDs with their students because it was something new, shared that they were quick to try SMDs because they knew SMDs were not permanent fixtures and if they caused distraction or issues they could be removed.

The second factor, which was also mentioned by six teachers, was the hope that the use of SMDs would help energetic students. When first considering SMDs, some teachers had specific students who came to mind. The students these six teachers had in mind were energetic and were frequently up and moving around the classroom. Just as some teachers hoped introducing SMDs would support active students by burning energy, others wanted to use SMDs with students they hoped would show improvement in focusing or behaving themselves. These factors are summarized and visually displayed in figure 2.

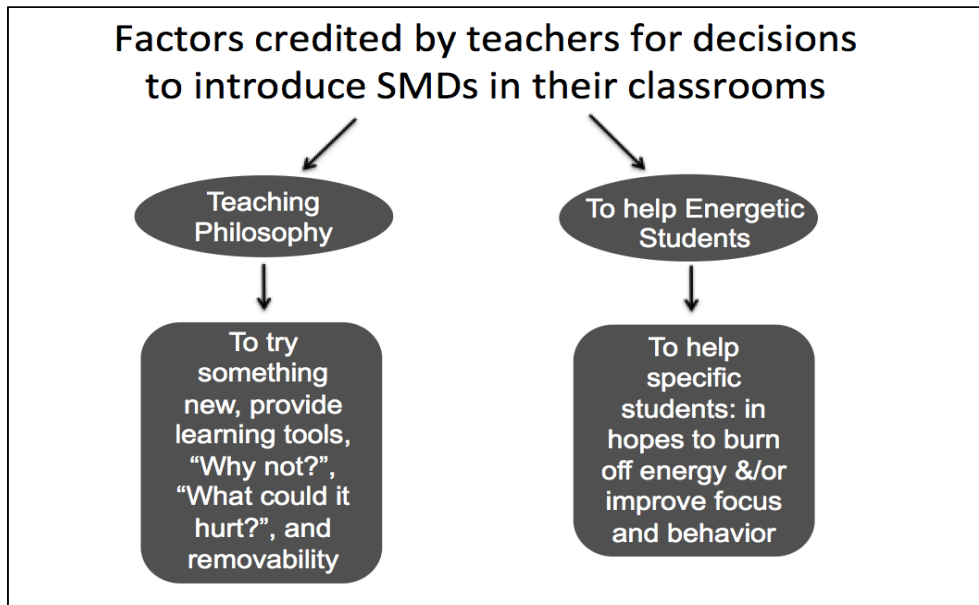


Figure 2. Factors credited by teachers for decisions to introduce SMDs in their classrooms. This figure is a visual abbreviated answer to research question 1.

Overall, the factors that led to the teachers' decisions to introduce SMDs to their classrooms were related to perceptions of what would be beneficial and feasible for their classroom environments. The teachers who made the decision to try SMDs in their classrooms seemed to model flexibility about trying something new. Some of the teachers also considered the current structure of their classroom and how they could fit SMDs into their management style and daily routines. Lastly, as was previously mentioned, some teachers considered the individual characteristics of their current students to decide if integrating SMDs was appropriate. Some of the changes teachers initially hoped would occur after integrating SMDs in their classrooms are discussed, along with all other perceived changes, in the following section.

**What changes, if any, do teachers perceive after introducing SMDs?** The teachers shared changes they perceived in their classroom communities, the academic performance of individual students, and their own teaching styles. Classroom community changes were reported by teachers who felt their choice to introduce SMDs improved their rapport with students, increased communication throughout the classroom, and shifted the feel of the classroom from an agitated to a calm atmosphere.

Changes in the academic performance of individual students were mentioned in instances when teachers discussed students showing: (a) improvement in focus, (b) decreases in off task behaviors such as walking around the room or disturbing neighbors, (c) increases in distractions for some who could not use the SMD appropriately, (d) improvement in mood regulation for students who were taught to use an SMD instead of having a meltdown, and (e) decreases in anxiety for students who had high levels of test anxiety.

Some teachers also mentioned some students displaying negative behaviors by arguing over who would use the SMD. However, other teachers mentioned that students learned to work out these types of arguments and in the end learned how to share and problem solve. These last two changes seem closely related to how the individual teachers managed their classrooms and reacted to student arguments.

Two participants mentioned observed changes in their teaching styles. Penny talked about the SMDs as being her inspiration to try other innovative strategies to meet her students' needs. Nature Nut did not comment on her own style changing, but she reported a change in culture within the school. She felt that around the time SMDs were introduced as options for staff members to use, teachers (including veteran teachers), seemed to start integrating more movement and tolerance for out-of-seat learning options in their classes. These perceived changes are illustrated in figure 3.

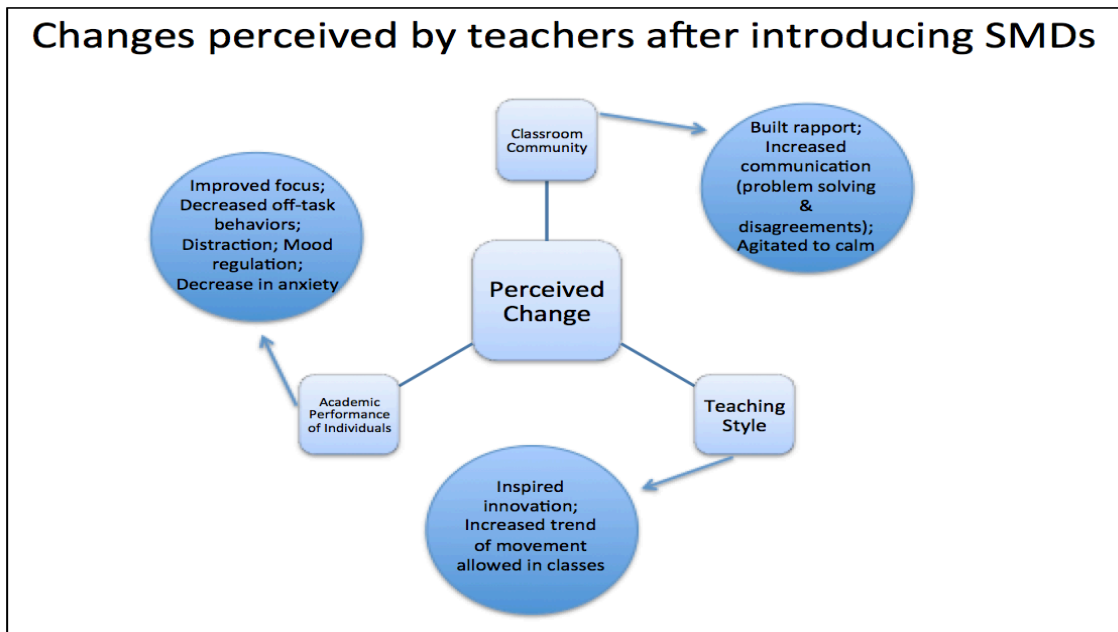
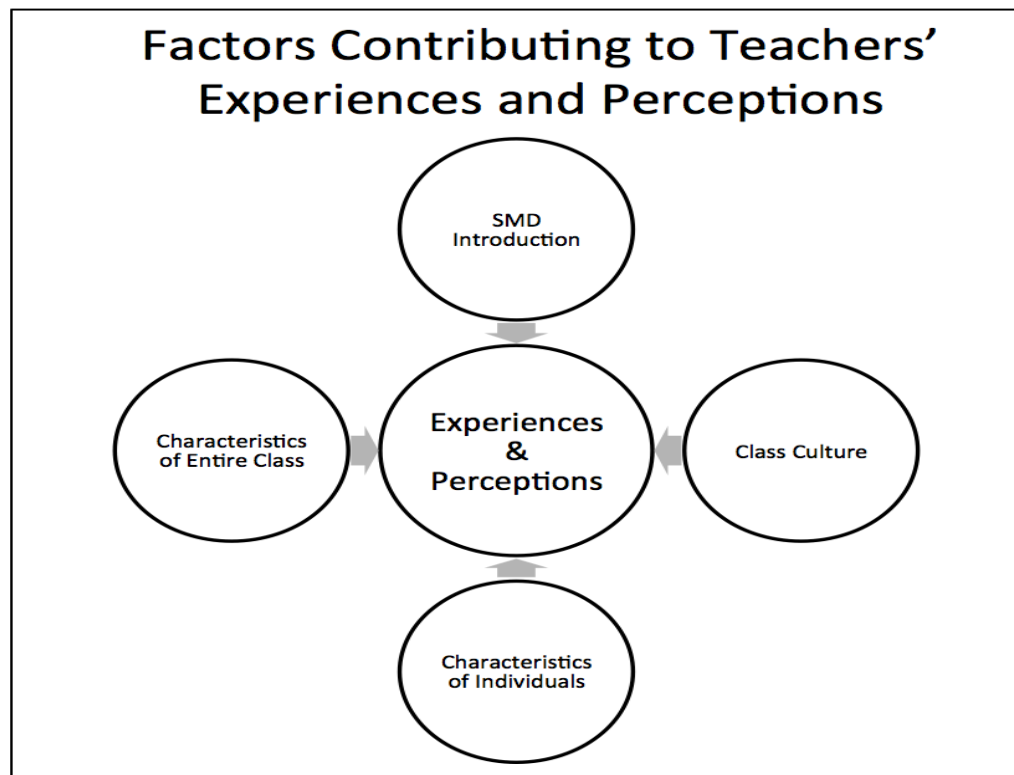


Figure 3. Changes perceived by teachers after introducing SMDs. Figure 3 illustrates findings pertaining to research question 2.

**Central question: What are teachers' experiences and perceptions in using SMDs in their classrooms?** The essence that emerged through the phenomenological data analysis process was that the experience teachers had with SMDs was largely related to the way they chose to introduce and use the SMDs, the culture established within their classroom communities, and the characteristics of each of the individual students and the unique collection of students in the classes. This is illustrated in figure 4 and explained below.



*Figure 4.* Factors contributing to teachers' experiences and perceptions. Figure 4 shows a visual representation of how teachers' experiences and perceptions were influenced by four main factors.

