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Teacher Perceptions on Flexible Seating in the Classroom: Effects on Student Engagement and Student Achievement

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A candidate for the degree of Doctor of Education
And hereby certify that in their opinion it is worthy of acceptance

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Teacher Perceptions on Flexible Seating in the Classroom: Effects on Student Engagement and Student Achievement

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Abstract

This qualitative study explores the perception of teachers' use of flexible seating in the classroom on student engagement and student learning. The researcher analyzed qualitative interview data to answer the following research questions: 1) What are elementary teacher perceptions regarding uses of flexible seating in the classroom? 2) What are elementary teacher perceptions on the influence of flexible seating on student engagement? 3) What are elementary teacher perceptions on the influence of flexible seating on student achievement?

The purpose of this study was achieved by interviewing general and special education teachers who teach pre-kindergarten through sixth-grade in Missouri who use, have used, or have never used flexible seating in their classroom. Using the data from these interviews, this study identified common themes around the use of flexible seating among the fifteen teachers interviewed. Under the themes of advantages, comfort, choices, and increased engagement/focus were discussed. Falling under the disadvantage themes were classroom management, too much choice, and cost. For the second research question, themes of student movement, student engagement, students on task, and differences in student behavior were discussed. For the third research question, themes identified were flexible seating during independent work and students being comfortable as a way to improve student achievement.

This study provides insight into how those involved use flexible seating to engage students during instructional time and work time. In addition, the literature studies involving stability balls for those students who may need extra movement due to having

ADHD, Autism, sensory disorders, or just need more movement showed positive results for student engagement. In addition, the data showed when students are comfortable, they are more likely to be engaged which could lead to better student achievement.

The results from this study could help school districts and teachers get more student engagement by the seating items or the arrangement of students' seating in the classroom by giving students more movement throughout the day. Results also pointed out that classroom management and explanations of the flexible seating items is an important part of having a successful flexible seating environment.

Dedication

I would like to dedicate this dissertation to all the teachers who have ideas that may be a bit out of the ordinary, but willing to try new things to help their students be successful. There are always ups and downs, but know, you make a difference. Keep doing what is best for the students and don't forget to take a chance to learn from your students.

Acknowledgments

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To my children, Maddi and Luke. I am so thankful for both of you. I hope you know how much I love you and how much joy you have brought to my life. Never stop learning, keep striving to better yourself each day, and always stay humble and kind.

I would like to thank my parents. I thank you from the bottom of my heart for instilling in me the importance of loving others and working hard. Your love and encouragement throughout my lifetime are unmeasurable and I pray that you know how much you mean to me. To my Daddy, who gave me the name Pepper, this Dr. Pepper is for you!

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Chapter One

Introduction

Background of Study

At the beginning of every school year, educators spend a plethora of time gathering information on the latest research on how every child learns and preparing their classrooms to be ready to help each student in their classroom become successful. The lesson planning that educators spend hours on contain not only the 'what' they will be teaching, but also the 'how' they will be teaching, along with how they will respond if students don't learn it. Going even deeper, teachers have to have a plan on what to do when students are not engaged in the lessons, and in return, not learning. According to Education Week, a survey conducted by Gallup in 2016, found that only half of the adolescents reported feeling engaged in school (Brenneman, 2016) and for years, educators and researchers have tried to find the best ways to keep students engaged.

A few studies show that movement is a prerequisite for learning (Krog & Kruger, 2011), movement and physical activity anchors learning (Hannaford, 1995; Krog & Kruger, 2011), and exercise boosts brain function (Medina, 2008). Reconnected Kids author, Dr. Robert Melillo says "...muscle movement is important motor stimulation for the brain" (Melillo, 2011, p.27). Without moving, kids' brains won't grow (Melillo, 2011). According to Dr. Stuart Grauer (2013), the average student sits 4.5 hours on a school day. Some researchers believe incorporating flexible seating into a classroom provides more opportunities for students to move throughout the day, which increases blood flow to the brain and promotes mental clarity (Abdelbary, 2017). Flexible seating allows the students to move and change physical positions, therefore providing them with

vestibular input, proprioceptive input, and discrete physical activity (Schilling & Schwartz, 2004).