The perceptions of SMD use seemed to relate to how successfully teachers integrated SMDs use into their classrooms. Teachers who talked with students about SMDs as tools that could enhance their classroom experience, as well as teachers who presented specific

expectations related to how SMDs were intended to be pedaled, had more positive experiences to report than teachers who did not formally introduce SMDs to students. Participants reported more positive student experiences when all the students in the classroom had been given the option to use SMDs. When SMDs were introduced as tools for specific students, it decreased students' motivation to use them. When students felt they were forced to try or use the SMDs, the task became a chore. However, when teachers introduced SMDs as tools that could be used when students felt they needed them, students took responsibility for their needs and used SMDs at times they needed assistance with mood regulation, focus, concentration, or calming down.

Overall, there were some negative experiences that were out of the teachers' control, such as a lack of space in the classroom and parts breaking on the model of SMD used, but other experiences seemed to be greatly influenced by the teachers' classroom structure and the way SMDs were introduced to students.

### **Relation of Findings to Scholarly Literature**

Literature was reviewed before this study began for the purpose of discovering what had previously been done in relation to movement in the classroom setting. Little research was found for such a specific topic, so the literature review was broadened to include physical activity used to assist individuals' cognitive and academic needs or personal/social needs. Initially reviewing this scholarly literature allowed for gaps to be identified and for the need for this current study to be established. There were no previous studies reporting on the voluntary use of exercise in the classroom that is made available to students throughout the school day.

The present study is the foundational piece to begin filling this research need. Now that the findings of this study are known, it is important to reflect back on what was reported in previously reviewed literature to find where this study supports or differentiates from former findings. Scholarly literature pertaining to educational neuroscience, physical movement and cognitive and academic needs, and physical movement and personal/social needs is revisited in the following sections to establish its relation to the current findings.

**Educational neuroscience.** Reflecting back on the emerging field of educational neuroscience, the present findings support the concern in this new field of study about inappropriate applications of the neuroscience principles, especially in educational policy and practice. For example, the administrators of both schools assumed there were benefits to the use of SMDs in classrooms prior to data collection. To heed these cautionary warnings in the field of education it is most important to establish that accurate information is being shared. Even though teacher practices are moving towards being data-driven, not all practices are being assessed in an objective unbiased way. The perceived effects of using SMDs in classrooms are presently primarily subjective because the data are based on observations of the teachers, and criteria for objective outcome measures have not been implemented. If the data collection setting had been different then in the present study, the accuracy of the teacher reports may have declined. For example, if an administrator had asked a teacher about his or her use of SMDs with a particular child who had shown a need for behavioral support, the teacher might feel obligated to report that this child had used SMDs more consistently than they really had because perceived expectations of the supervisor making the inquiry.

When the elementary and middle school principals were interviewed to gain contextual information about each research site, both administrators seemed to have preconceived notions about what was happening in the classrooms as a result of the SMDs being used. Some of these assumptions may have been founded on conversations that had taken place with teachers, but it is suspected that most of these initial ideas were limited to uniformed assumptions since this study includes some of the first data tracked on the perceived effects of SMD use in the classroom.

There are always programs and concepts in education that get more attention than others and right now incorporating physical movement into the school day is one of them. Additionally, the use of exercise equipment in the classroom is getting more attention and is being advertised as an effective practice by some companies with data that cannot validly support these claims. Principals and education leaders are encouraged to share what is being done in classrooms where SMDs are being used in order to promote the most optimal learning environment. For some students, the incorporation of SMD use assists learning. One way this was made evident during teacher interviews was the explanation of students' SMD use during silent reading. Teachers explained that some students were able to read for a sustained period, rather than flip through books, when allowed to use an SMD while reading. Though, each SMD experience is unique to each individual student and consistencies among student traits were not established. One of the principals interviewed in the present study automatically assumed that SMDs support the learning of students with attention deficit disorder tendencies. Ironically, as was explained in an interview with a



teacher at this principal's school that students who were quiet and reserved used SMDs most often in her classroom.

This specific example was presented to show that a call for caution because of potential for popular misinformation about the value of SMDs is valid and should be considered carefully when deciding how to use the findings of this study. It is important for the findings of this study to be clearly communicated to decrease false assumptions in regards to SMD use in the classroom. The findings from the present study, when shared, should include what the experiences of incorporating SMDs were and specify what they were not. For example, the findings present the essence of teachers' perceptions, not causality between the use of SMDs and student performance.

**Physical movement and cognitive and academic needs.** The present study was focused on teacher experiences and perceptions; therefore the actual influence on the academic performance of the students cannot be established. However, something that can be discussed in regards to previous literature is the change, if any, in student cognitions and academic performance as perceived and reported by teacher participants.

The benefits or impairments of exercise on cognitive performance has been said to depend on the level of physical fitness of a person at the time their cognitive abilities are assessed. This information can be interpreted to mean two different things: (a) that a person's level of physical fitness, regardless of exercise being introduced, could predict one's level of cognitive ability, or (b) if a person lacks physical fitness ability, then their cognitive abilities are more likely impaired when exercise is introduced. After reviewing reports from teacher-participants, the latter prediction seems most accurate. Students who had physical

limitations were not able to physically operate the SMDs without their feet falling off the pedals. Consequently, this kept those students' attention focused on trying to pedal correctly, rather than their assigned task. This example illustrated how a lack of coordination or physical ability could hinder one's aptitude to multi-task or receive new information while doing an exercise such as pedaling an SMD.

A teacher who witnessed a student physically struggling to operate an SMD, explained that during her previous year she had a student who was very athletic and intelligent, but was constantly off task and out of his seat, preventing his true abilities from being seen through independent work. Once this student was given the opportunity to use an SMD at his desk, he remained in his seat and completed work more frequently. This experience does not specifically determine if this student, who had athletic ability and coordination, had an increase in cognitive abilities because he was able to exercise. However, this student was able to demonstrate his cognitive and academic ability more consistently when his time at his desk and time on task was increased after SMDs were placed under his desk. Specific grades were not mentioned, but the teacher reported that this student completed tasks more consistently when using SMDs. This report was one of many regarding SMDs as a tool that assisted students with staying in their seat and on task in the classroom, which supports the concept of kinesthetic experiences enhancing student learning.

Teacher-participants shared that students' use of SMDs during independent reading times increased on task behavior and decreased the amount of classroom distraction that was typically caused by students walking back and forth to choose a new book. It was observed by teachers that when students were able to use an SMD to pedal during independent reading,

they remained sitting through the entire 20 minute time period. When SMDs were not available to these same students, they frequently flipped through books without taking the time to read them entirely and because they were not reading, they got up frequently to select a new book. In these examples of students' use of SMDs, concentration seemed to be enhanced because reading, rather than page flipping, occurred when students pedaled.

When reflecting on SMD use of kindergarten and 1<sup>st</sup> grade students, a teacher shared that the younger aged children were highly motivated to use the SMDs and they likened the use of them to riding a bicycle. Even when SMDs were described as a classroom distraction, this teacher admitted that the students were enthralled with using them and thought they were so much fun. These students were highly motivated by the opportunity to use SMDs. This motivation was successfully used to decrease the amount of time it took students to complete independent assignments when a teacher allowed the students to use SMDs upon completion of their work. These students' strong motivation to physically move in the classroom supports physical movement as a way to attract students to learning.

**Physical movement and personal/social needs.** Individual needs that fall within personal/social areas include development of emotion regulation, healthy coping skills, and appropriate social behaviors. Much of the research pertaining to personal/social needs of an individual and physical movement implied that physical activity or exercise could be used as a cost-effective intervention and treatment for individual's symptoms of depression, anxiety, or other mood disorders. Teachers' shared experiences supported physical activity as a coping tool or intervention for students who needed assistance with mood regulation. The specific moods teachers reported were regulated by the use of SMDs were anxiety and anger.

Some teachers shared that students learned to pedal as a way to calm down before or during a hard task, such as a test. Students also used SMDs as an energy outlet when frustrated or angry.

Students' behavior needs fall within the personal/social development category and this was a frequent topic discussed in the teacher interviews. Some participants noticed that students were less likely to bother those who sat around them when they were able to use an SMD at their desk or at a workstation. Physical activity has been mentioned in previous literature as a tool to improve work behavior. These improvements in student behavior may have also been because these students have attention deficit hyperactivity disorder or similar behavior symptoms, which are reportedly improved when individuals have an outlet for excess energy, such as the use of an SMD.

### **Relation of Findings to Social Cognitive Theory**

When proposing and preparing this study for implementation it was hypothesized that Bandura's social cognitive theory would be the most compatible theory because there has not been a specific theory developed to specifically address what happens when physical movement is introduced to the learning environment or directly to students for voluntary use. Additionally, SCT provides a way to explain the way teachers chose to use SMDs. Bandura's SCT (1986, 2001, 2006) proved applicable to this study and the relation of the findings to social cognitive theory is addressed herein.

After analyzing data and reflecting on what was reported by teacher-participants, initial predictions that human agency would only emerge through proxy (when an individual asks for assistance from someone else) and collective (when a group works towards a

common goal) modes were inaccurate. Direct agency was described in each of the teacher's experiences with SMDs. In order to be a direct agent, one must bring influence to a situation (Bandura, 1986, 2001, 2006). Teachers had differing reasons for why they made the decision to use SMDs, however in each situation described, the teacher was the one who made the decision to directly influence their classroom setting by using SMDs.

Although direct agency was the most prevalent human agency mode found with study results, proxy and collective agency were present as well. Each of the three modes of human agency, as were exemplified within this study, is shown in Figure 5.

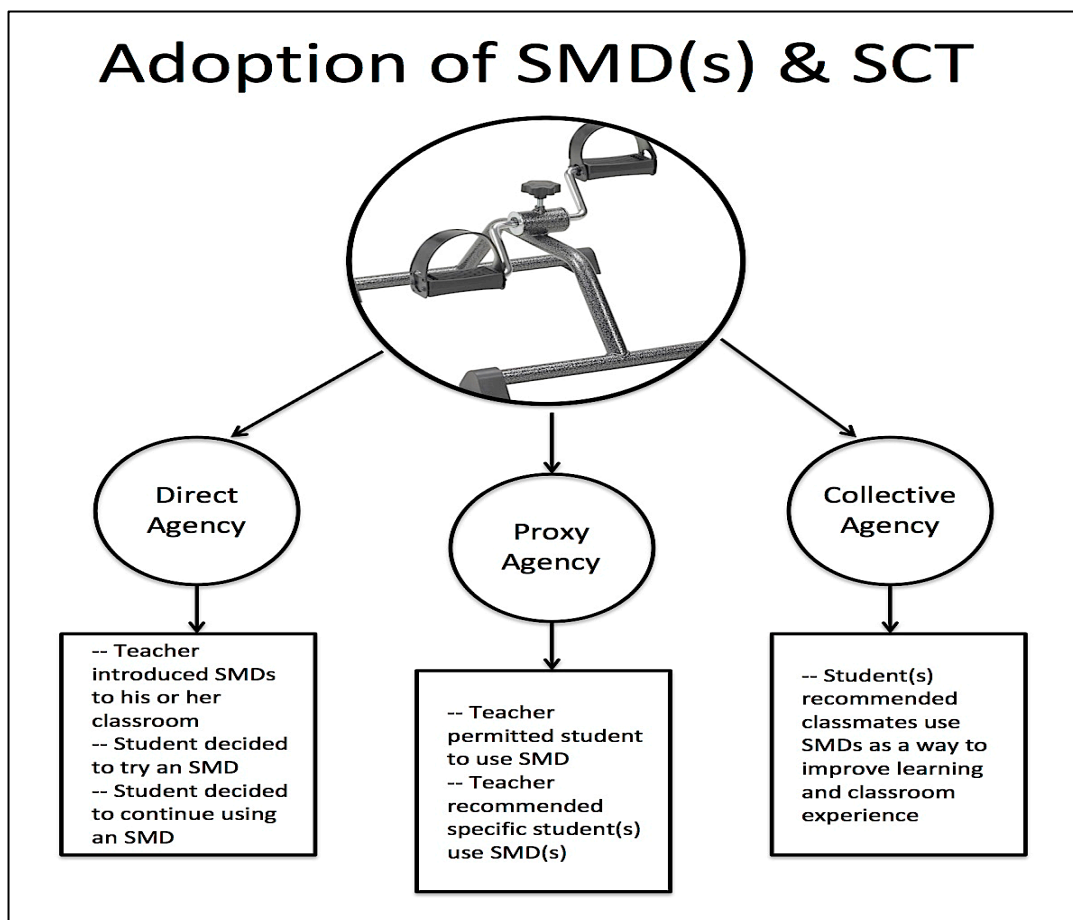


Figure 5. Adoption of stationary movement devices (SMD) and social cognitive theory (SCT). This figure illustrates how all three types of human agency emerged through observations and teacher-participant interviews.

Although one form of collective agency took place after SMDs were introduced to students, many of the classrooms already fostered this type of human agency in the culture of the student community in the room. When observations were conducted many of the classroom settings were quiet, calm, and student focused. It was rare that a teacher was observed lecturing during the times of classroom observations. Instead, students were primarily seen working in groups to meet their learning goals for the day. Students' motivation to work together supported the notion that some classes fostered the idea of collective agency being practiced as students worked together to learn throughout the day. Even though the collective agency described was primarily seen among students, this type of learning environment was only made possible because of the classroom management and teaching philosophy practiced by the teacher.

Triadic reciprocity, that is, when factors influence one another (Bandura, 1986), took place within this study most frequently in how the classroom communities were changed by the introduction of SMDs. An example of this was an observed increase in sharing behaviors in some classrooms. Teachers reported that SMDs provided the opportunity for students to learn how to share and compromise among peers. These teachers left it up to students to resolve conflicts that occurred when two students wanted to use the same pedal. This helped students practice these problem-solving skills regularly and teachers conveyed that sharing was enhanced in their classroom community as a result of SMDs being introduced to their students.

When considering Bandura's (2006) four core properties of human agency (intentionality, forethought, self-reactiveness, and self-reflectiveness) in relation to the

present study, three were evident in actions teachers reported doing and one was represented in teacher-reported student behavior. Teacher-participants' who chose to use SMDs in their classrooms conveyed intentionality in how they planned to use such devices with students, showing forethought in how they initially assumed the introduction of SMDs would go, and finally practicing self-reflectiveness in changes that were made in the structure surrounding the use of SMDs in order to best respond to student and classroom needs. The only core property of human agency not reflected in the teachers' direct experiences was self-reactiveness. This core property refers to one's need to self-motivate to complete a task or goal. It is suspected that self-reactiveness was present in the participants' classrooms in students' use of SMDs to assist with completion of difficult tasks and self-regulation.

Overall, the main premise of Bandura's (2006) social cognitive theory was that people are agents capable of changing and influencing what happens to them. This premise was supported by the experiences teacher-participants shared as they used SMDs to assist in influencing and changing what occurred in their classrooms. Even in the classrooms that did not experience a culture shift with the introduction of SMDs, the act of introducing the SMDs as a new option for supporting student learning was a form of human agency displayed by the teachers.

### **Limitations**

Limitations of the present study include the participants' relationship with the interviewer, the general nature of self-reporting information, and temporal conditions of the formal classroom observations. In addition to each of the limitations explained within this section, it is also important to note that the investigator explored the use of a stationary

movement device that was only available in a limited quantity. As many as possible were made available to all classroom teachers, but these devices were limited to the original 63 obtained through local grant funding.

**Participants' relationship with interviewer.** As was explained in the positionality statement given in chapter three, I was the researcher as well as a work colleague to all the participants in this study. This may have skewed the way teachers reported information in the interviews. I was pleasantly surprised in a few interviews when teachers asked if they could be completely honest, then went on to report positive and negative things about their experiences. In those moments, I felt I was getting a true picture of what teachers felt had happened after SMDs were introduced to their classrooms. Since the instrumentation for interviews is essentially the interviewer, the fact that teachers knew me outside of this research study definitely had an effect. The problem is that one cannot fully determine how responses were affected. This prior relationship between participant and researcher could have put some participants at ease, while some could have felt less inclined to report negative outcomes. My impression is that most teachers shared their experiences as honestly as possible, but this relationship can still be seen as a limitation of the study.

**Nature of self-reporting.** When self-reporting information and experiences involving a teacher's own classroom, one may be less inclined to share unflattering information. This makes self-reported information, which was the primary data source in this study, a limitation. As a way to validate what was self-reported by teachers, classroom observations were conducted, but not every experience could be observed, which leads into the final limitation discussed.



**Time constraints on classroom observations.** At least one formal classroom observation was conducted in each teacher-participant's classroom after interviews were conducted. However, the opportunities for these classroom observations were often not the most ideal time to observe everything that was discussed in the teacher interviews. One major time constraint was the time of school year that most the observations were conducted. Interviews were conducted with teachers in April and observations took place during the end of April and beginning of May. This is a critical time in the school year for traditional calendar schools, such as the elementary and middle school that participated in this study. During the months of April and May, much of classroom instruction shifts towards preparing students for the end of the year. This can sometimes change the classroom community to incorporate feelings of urgency and additional stress. Therefore, the time of year may have limited what could be observed and how students chose to use SMDs while classroom observations took place.

The following section provides a presentation of practical implications related to information learned through conducting this phenomenological study. These practical implications are presented with specific considerations related to the job functions of school counselors, teachers, and education leaders.

### **Practical Implications**

The focus of this study was the perceptions and experiences of teachers. The purpose of researching something being done within the school setting was to reflect on this practice analytically in order to figure out the most effective ways to meet learning needs of future students. Findings from teacher interviews and classroom observations were reported in

chapter four in a way that allows readers to draw their own conclusions through the inclusion of long quotations from participants. These results were synthesized for deeper meaning at the beginning of chapter five and recommendations based on the findings from teacher interviews and classroom observations are presented next for practitioners. The following sections provide practical recommendations for how school counselors, teachers, and education leaders can apply the information learned through this study to their own work settings.

**School counselors.** The role of a school counselor varies based on multiple factors such as the population of students served, size of case load, responsibilities assigned within the school, number of other student support staff members employed in the school, and the administration's vision of the school counselor's role. Even though much of a school counselor's role can fluctuate based on school site, the American School Counselor Association has outlined ideal role descriptions (ASCA, 2012). As was introduced in chapter one and outlined in Appendix A, school counselor standards focus on meeting students academic, personal/social, and career development needs. School counselors are able to meet these student needs through indirect or direct services. This section includes practical recommendations for school counselors to use SMDs to provide indirect and direct services.

School counselors can introduce SMDs to teachers, as a way to collaborate in order to meet students' academic and personal/social needs indirectly. School counselors may also use stationary pedals or another method of physical movement directly with students in their offices or in a separate area of the school to allow students time to calm down and unwind. This could be particularly helpful for students who have a difficult time deescalating and

regulating emotions such as anxiety, frustration, or anger. The opportunity to do something physical allows students to channel their energy in a manner less harmful than internalizing emotions or physically acting out against another person or themselves.

The use of SMDs could also be implemented collaboratively with teachers, directly or indirectly, as a way to help students learn to cope with emotions. Some teacher-participants explained that students in their classrooms did not need to continue using SMDs through the entire school year. The students in these teachers' classroom settings learned to use the SMDs at times of high anxiety, frustration, or when they had a lot of energy and were unable to focus. After learning to use the SMDs, students were able to recognize when they needed to take a break. This acquired ability to recognize their emotional limits may have been enough for the students in these classrooms to learn to cope without pedaling later in the year. One teacher explained that tremendous growth was seen in a student who used his SMD any time he was mad. This student started the year with few coping strategies when he got upset. At the beginning of the year he would yell and hit when frustrated. By the end of the school year he was able to take a break to regulate his emotions when frustrated and needed very little support from the teacher to cue these breaks. These shared experiences, support the idea of counselors working with teachers to implement the use of SMDs.

**Teachers.** The practices shared by teachers in this study also provided material for practice recommendations. The decision and structure surrounding SMD use theme, is based on specific details about how SMDs were integrated within the classrooms of teachers who participated in this study. Some teachers shared lessons learned through their use of SMDs. These lessons included the importance of clearly defining expectations of SMD use before

introducing them to students. Another important lesson or surprise shared by teachers was the inability to predetermine which students would most benefit from using SMDs. One teacher was surprised that some of her quiet students benefited by using SMDs during tests to decrease anxiety. When considering this discovery and the other lesson learned, it seems most important to set expectations and discuss potential uses with students before introducing SMDs. It is also vital to assure all students have access to use the SMDs if needed.

Other ideas for implication include: introducing SMDs to students as a fitness tool that could be used for health benefits and exercise, making SMD use a reward incentive for students when they complete goals set with classroom teachers, or using SMDs as an intervention tool in a tiered process such as RtI (Response to Instruction/Intervention) or MTSS (Multi-Tier System of Supports) for student motivation or attention—this would have to be approached carefully so targeted students they are outcasts or are being punished.