Uses of flexible seating in school classrooms are fairly new; however, occupational and physical therapists have been using the concept for a while. While working with children with sensory-motor disorders, autism, and attention deficit hyperactivity disorder, the concept of moving while learning has been known to help their on-task behaviors. Children who display sensory processing deficits show attention, motor, cognitive, and/or social-emotional skill deficits, which affect school performance (Golos, Sarid, Weill, & Weintraub, 2011). The over-responsivity or under-responsivity and sensory seeking behaviors appear as poor attention, impulsivity, lack of self-control, being out of the seat, and rocking in a chair (Ashburner, Ziviani, & Rodger, 2008). This study is intended to examine teacher perceptions on the influence of flexible seating uses with children who have difficulty staying engaged in the classroom. The researcher is interested in examining perceptions with special needs teachers and general education teachers to determine the influence of flexible seating on student engagement and student learning.

Research on uses of flexible seating in the classroom and its influence on student engagement is limited. With the constant pressure of schools to get every child "college-ready", improving test scores is at the top of every educator's list. To improve test scores, students need to be engaged in the classroom (Fredricks, Blumenfeld, Friedel, & Paris, 2003) but some research has shown that students sit for most of a school day. Sitting still in a chair reduces students' awareness of physical and emotional sensations, and increases fatigue (Braniff, 2011). Once fatigued, a student's engagement, concentration,

and attention are reduced, often resulting in discipline problems (Jensen, 2005). Raney, et. al (2017) stated in schools where frequent breaks and movement from seatwork are incorporated, student focus and academic achievement increases (Raney, Henriksen, Minton, & Lynch, 2017; Howie, & Pate, 2014).

Statement of Problem

Brain research suggests movement supports success in school, fuels the brain with oxygen, and is known to increase the baseline of new neuron growth (Jensen, 2005; Hannaford, 1995; Sattelmair & Ratey, 2009), yet the expectation in today's school settings often remains for students to sit in a chair and listen for the majority of the day. Research has also led us to know that the part of the brain that processes movement is the same part of the brain that processes learning (Jensen, 2005) and when students are allowed to use the bodily-kinesthetic intelligence, they learn by moving, touching, and making things (Al-Wadi, 2012; Brualdi, 1996). Alternative seating options have been found to influence student behavior and engagement in the classroom (Burgoyne & Ketcham, 2015; Fedewa & Erwin, 2011; Bagatell, Mirigliani, Patterson, Reyes, & Test, 2010; Haghighi & Jusan, 2012). While there is not a lot of scholarly research on flexible seating, brain-activation research has shown an increase in students' attention to task, in-seat behavior, and writing legibly while seated on stability balls, which is one type of flexible seating (Boone, 2016). This study is intended to expand research on educator perceptions of the influence of flexible seating on student engagement and achievement in elementary and special education classrooms.

Purpose of Study

The purpose of this study is to examine the perception of teachers' use of flexible seating in the classroom on student engagement and student learning. The researcher will

examine teacher perceptions on the effectiveness of flexible seating options using therapy balls, also known as an exercise or stability ball, tall and/or wobble stools, floor cushions, bean bag chairs, and standing, in relation to student engagement and learning in elementary classrooms based on teacher perceptions. The researcher believes teacher perceptions are important because they are based on the teachers' prior knowledge of student behavior and whether flexible seating is perceived by teachers to improve student engagement and student learning. The study includes general education teachers, gifted teachers, special education teachers, as well as teachers of Attention Deficit Hyperactivity Disorder (ADHD) and Autism Spectrum Disorder (ASD).

Significance of Study

This research may be useful to educators who are interested in improving student engagement and student learning in elementary classrooms. Exploring the relationship between flexible seating and student engagement may be valuable to teachers who struggle to keep their students' attention, schools struggling to reach accreditation, or schools wanting to improve their academic scores. With the growing number of children being diagnosed with attention problems, this research might lead towards helping teachers of upper grades with students who have difficulty staying on-task. This study sought to broaden the knowledge of flexible seating in classrooms and provide information to teachers who are looking for other ways of keeping their students engaged.

Definition of Terms

Achievement Growth. Academic progress made over a period of time, as measured from the beginning to the end of the defined period (The Glossary of Education Reform, 2013).