**Education leaders.** Education leaders are less likely to implement the use of SMDs directly with students, so this section contains some important take away points from this study that are beneficial for leaders in education to consider, perhaps from a policy perspective. Based on experiences and perceptions shared by teachers, the integration of SMDs into the school setting is something teachers may appreciate having available for student use because teachers within this study perceived SMDs to help students (a) focus in the classroom setting, (b) read for a sustained period of time, (c) behave appropriately, (d) regulate emotions, and (e) develop problem solving skills needed to share limited classroom resources.

Other important points for educational leaders to keep in mind when considering the use of SMDs are as follows: (a) teachers sometimes found it difficult to predict which students would most benefit from the use of SMDs so it cannot be assumed that some will and some will not benefit; (b) when used as an optional tool, rather than a requirement, students enjoyed using SMDs; (c) similar to students, teachers may also have push back against SMD implementation if they feel they have to use them in their classrooms. Teachers in this study were given the option of integrating SMDs into their classrooms. It was important that the teacher could choose to use SMDs because it was viewed as a privilege to have them available in the school district in the present study. If this had been a requirement for initial implementation, teachers may have supported the initiative less enthusiastically and possibly affected the impressions students were given about SMDs negatively. In contrast, if professional personnel in a school agree that stationary movement devices are important and useful, they are more likely to own and take control of the initiative, and have a higher probability of positive outcomes. This would have to be supported by the administration for it to succeed.

Most importantly, the findings from this study can support the concept that innovative ideas are needed in classroom settings, especially if the innovations are new tools for meeting student needs. If individual school, school district, county, or state personnel do not support innovative practices then teachers and support staff members are less likely to try new techniques and tools in their classrooms. Education leaders set the tone, which many other educators try to follow. The education leaders in this study were open-minded, supportive, and student-focused which contributed to its completion and the willingness of teachers to

initially try incorporating SMDs into their classrooms. If teachers had been anxious about failure or about being judged for how they chose to implement SMDs, benefits and lessons learned would not have been discovered. Consequently, all the new information retrieved through this study would not be available for future researchers and practitioners.

### **Future Research**

The scholarly literature reviewed in chapters one and two established that there was a gap in research pertaining to learning and physical movement. Studies have been conducted to determine the effectiveness of physical activity in the classroom when used to teach a new concept, assess for student understanding, transition students between lessons, provide additional recess time, and prepare students for daily lessons. Studies have not been conducted to determine the effectiveness of movement or physical activity when it is made an option to students to use on a voluntary basis in the classroom setting throughout the day. This study did not look specifically at effectiveness of SMDs as an academic intervention strategy because the nature of this study was exploratory rather than experimental. However, the findings of this study can now be used to determine the best structure and approach to obtain outcome data related to the use of SMDs.

In most of the previously reviewed outcome research regarding physical movement and cognitive functioning, data were obtained by dissecting the brains of lab animals to track changes in chemical production or by giving participants an assessment after varying amounts of physical movement. To obtain more specific outcome data related to the use of SMDs, future investigators should consider taking physiological measurements, while monitoring information retention and cognitive function. Less sophisticated ways to collect

outcome data could include keeping time logs, tracking SMD use with a pedometer, and recording before and after heart rates of the SMD users.

The data from this study can be used by future researchers to identify the factors associated with using SMDs that are important to study. Identification of these factors provides support in isolating each one to conduct studies that may link the use of SMDs with impact on academic performance, personal/social development, or classroom community building. Future research ideas include, but are not limited to studying the following: (a) how the introduction of SMDs relates to responsibility or ownership students' take for their own learning, (b) which teacher and/or student populations find the use of SMDs helpful versus distracting and the contributing factors associated with these preferences, (c) how a professional's personal philosophy and method of introduction contributes to the benefits of SMD use, (d) the effects of using SMDs as intervention tools for students who need additional academic or behavior support, and (e) the effects of using SMDs in and outside of the classroom setting to aid mood regulation.

### **Potential Next Steps**

Although this study was contained by Bandura's (1968, 2006) SCT, diffusion of innovation theory (Rogers, 2003) should be considered for future work because it fits well based on findings presented in chapter four. Everett Rogers (2003) founded diffusion of innovation theory for the purpose of dispersing information pertaining to farming practices in Iowa. Since this theory was initially published, it has been applied to multiple disciplines including the counseling field. In an article explaining how Rogers' theory can be used to bridge the gap between research and practice, Christine Murray (2009) demonstrated how

diffusion of innovation could work with making research findings useful for practicing counselors. When considering how Rogers (2003) defined the terms diffusion and innovation, this theory seems applicable to what occurred within the classrooms of teacher-participants in this study. Additionally, the theoretical framework used to contain this study, Bandura's social cognitive theory, was mentioned as being helpful in understanding adoption decisions of individuals (Hornik, 2004), which is similar to what has been done in the present study.

Diffusion has been presented as a process that communicates innovation "through certain channels over time among the members of a social system" (Rogers, 2003, p. 5). Innovation, as it is used in this theory is any "idea, practice, or object" that is newly adopted by a person or organization (Rogers, 2003, p. 12). The likelihood that a person will adopt an innovation follows a bell curve trend and is illustrated in appendix K. The five stages of adoption readiness include: (a) innovators, (b) early adopters, (c) early majority, (d) late majority, and (e) laggards. In the present study, the use of SMDs were a newly innovated concept being introduced to the targeted schools. Since the teachers did not create the innovation, but were the first to use it, they most closely identified with the early adopters stage of adoption. According to Rogers (1995), there are five characteristics that contribute to whether an innovation is adopted or not. These five traits include: (a) relative advantage – the benefit of using this innovation over the pre-existing method; (b) compatibility – the way this innovation fits with pre-existing protocols and culture; (c) complexity – the ease of implementing or using the innovation; (d) trialability – the ability to try the innovation without permanently committing; and (e) observability – the ability for the innovation to be



seen by others before adoption. Each of these five characteristics was observed in teachers' use and adoption of SMD use in the present study. The most influential trait that was specifically discussed in teacher interviews was SMDs' trialability factor. Some teachers were less hesitant to try SMDs in their classrooms because there was no long-term commitment attached to using them and the SMDs were physically easy to add or remove from classroom settings.

Diffusion results in an innovation being adopted, implemented, and finally institutionalized. When thinking about the present study, the innovation was the use of SMDs in the classroom setting. The diffusion of this innovation began when individual teachers chose to adopt SMDs for their classroom. Teachers subsequently implemented the use of the SMDs with their students and some reported that the use of SMDs would be incorporated in their rooms as long as SMDs were made available. By wanting to make the use of SMDs a permanent practice in their classrooms, some teachers are reporting that they will institutionalize the innovation of using SMDs, which completes the diffusion of this practice (Murray, 2009).

For practitioners who want to adopt the innovation of using SMDs in a classroom setting, this study can serve as a foundation to reflect on teacher-participants' reasons for wanting to adopt this innovation and how each teacher chose to implement the use of SMDs with students in their classroom. These specific details about teachers' decisions to use and implement SMDs were included in the results shared in chapter four. A final future consideration for diffusion of innovation theory relates to school principals' stance on innovations, such as SMDs, entering their schools. When considering adoption lifecycles of

new innovations, the teachers' perspectives were discussed, but teachers would not have been given the opportunity to adopt SMDs in their classrooms if principals at each participating school had not been early adopters in their roles as education leaders. Education leaders have tremendous impact on the culture and protocols of the schools with which they work. Therefore, future research on diffusion of innovation theory as it relates to the behaviors of school principals should be considered to further explore the role of education leaders in the implementation of new innovations.

## **Conclusions**

The purpose of this phenomenological study was to explore and describe the experiences and perceptions of elementary and middle school teachers who have used stationary movement devices (SMDs) with students in their classrooms and who consented to participate in this study. The central question being asked in this study was: What are teachers' experiences and perceptions in using SMDs in their classrooms? This was broken down into two sub-questions: (a) What factors do teachers credit for decisions to introduce SMDs in their classrooms? (b) What changes, if any, do teachers perceive after introducing SMDs? The research questions were inspired by the results of a pilot study (Allen, 2014) that focused on students' experiences with SMD use in a 5<sup>th</sup> grade classroom. Teachers' decisions surrounding the use of SMDs were explained through reported results in chapter four and then contained using the chosen theoretical framework – Bandura's social cognitive theory.

Aside from the pilot study, the voluntary use of exercise equipment or movement tools in the classroom setting had not been formally researched. This topic is of growing

interest. The use of movement devices is being marketed by large companies as being beneficial to educational settings, primarily for the purpose of selling new movement products to school systems. Unfortunately, the information these companies claim proves the benefits of using exercise and movement materials in the classroom has not been well investigated and lacks validity. To prevent misconceptions and misuse of information from occurring, it is important to accurately share findings from studies such as this when considering the use of movement tools in class settings.

School counselors, teachers, and school administrators may use these findings to make decisions on whether or not the implementation of stationary movement devices is appropriate in their specific settings. Future researchers can also use these findings to determine what factors have changed or contributed to SMD use of teachers. Awareness of major themes and subthemes that emerged, as well as first-hand perspectives from teachers, can assist in designing future research designs. This information could even be used as a foundation for framework related to the use of optional learning tools or the use of voluntary movement classrooms.

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## APPENDICES

## Appendix A

**National standards of school counselors:** The American School Counselor Association (ASCA, 2012) National Model lists standards for practice by three different types of students' needs: academic, personal/social, and career. Below is a list of the academic (A) and personal/social (PS) student standards most applicable to this study:

"A:A1.2 Display a positive interest in learning

A:A1.5 Identify attitudes and behaviors that lead to successful learning

A:A2.2 Demonstrate how effort and persistence positively affect learning

A:A2.4 Apply knowledge and learning styles to positively influence school performance

A:A3.1 Take responsibility for their actions

A:B1.1 Demonstrate the motivation to achieve individual potential (p.102)

A:B1.6 Use knowledge of learning styles to positively influence school performance

A:B1.7 Become a self-directed and independent learner (p.103)

PS:A1.5 Identify and express feelings

PS:A1.6 Distinguish between appropriate and inappropriate behavior

PS:A1.8 Understand the need for self-control and how to practice it

PS:A2.1 Recognize that everyone has rights and responsibilities

PS:B1.3 Identify alternative solutions to a problem

PS:B1.4 Develop effective coping skills for dealing with problems (p.106)

PS:B1.11 Use persistence and perseverance in acquiring knowledge and skills

PS:C1.10 Learn techniques for managing stress and conflict (ASCA, 2005, p.107)"

## Appendix B

**National standards of teachers:** In order to discuss teaching standards in a way that is available and applicable to all high standard teachers throughout the United States, the National Board for Professional Teaching Standards (NBPTS, 2014) are introduced herein. Each specific teaching position has its own set of standards produced by NBPTS, but all these standards were derived from five core propositions. Within these five core propositions, the following areas demonstrate the importance of supporting students' cognitive or academic and personal/social needs. Each of the following may also relate to the current study:

“Proposition 1: Teachers are committed to students and learning

- National Board Certified Teachers (NBCTs) are dedicated to making knowledge accessible to all students. They believe all students can learn.
- NBCTs understand how students develop and learn.
- They are concerned with their students' self-concept and their motivation.

Proposition 2: Teachers know the subjects they teach and how to teach those subjects to students.

- They are able to use diverse instructional strategies to teach for understanding.

Proposition 4: Teachers think systematically about their practice and learn from experience.

- They are familiar with learning theories and instructional strategies and stay abreast of current issues in American education (NBPTS, 2014).”

## Appendix C

**National standards of education leaders:** The Council of Chief State School Officers released the Educational Leadership Policy Standards ISLLC 2008, which is presented herein as the set of standards referenced that are applicable to education leaders (CCSSO, 2008).

The following standards and functions are most applicable to the present study:

“Standard 2 – An education leader promotes the success of every student by advocating, nurturing, and sustaining a school culture and instructional program conducive to student learning and staff professional growth.

Function C: Create a personalized and motivating learning environment for students

Function G: Maximize time spent on quality instruction

Function H: Promote the use of the most effective and appropriate technologies to support teaching and learning

Function I: Monitor and evaluate the impact of the instructional program

Standard 4 – An education leader promotes the success of every student by collaborating with faculty and community members, responding to diverse community interests and needs, and mobilizing community resources.

Function A: Collect and analyze data and information pertinent to the educational environment (CCSSO, 2008)”



## Appendix D

### Visual of a Stationary Movement Device (SMD)



## Appendix E

### Initial Email to Elementary and Middle School Administrators

Subject Line: Request to collect data on pedal-use

Dr./Mr. \_\_\_\_\_ ,

As you know I am excited to have pedals in some of your teachers' classrooms and I'm thankful that [REDACTED] has principals, such as yourself, who are willing to use new strategies in the classroom to meet learners' needs! Since the use of pedals in the classroom is a new concept and it is important that classroom strategies become research-based, I would like to study what has been occurring in some of your classrooms.

I'm writing to request your permission to study what has occurred since teachers were given pedals to use in the classrooms. I would like to do this by interviewing and observing your teachers who are willing to participate. I would also like to speak with you briefly about your choice to allow pedal use in your school. Additionally I would like to speak with you and your counselors about your involvement and perceptions in regards to the pedal use.

If you agree to allow your school to participate in this study, I am requesting a time I can speak with you, your counselors, and the opportunity to ask your teachers' (who were given the opportunity to use the pedals) to participate in a one on one interview. To recruit teachers for this study, I will provide each potential participating teacher with a copy of the informed consent document (attached to this email) and I will read through this document to assure it is understood before teachers decide on participation.

If you have any questions or concerns, please let me know. Otherwise, I look forward to hearing from you regarding participation in this study!

Amanda H. Allen, NBCT, LPC, NCC, NCSU Doctoral Candidate  
Counselor

[REDACTED]

“They may forget what you said but they will never forget how you made them feel.” – Carol Buchner

## Appendix F

### North Carolina State University TEACHER PARTICIPANT INFORMED CONSENT FORM for RESEARCH

Title of Study: What do the Teachers Have to Say?: A Phenomenological Study of the Use of Stationary Movement Devices in Elementary and Middle School Classrooms

Principal Investigator: Amanda H. Allen      Faculty Sponsor (if applicable): Dr. Adria Shipp Dunbar

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Dear Teacher,

In mid-December 2013 stationary exercise pedals were purchased with grant funds awarded for the "Brain Power" project. This project was founded on research showing that an increase of oxygen flow to the brain helps with cognitive function (a.k.a. LEARNING!) There are currently 63 sets of bicycle pedals distributed among classrooms in one elementary and one middle school within our school district. In a previous pilot study, students were asked to share their experiences and perceptions surrounding the use of the pedals in class. This information was helpful in gaining initial insight on what happens when stationary pedals are introduced to the classroom setting, however the findings were limited to students' experiences. In order to gain a better understanding of what happens when movement devices are introduced to elementary or middle school classrooms, a study is being conducted.

This Informed Consent Form is a request for your consent to participate in this study. If you consent, you will be asked to participate in an interview focusing on your experiences using the exercise pedals in class. Interviews will be audio recorded so responses can be transcribed and quoted for the study and future professional development presentations. To assure confidentiality, teachers who are asked to participate in an interview will be asked to create a pseudonym (a fake name) to be called during the interview. This will prevent anyone other than the interviewer, Amanda Allen, from knowing your identity. All audio recordings will be deleted after the completion of this study. Please know that your name will not be mentioned or used in this study, but some parts of the interviews may be quoted when findings are being discussed and presented. Once interviews are complete, a classroom observation will be conducted by the interviewer as a way of gaining additional data and insight on how the pedals are being used and what occurs in the classroom when they are incorporated.

There will be no consequence to you regardless of your choice to participate. Your classroom and students will have the same access to the exercise pedals and all other school programs no matter what your decision is about participation in this study. Please read below and the back of this letter for additional information about the research being requested before making an informed decision about participating.

Thank you for taking the time to consider participating in this study,

Amanda Allen, M.Ed., LPC, NCC, NBCT  
School Counselor

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Please review, complete, and return this document to Amanda Allen in the designated area of your school's front office within one week. Additional questions can be sent to AmandaAllen@[REDACTED]

**Additional Information:** (continued on the back)

**What are some general things you should know about research studies?**

You are being asked to take part in a research study. Your participation in this study is voluntary. You have the right to be a part of this study, to choose not to participate or to stop participating at any time without penalty. The purpose of research studies is to gain a better understanding of the topic or issue. You are not guaranteed any personal benefits from being in a study. Research studies also may pose risks to those that participate. In this consent form you will find specific details about the research in which you are being asked to participate. If you do not understand something in this form it is your right to ask the researcher for clarification or more information. A copy of this consent form will be provided to you. If at any time you have questions about your participation, do not hesitate to contact the researcher named above.

### **What is the purpose of this study?**

The purpose of this phenomenological study is to explore and describe the experiences of elementary and middle school teachers who have used pedals with students in their classrooms. The central question being asked within this study is: What are the experiences of teachers who use stationary movement devices with students in the classroom setting? Transcriptions of audio-recorded interviews investigating the use of pedals in the classroom will be used to establish major themes and conclusions about the use of these movement devices in the classroom. All findings will be used to educate other teachers and support staff members on what occurs when such devices and movement are incorporated in elementary and middle school classrooms.

### **What will happen if you take part in the study?**

If you agree to participate in this study, you will be asked to allow your voice to be recorded during an interview with the principal investigator, Amanda Allen. During this interview, you will be asked to describe your experience of using exercise pedals in your classroom. There are no right or wrong responses. Prompting questions will be used to gather all details surrounding your experience. These pedals or stationary movement devices have been brought into your school based on research stating that an increased level of aerobic activity assists with cognitive functioning and as a means for students to stay physically active while instruction requires students to stay stationary. Your participation in this study will not cause core academic time to be missed. You may choose the time of your interview within the availability of the principal researcher and the work requirements of your position as a teacher. Once your interview is complete the principal investigator will conduct a classroom observation to validate information shared in the interview process. This observation will be for the sole purpose of collecting information about the use of pedals in the classroom. Teachers will not be evaluated using any of the data collected for this study. Additionally, none of the raw data collected from this study will be shared with teachers' employers or supervisors. If you choose not to participate, you will still have equal access to the stationary movement devices used in your school, as well as equal access to the principal investigator, Amanda Allen, who is the counselor at the elementary school targeted for this study. There is **no consequence** if you choose not to be interviewed for this research. All information being collected for this study will be concluded this school year, unless you are otherwise asked to participate.

### **Risks**

There are minimal risks associated with participation in this research.

### **Benefits**

Educators will benefit from this research; the primary benefit of the research is the knowledge that will be gained concerning learning that occurs when movement is integrated into the classroom setting.

### **Confidentiality**

The information in the study records will be kept confidential to the full extent allowed by law. Data will be stored securely in a password-protected folder on the researcher's password protected laptop, which will be kept in a locked location when it is not in use. All study data will be stored without teachers' names and specific identifying information. References to individuals will be made using pseudonyms created by participants. No reference will be made in oral or written reports, which could link you to the study. All audio files and field notes will remain secure and will only be used to transcribe and validate interview data. Audio files will be deleted after data analysis is complete.

### **Compensation**

There is no compensation for participation in this study.

**What if you have questions about this study?**

If you have questions at any time about the study or the procedures, you may contact the researcher, Amanda Allen, at [REDACTED] or [REDACTED].

**What if you have questions about your rights as a research participant?**

If you feel you have not been treated according to the descriptions in this form, or your rights as a participant in research have been violated during the course of this project, you may contact Deb Paxton, Regulatory Compliance Administrator, Box 7514, NCSU Campus (919/515-4514).

**Consent To Participate:** (check one below)

\_\_\_\_\_ **YES** – *“I have read and understand the above information. I have received a copy of this form. I agree to participate in this study with the understanding that I may choose not to participate or to stop participating at any time without penalty or loss of benefits to which I am otherwise entitled.”*

\_\_\_\_\_ **NO** – *I have read and understand the above information. I have received a copy of this form, but I choose NOT to participate in this study.*

**Teacher Participant’s Name (printed)** \_\_\_\_\_

**Teacher Participant’s signature** \_\_\_\_\_ **Date** \_\_\_\_\_

**Investigator’s signature** \_\_\_\_\_ **Date** \_\_\_\_\_

## Appendix G

### Reminder Email to Potential Teacher Participants

Subject Line: Reminder: Please turn in Informed Consent Form tomorrow

Thank you for allowing me time to speak with you last week about my study on the use of pedals in the classroom. Please remember that I would love your participation whether you are currently using pedals in your classroom, or not. Regardless of your choice to participate, you will still have access to pedals and my services as a school counselor.

Please check “yes” on the informed consent document if you would like to participate or check “no” if you are not interested in participating. Either way, I would appreciate it if you could give your informed consent to your school counselor in the sealed envelope provided. If you misplaced your form email me and I will get one to you today, or you can pick up an extra form in your counselor’s office.

Thank you in advance for returning your informed consent by tomorrow!

Amanda H. Allen, NBCT, LPC, NCC, NCSU Doctoral Candidate  
Counselor



“They may forget what you said but they will never forget how you made them feel.” – Carol Buchner

## Appendix H

### Teacher Participant Demographic Questionnaire (To be completed at time of teacher-participant's interview)

What would you like your pseudonym (fake name) to be? \_\_\_\_\_

General Information:

Sex: \_\_\_\_\_ Ethnicity: \_\_\_\_\_

Years of teaching experience: \_\_\_\_\_ Current grade taught: \_\_\_\_\_

Current subjects taught: \_\_\_\_\_

Years/semesters of using pedals in classroom: \_\_\_\_\_

What degrees do you hold?: \_\_\_\_\_

What professional licenses do you hold?: \_\_\_\_\_

What types of strategies do you currently use in your classroom to meet the needs of your students? (check all that apply):

- \_\_\_\_\_ Seating: use of stretchy bands on chair legs
- \_\_\_\_\_ Seating: use of balance cushions/disc seats
- \_\_\_\_\_ Movement: students asked to run errands, get water, or pass out papers
- \_\_\_\_\_ Water allowed at desk
- \_\_\_\_\_ Stimulating flavors/foods (e.g. mint or lemon for increased arousal)
- \_\_\_\_\_ Food allowed outside of breakfast/lunch/snack
- \_\_\_\_\_ Physical activity encouraged at recess
- \_\_\_\_\_ Hands on: Velcro strips under or inside desk
- \_\_\_\_\_ Hands on: fidget or stress ball allowed
- \_\_\_\_\_ Other strategies used: \_\_\_\_\_

## Appendix I

### Teacher Interview Questions

**Opening Question:** Tell me a little about your teaching philosophies.

**Introduction Question:** Tell me about your experience deciding to use the pedals in your classroom.

**Transition Question 1:** What factors contributed to this decision?

**Transition Question 2:** In what ways does your teaching philosophy support your decision to use the pedals in your classroom?

**Key Question 1:** What are some of the positive and negative changes that have occurred since students started using pedals in your classroom?

**Key Question 2:** What changes have you noticed, in your classroom, in terms of students' performance since the pedals were introduced?

**Key Question 2 Probe:** Specifically what changes in academic performance or personal/social development of students?

**Key Question 3:** In what ways has the classroom community as a whole changed as a result of the introduction of the pedals?

**Ending Question:** What other experiences have you had relating to the introduction and use of pedals in your classroom?



## Appendix J

### Summaries used for Member Checking

#### Email to teacher-participants

Email messages were left vague and did not include identifiers linked with the study (such as pseudonyms or reference to the existence of a research study) to maintain confidentiality.

Subject Line: Can you look over this?

Email Content:

*Whenever you get a chance, can you look over these bullet points? Please let me know if this all sounds accurate or if something needs to be added, taken out, or altered.*

(Bulleted summary was included)

*Thank you for taking some time to look at this information!*

#### **Bulleted summaries presented in alphabetized order by pseudonym:**

Audrey Hepburn – (emailed on 5/28/2015; received confirmation of accuracy on 5/29/2015)

- Teaching philosophy includes that every child is able to learn, but they all learn differently. The teacher must learn individual student strengths and challenge the student based on their current level of understanding. Learning should also be fun.
- The decision to introduce pedals to the classroom was made because some active students needed assistance with focusing and students who were unable to focus on reading were not utilizing DEAR time appropriately. Pedals were also introduced because they are a fun tool to help students focus.
- Pedals were seen as a privilege to students. They were chosen using their magic numbers for when they were allowed to use them during DEAR time. Students were never forced to pedal
- When it is time to release energy in your classroom, you have different fun activities like your dice. The pedals fit with your fun class activities as another way for students to release energy.
- Positives about the pedals: students love them – they can't wait for their day to use them; when pedaling they don't get up during DEAR time, so they focus and read their chosen book more thoroughly; students are better behaved and do not speak to their peers during DEAR time when they have the pedals
- Negatives about the pedals: there are only 2 in the classroom this year – so students have fussed over them
- Five pedals would be a more ideal amount to have in the classroom.

- Specific academic changes from pedal use cannot be determined because so many other factors contribute to that and students don't use pedals consistently enough.
- Since pedals were introduced, students have demonstrated how to share and take turns (which is important for 2<sup>nd</sup> grade). They've also learned to accept the answer "no" when it is not their day to have a pedal.
- Pedals were also seen as a helpful tool to a 4<sup>th</sup> grade student who has used them throughout the year.

Grape Ape – (emailed on 5/28/2015; received confirmation of accuracy on 5/28/2015)

- Teaching philosophy includes that students must feel safe and want to learn in order for learning to occur. Knowing that their teacher cares for them and hands-on experiences that tie in multiple intelligences also assists in student learning. Students will do anything in the world for you if they think you care for them and embrace their unique qualities. Otherwise, students won't do what you want them to.
- Decision to bring pedals in the classroom was based on very energetic (ADHD) students needing a way to burn energy and the thought that pedals could allow this to happen while students stay focused at their desks.
- Pedals were first introduced to individual students that you spoke with about using them. Then pedals were introduced to the whole class as an option for all students in the classroom. There were 2 pedals in your classroom last year. Students were told they had to give pedals up within 20 minutes of a peer asking to use them.
- Pedals were seen as a reward or privilege to use rather than a consequence. However, some students did not care to continue using pedals after they tried them once.
- Your desire to accommodate all students' needs, while making them comfortable enough to learn supports your use of pedals in the classroom. If you did not support students different needs to move (i.e. stand by their desk, use fidgets, etc.) students may spend a lot of time worrying about sitting still and behaving appropriately, which would prevent learning.
- Students are able to concentrate better when they're comfortable and not scared of consequences.
- Positives of pedals: students that behave aggressively were able to direct energy in a different way; helps to keep students awake; decreases testing anxiety when used by students during tests (increased performance a little bit on these students' tests); pedals may have made students more comfortable who needed to release energy or anxiety; students were more tuned in to lessons and therefore retained more information; pedaling during a math discussion enhanced student engagement
- Negatives of pedals: students tried to speed up to get attention of others with the pedals; pedals broke and pieces came off; students argued over pedals; pedals were no longer available after they broke; if students misused pedals they were told they had to go put them away
- Positives outweighed the negatives

- It was surprising to see how students with test anxiety benefited from using pedals. It was also surprising that ADHD students did not latch on to using pedals.
- Students need pedals less at the end of the school year. The pedals are like a coping skill that you hope to grow out of or need less and less to find success.
- 6 to 8 pedals would be an ideal amount for the classroom (especially the inclusion group)
- The classroom community was not really changed by the introduction of pedals because so many tools and accommodations have always been available in your classroom.
- Students really enjoy running errands for you, especially when dropping off broken pedals to my office.

Margret – (emailed on 5/27/2015; received confirmation of accuracy on 5/28/2015)

- Teaching philosophies include the need for children to feel safe and happy in order to learn most. It is important for students to be nurtured, but also to be held accountable. The pedals fit into the teaching philosophy because they are an additional thing to assist students in finding success.
- Initially pedals were introduced with one specific student in mind. This student found success in your classroom and also with using pedals at his desk. Most other students used pedals during reading time (students last year frequently brought the pedals to their desk). Pedals were also introduced to assist me in trying them with students 😊
- Pedals have been suggested to students who are off task to go “try them out”. The pedals seem to benefit students who struggle to concentrate and sit still. Pedals work as a tool to prevent students from annoying peers around them. This is beneficial because the student using the pedal is incorporated into more positive social interactions and is no longer avoided by his or her peers.
- Students who need the pedals don’t need permission to use them. They also used the pedals for longer than students who didn’t really need them. When the pedals were first introduced, everyone HAD to try them and was very excited about them.
- Positives of the pedals: assists students in calming down, focusing, and behaving properly in class; increases amount of work students can get done, can assist in test completion for some students; students are included in social interactions because they are able to behave more appropriately in class
- Negatives of the pedals: whining that occurs between students over pedal use; students using pedals at inappropriate times
- The students that could benefit from pedals are not always predictable at the beginning of the school year. Pedals can have different uses for different students. Some students are recommended to pedal if the teacher suspects there is little time outside of school spent on physical activities.
- Any suggestion from the teacher for students to pedal is well received because the pedals are a popular activity and are seen as a treat.

- Classroom community was already very accepting and did not change much after pedals were introduced.
- An ideal amount of pedals to have per classroom could range from 5 to enough for everyone in the classroom to have their own depending on if the classroom environment could accommodate a larger amount.

Marie – (emailed on 5/25/2015; received confirmation of accuracy on 5/25/2015)

- Teaching philosophy includes wanting kids to feel loved and safe enough to try to answer questions they may get wrong.
- Children learn in different ways so they must be taught on their level.
- Wants kids to love coming to school and to be able to make friends.
- It's important for kids to love coming to school because they have a long time to be in school. They need positive experiences at school because you don't know what they may be getting at home (they may have tough home lives).
- Students are taught reading, writing, math, and social skills. Resource students go back to homeroom setting throughout the day for non-core subjects.
- This year pedals were not used in the classroom. Teacher thought they were completely gone when some were sent to the middle school
- Teacher got pedals originally because she is willing to try anything that is meant to help children learn and they seemed like good tools for students with lots of energy or disrupted others. Pedals were also tried because teacher felt if they benefited even one student, then she would love them.
- Pedals were not helpful for her class because students treated them like a fun toy rather than a tool to help their learning. Students rushed through work to use them and were distracted by the presence of pedals in the classroom. Some students had a difficult time using the pedals correctly and made noise on purpose (i.e. hit knees on table) to get others' attention.
- Some of the issues that came up may have been prevented or decreased if the pedals were introduced differently (i.e. proper use demonstrated, specific expectations given in a kid-friendly way, set a timer for students when using pedals, teacher had more background knowledge on pedals)
- Pedals added additional strain on class expectations, especially since students are in and out of the classroom so quickly.
- The whole pedal experience was helpful in learning what to do differently in the future (if pedals were ever introduced again)
- Students really enjoyed using the pedals and they thought they were fun. The pedals helped them to release some energy in a way somewhat similar to "heavy-work"
- Pedals would be better for classrooms if they were connected to the chair or desk so students couldn't mess with them (take them apart) or move them as much. This would stop the pedals from being wobbly as well
- Kindergarten – 2<sup>nd</sup> grade students did not have difficulty physically using pedals

- Students were able to get their energy out with pedals, but the effects did not last for more than 15 minutes and they frequently tried to go to use the pedals. Students also made noise that distracted others while pedaling
- Long term changes from the pedals were not possible to determine because kids mature throughout the year
- It took a long time for the new-ness and excitement of the pedals to wear off. Probably because this is not a traditional classroom population that stays in the same class all day.
- An ideal number of pedals to have per classroom would be enough for each child who needed it to have one. Pedals could almost be a tool that was listed on an IEP like “can use pedal as needed”. This could be something used by students when they used a break card. Not everyone needs the pedals but it is tough to determine who does. It would be most ideal if all students could have a pedal for a short trial period, then those who didn’t need the pedals could give theirs to another classroom.
- After pedals were used for a while students were able to tell when someone needed to go take a break. They were able to better recognize and empathize with their classmates when peers became fidgety, hyper, or distracting. They would point this out to the teacher and recommend that person take a pedal break. These students also recognized when they needed to take a break, but the teacher worried they just acted out (pretending) to get a chance to pedal.
- Last year teachers sent some students over to use pedals because the ones in their classroom weren’t available. This year teachers still sometimes send students over for breaks and even though this is not fair, the breaks are still honored because the interviewed teacher does not want students to experience their homeroom teacher’s frustrations towards them.
- It is believed that personal problems and negativity should be left at home because students need and deserve their teachers to be positive and happy because this is not guaranteed for their home experiences.

Miss Early – (emailed on 5/25/2015; received confirmation of accuracy on 5/25/2015)

- Teaching philosophies include that every child can learn, but first you have to figure out how to teach and motivate them. It is important to like kids, because kids aren’t easy and kids aren’t nice to one another. There is no one fix all for everybody.
- Sometimes it can be frustrating to work with parents and families. Sometimes families are so involved that they coddle students too much and don’t let them learn from their own mistakes to become successful adults. Instead they choose to blame the teacher for everything that they don’t like. Not all parents are receptive when given teacher feedback, so battles need to be chosen carefully with families.
- Pedals were initially introduced to your classroom to assist students with getting rid of energy in a way that wouldn’t distract peers and just to try something new. Brain breaks, stretch breaks, and fidget tools were already being used in class.

- When pedals were introduced, teacher would ask students to try out the pedals. When other students wanted to try pedals a rotation schedule was put together.
- The students that the teacher wanted to use the pedals stopped using them after the novelty wore off.
- Positives of pedals: students last year were able to rotate and share pedals; students last year were able to concentrate better; kept legs active during silent reading; first group was able to share (positives were canceled out this year by the disruptions caused); last year students felt they could better control themselves and release energy; pedaling also seemed to build confidence
- Negatives of pedals: students were very competitive with them – as soon as someone gets up, someone else snatches their pedal; pedals had to be removed for a little while; competitiveness would have been problem with this group even if more pedals had been available.
- Pedals were mostly used during independent work, especially when reading.
- You are up for trying pedals again with a different group of children – and the way the pedals were introduced will probably be kept the same
- Last year, pedals enforced the classroom community – family feeling – because students cooperated and shared
- This year's group of students is more difficult to motivate to show appropriate behavior; this group also shows a lack of responsibility and respect, especially compared to last year's students
- An ideal number of pedals in a 25-student classroom may be five.

Nature Nut – (emailed on 5/13/15; received confirmation of accuracy on 5/21/2015)

- Teaching philosophy is heavily influenced by desire to incorporate 21<sup>st</sup> century skills, creativity, experiential learning, and outdoors
- Pedals were originally incorporated as tool for students with ADHD (or similar symptoms) to get energy out and hopefully assist with focus and attention
- Pedals were offered to all students, but were eventually only used by those who felt they needed them – these were also the students identified by the teacher as needing to use them
- Pedals were distracting for some students to use – these are the students who did not continue to use pedals after initially trying them
- At first noise from the pedals were a distraction to the teacher and a few students, but the teacher and students got used to this
- Would have used the pedals this year, but did not realize they were still available
- Pedals can only benefit students if they sit down long enough to use them
- Students who truly benefited from pedals were seen using them during tests to get nervous energy out

- More teachers have been seen giving movement options (standing instead of sitting, etc.) in the classroom since the pedal concept has been introduced to the school – a correlation is suspected
- Students were consulted for their opinions on pedals in the class – students who chose to use them consistently reported benefits: got energy out, able to focus more, felt more comfortable (teacher noticed same benefits) – students who did not want to continue using them reported negatives: they break, they squeak, I hit my knees, they're not comfortable.
- Not all pedal users pedaled through the entire lesson
- Pedals helped some students stay out of trouble: they weren't distracting/bugging their peers, they were being productive members of their groups and whole class discussions; they were more on task
- Teacher tried to make pedals available (in a fair way) to students that really seemed to benefit from use
- Some students preferred the cushions to pedals
- Potential Negatives: It took about 3 weeks for the newness of pedals to wear off, storage of the pedals is an issue because there is no room in the classroom
- Ideal classroom amount = 4 pedals
- Students were excited over using pedals in the class; added enthusiasm to class

Penny – (emailed on 5/25/2015; received confirmation of accuracy on 5/25/2015)

- Your teaching philosophy differs from some other teachers' because your class is unique. Your philosophy includes doing lots of hands on activities and whole-brain teaching to enhance students' learning experience.
- Your class curriculum focuses more on social interaction and life skill lessons to best prepare your students for the future. Students in your class require a highly structured setting and small group or one-on-one instruction to find success. One difficulty you've had with the large age-range of your students (other than teaching such a large range of abilities) is lacking good social skill role models. Not all students are verbal, which makes teaching conversation components difficult when students need to practice with peers.
- Some students join your room to take breaks (who are in EC program) there are also students who join your room to help as a reward they've earned (these students are in EC and standard education programs).
- Pedals were introduced to your classroom last year because when you heard about them you thought "Why not?", you could see if they worked and if not, remove them. You weren't able to use them again this year because one of your students would have thrown them to gain attention. You also mentioned potentially trying them with students in the future if the personalities of your students allow it.
- Last year you used pedals with students who had ADHD to help them focus while working and also with a student who had a difficult time controlling his anger. If this

student got frustrated they would go “pedal it out” until they got their energy out. Pedaling was a calming tool.

- Pedals were used with their feet and arms. One student was able to inform teacher when he needed to pedal, but would still work at the same time.
- Positives of pedals: helped develop core strength so student no longer sat in ‘W’; helped students get physical activity they don’t get at home; students learned a new type of coping mechanism; helped one student learn to control anger; helped teacher think of more “out of the box” coping tools for students; students who used pedals last year no longer need them to cope; students learned to focus on learning while moving feet
- Negatives of pedals: student smacked himself in the face when arm-pedaling and stopped paying attention; pedals can be thrown across the room
- Using pedals in the classroom has supported your philosophy of incorporating movement and teaching kids coping mechanisms in social skills. Some students need to be able to move to learn and think. Pedals are a way to allow students with ADHD to get energy out while sitting so they aren’t as focused on needing to stay still.
- When the pedals were first introduced to the classroom, the class community was angry and more agitated. After introducing and teaching students how to use pedals, the instances of kicking and screaming went down and the class environment was calmer. Pedals helped create an environment where the teacher could teach and students could learn
- All the improvements noticed could have been a combination of things, but it was all triggered by the introduction of the pedals.
- Teacher discovered that pedals could help with emotion regulation after noticing a student run across the room when they were upset.
- When you personally tried the pedals you discovered that they did not help and sometimes made you more hyper (similar to what happened with one of your students). You continued to try the pedals during planning to conclude that they did not work for you because they made you so wired.

Steelers Fan – (emailed on 5/25/2015; received confirmation of accuracy on 5/29/2015)

- You feel like your teaching philosophies have changed through the years and the needs of the different students you’ve taught have influenced these changes. You don’t like to keep things the same if they can be changed and improved. The character students learn and the life experiences they get to have throughout the school year is important. Being a parent also changes the way you teach. Its okay for kids to make mistakes and they learn through these mistakes.
- Last year your students were calmer, independent, and were able to get through tougher class activities (like completing notebooks). This year students are more energetic, athletic, and are more motivated to do simple tasks (like labeling a diagram of a colony of ants).



- Pedals are left in the back corner and students come and get them when they want to use them (during independent time, small group work, or free time). Pedals are mostly used when students are partner reading. When students have questions that need to be answered, you allow them to talk about them out loud instead of making them write when they are on the pedals. Students decide if and when they use pedals, you never ask anyone to pedal.
- Positives with using pedals: helps children with built up energy release some of it, fun for students to use while reading, students relate the pedals to being fit and exercising, exercise can stimulate the brain, students aren't as restless with the pedals, they don't roam the room when pedaling, when pedaling students seem less interrupted and sometimes are so focused they have to be called back to participate with the rest of the class.
- Negatives with using pedals: when you are teaching the whole class (like for 15-20 mins.) pedals can be distracting, students have argued over who gets the pedals – but has taught sharing which is positive
- Students who like to pedal have to share. They do well with sharing.
- When pedals were first introduced, students were able to demonstrate the correct and incorrect ways to pedal (incorrect ways were silly)
- Tried pedals in class to see if they would work because teachers should accommodate the needs of all students in the classroom and make school interesting. Also, why not give students the opportunity to try the pedals? If a teacher doesn't help students have new life experiences then they are not doing their job to the fullest. If pedals help one kid then they're amazing.
- Four pedals would be an ideal number for the classroom so two sets of partners could read at once.
- It is suspected that students' reading levels improve from the time they stay focused on reading while pedaling, but this is hard to say for sure.
- Students are able to tell when they have some nervous energy they need to release. By releasing this with pedals they are able to avoid annoying their classmates and get out energy
- Bringing the pedals into the classroom has increased the amount of productive communication students have between each other. They have good book discussions while pedaling. Otherwise, some students may not have spoken to each other, which helped build some friendships. Pedals also keep some students on task and focused while they multi-task by pedaling.
- You plan on keeping pedals in your classroom for your students to try out next year.

Wilma – (emailed on 5/25/2015; received confirmation of accuracy on 5/26/2015)

- Your teaching philosophy is that you believe all children can learn and it is important to you that your children feel nurtured and learn to be good citizens. You also give your kids a lot of choice so they know the classroom is their space, not just yours.

- A lot of pressure is put on testing in 3<sup>rd</sup> grade. Some factors that add stress include some assessments being on computers, computer issues, students not taking computer tests seriously, and tests being scheduled in the afternoons.
- Its important for students to understand that the goal of assessments is to show growth and they should be proud of the growth they make.
- The decision to try pedals in the classroom was made because you like to try new things to give them a shot for the kids. It was important to you that kids didn't feel hurt that they didn't have the opportunity to try the pedals. You also thought some could really benefit from the pedals. The initial thought was *might as well try it*, at least until it bothers someone.
- Students were allowed to use pedals whenever they ask, but they are typically only used during "read to self" time for students. A student previously tried to use them during math by using a lap desk, but it didn't work too well.
- Sometimes you can't concentrate when students are pedaling because they squeak
- Pedaling is not something that all students like to do.
- Students who ask and seem to enjoy the pedals the most are the most active kids. One can sit and read better with the pedals because they keep him from jumping up and down and allows him to really read. This student will not read for 20 full minutes without the pedals
- One less coordinated student tried recently to pedal and was not able to get a good rhythm so he stopped (while pedaling he caused a lot of noise because he is "clumsy").
- Negatives of pedals: the students sometimes fuss over them - This was more frequent when pedals were first introduced, but students work it out; students trip over them when they are not put away properly; there is not enough room to store the pedals in the classroom easily (especially if more were brought in)
- Positives of pedals: pedals helps students build up to the 20-minute time length for daily 5 (expectations and modeling also helped implement the daily 5); students think pedaling is fun, it helps some students, it makes students choose read to self more often; hopefully the ability to read longer with the pedals helps the student to become a better reader; being able to give students another choice to move around and be active; behaviors have improved during reading time (students don't wonder around and bother others when they have the pedals).
- The classroom community has changed a little bit because communication has been increased between the students and teacher and students with students. Students have to ask to use the pedals and they must problem solve with each other if someone is using the pedals or cushions and they want them.
- Four pedals would be most ideal for your current class size especially when considering which students currently use the pedals most, you currently only have two pedals.

Wonderful World – (emailed on 5/25/2015; received confirmation of accuracy on 6/16/2015)

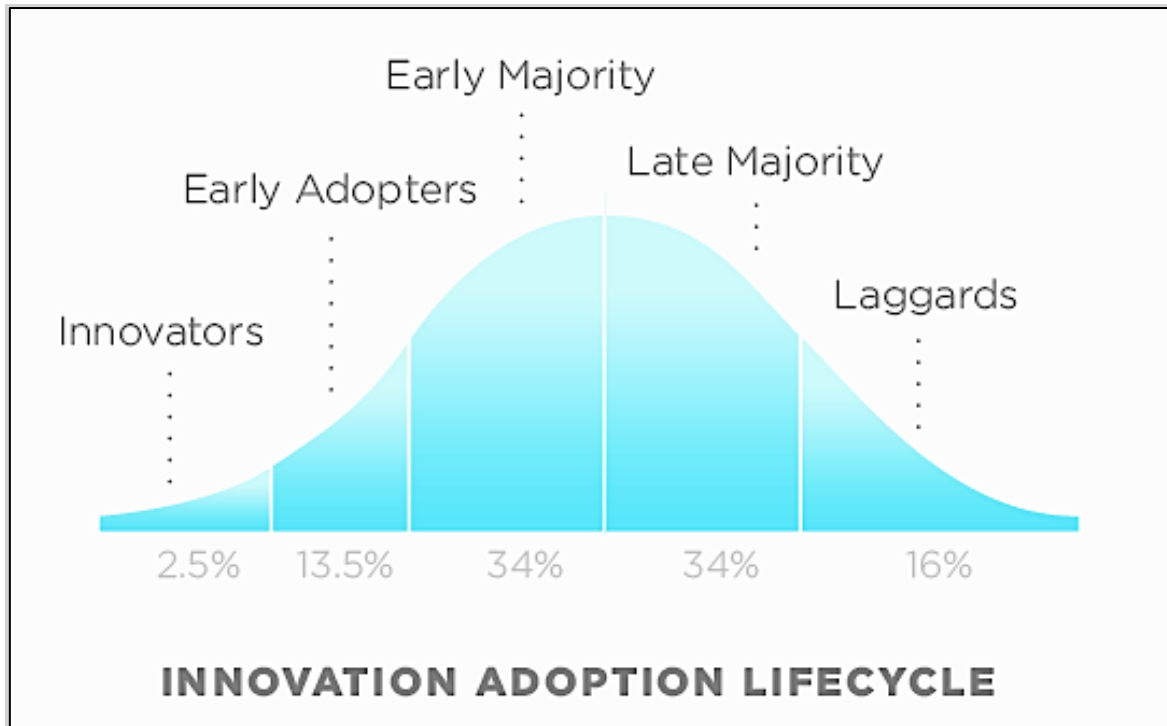
- Your teaching philosophy includes knowing that every child learns in a different way and every child comes to the classroom with different needs based on their individual characteristics and their life experiences.
- Learning in your classroom is not intended to be “fun” instead your goal is to keep students engaged by tapping into their natural curiosities.
- The culture of your classroom is structured, but forgiving and overall fosters student independence and taking responsibility for ones own learning.
- Your initial decision to try the pedals in your classroom was made after you considered if they would be feasible to introduce to your students. The use of pedals seemed like a potential tool to use for students who had previously tried fidgets in your classroom. This decision was because you thought: “what could it hurt”, “why not” and “if it might help even one or two of my kids it’s worth it to me”.
- Pedals were introduced to students by going over ground rules for how they should be used and how they shouldn’t be used. Both years that pedals have been in your classroom the use of them has been based on student preference and choice. This year pedal use is also on a first come-first serve basis, which coincidentally helps with getting students to class a little quicker
- One fascinating occurrence this year includes the frequency at which one of your math+ students uses a pedal. It appears as though he doesn’t even realize he is pedaling most of the time and this is not a student you would have initially assumed needed to use a tool such as the pedal.
- Initial thoughts about which children would and would not use pedals have been wrong, making it difficult to predict who may truly benefit and enjoy using them.
- Some positive outcomes of pedals being used include improvements in: moods of some kids, focus, antsy-ness, and anxiety (maybe because exercise relieves stress or because pedaling gives alternative activity to focusing on worry).
- Negatives: competition over who gets pedals (when first introduced), maintenance
- There are no adverse affects on the kids at all – everything has always been positive (which is why they continue to be used)
- Change in student performance is difficult to determine because pedal use has not been tracked and personal/social change is also difficult to speak to because students are naturally going through so many changes in 5<sup>th</sup>/6<sup>th</sup> grade
- Classroom community did not really change with pedals being added because so many alternative learning strategies and tools were already made available for students (such as eating in class, having water, using fidgets when needed, etc.)
- Parents have been supportive of pedal-use when they’ve heard about it and teacher-colleagues wanted to try them in their rooms
- An ideal number for a classroom would be about 10 and you plan to keep pedals as a part of your classroom as long as you teach.

ZOLA – (emailed on 5/25/2015; received confirmation of accuracy on 5/25/2015)

- Teaching philosophy includes students doing a lot of group work and independent exploration to learn while the teacher acts as a facilitator. Lecturing is only necessary for a very short amount of time to introduce new concepts or activities.
- Small groups conducted with the teacher are used to support learning and assess what students know.
- To support independence, students are allowed to work at centers at their own pace until this privilege is misused or grades drop. Then additional teacher check-ins and direction from the teacher are implemented.
- Some students are more difficult to keep motivated and they don't care as much if their grades drop (these individuals have to have their work looked over, unlike their more motivated peers)
- You thought using pedals might be more entertaining than just sitting in a seat. The pedals seemed like a good idea and since your kids like to move you thought they might like them. For all these reasons, you chose to use pedals this year.
- Students are allowed to use pedals while doing station work, some students are allowed to pedal while you are teaching, and others are only allowed to use them during independent work (but not during direct instruction because they get distracted). Some students have difficulty listening while pedaling, but students are able to regulate their pedal use on their own.
- Students who like to use the pedals get to rotate using them every 20 minutes. There are four pedals in the classroom.
- When you introduced the pedals in your class you gave clear expectations and explained that students could use them if they felt they needed them or to get energy out.
- You never chose who used the pedals you let students decide, which ended up working out with the children who needed them getting to use them.
- It was surprising to see some of the quiet girls loved to use the pedals.
- If students are not forced to pedal, it is more of a privilege and they want to do it.
- Positives of the pedals: keeps some kids more focused, decreases amount of time spent walking around the classroom, keeps students awake and alert, students stay in seats when pedaling out of fear that someone else will take their pedal
- Negatives of the pedals: some students pedal too fast and act goofy with the pedals, but the teacher corrected this quickly.
- The pedals are not noisy and cannot really be heard
- Four pedals work well for your classroom because students still see using them as a privilege because they might not get to use them everyday
- You felt like bringing pedals into your classroom helped you to build rapport and gain respect from your students. This may have also helped them understand that you care for them, which is important to you.

## Appendix K

### Innovation Adoption Lifecycle



This image illustrates Rogers' five levels of readiness or adoption in which individuals identify when a new innovation is introduced. In *Wikipedia*, n.d., Retrieved July 25, 2015, from [https://en.wikipedia.org/wiki/Technology\\_life\\_cycle](https://en.wikipedia.org/wiki/Technology_life_cycle). "DiffusionOfInnovation". Licensed under CC BY 2.5 via Wikipedia - <https://en.wikipedia.org/wiki/File:DiffusionOfInnovation.png#/media/File:DiffusionOfInnovation.png>. Adapted with permission.