Autism. A range of conditions characterized by challenges with social skills, repetitive behaviors, speech, and nonverbal communication, as well as by unique strengths and differences (Autism Speaks, 2018).

Attention Deficit Disorder (ADD). A developmental disorder that is marked especially by persistent symptoms of inattention, hyperactivity, and impulsivity or by symptoms of all three and that is not caused by any serious underlying (Melillo, Reconnected Kids, 2011) physical or mental disorder (Merriam-Webster, n.d.).

Attention Deficit Hyperactivity Disorder (ADHD). Includes a combination of persistent problems, such as difficulty sustaining attention, hyperactivity, and impulsive behavior (Mayo Clinic, n.d.)**.**

Bodily-Kinesthetic Learning. A learning style in which students learn by doing physical activities or by doing things with the hands, rather than listening to a lecture or watching someone else do something (George Lucas Educational Foundation, 2009).

Flexible Seating. Having a variety of seating and furniture options at different heights, different positions, and easily moveable so students can work at different heights and in different positions. May also be referred to as alternative or optional seating. (Paterson, n.d.)

Intelligence. As defined by Howard Gardner (Human Intelligence, 2018), "an ability to solve a problem or fashion a product which is valued in one or more cultural settings".

Movement. Movement is the umbrella term that covers all motion; movement is not being still (Blaydes, 2012)**.**

Off-Task. When a student completely disengages from the learning environment and task to engage in an unrelated behavior (Baker, 2007).

On-Task. Also known as time on task, is the amount of time a class is productively engaged in learning (Mitchell, 2013).

Stability Ball. May also be referred to as an exercise ball, or a therapy ball, it is a firm, very large, usually inflatable ball used in various exercises, chiefly to strengthen the back, pelvis, and abdominal muscles (Dictionary.com).

Student Engagement. The degree of attention, curiosity, interest, optimism, and passion that a student shows when they are learning or being taught (The Glossary of Education Reform, 2016)**.**

Theory of Multiple Intelligence. The theory from Howard Gardner states that each person has different ways of learning and different intelligences they use in their daily lives (Herndon, 2018).

Theoretical Framework

Howard Gardner, professor of education at Harvard University, researched and developed theories based on human learning. His Theory of Multiple Intelligences was based on the belief that every person is intelligent in more than one area and has strengths (intelligences) in some areas and weaknesses in others (Al-Wadi, 2011; Gardner & Hatch, 1989). Multiple intelligence is said to be "child-centered" as educators look at how the child learns and then develops curriculum, instruction, and assessment based on this information (Hoerr, 2002). One of the seven intelligences in Gardner's Theory of Multiple Intelligences, the bodily-kinesthetic intelligence, provides the framework for this study. Howard Gardner took much cognitive research into consideration while developing his idea of multiple intelligences (Lane, 2008; Herndon, 2018). Carla

Hannaford, author of Smart Moves: Why Learning is Not All in Your Head (1995) says, "What we know, feel, learn and think is shaped by how we know, feel, learn, and think" (p. 29). This science is based on how the brain works and knowing why we do what we do, and how we learn.

The bodily-kinesthetic intelligence is an ability to use one's own body to create products or solve problems (Davis, Christodoulou, Seider, & Gardner, 2011) and challenges the belief that mental and physical activity are unrelated (Brualdi, 1996). Research has confirmed that being engaged activates more of the pleasure structures in the brain than doing simple memorization tasks (Poldrack, et al., 2001). Working with children with sensory-motor disorders, autism, and attention deficit hyperactivity disorder, the concept of moving while learning has been known to help on-task behaviors. Children who display sensory processing deficits struggle with fulfilling grade level requirements, and show attention, motor, cognitive, and/or social-emotional skill deficits, which affects school performance (Golos, Sarid, Weill, & Weintraub, 2011). The over-responsivity or under-responsivity and sensory seeking behaviors appear as poor attention, impulsivity, lack of self-control, being out of their seat, and rocking in a chair.

This research study also takes into consideration the theoretical framework of brain-based education and how movement and exercise are correlated with the brain and how a child learns (Jensen, 2005). There are scientific reasons to move, but plain and simple, it helps us learn. Brain-based education is a field that has been constantly evolving over the last 20 years. Jensen (2005) explains when students are active, their energy stays up and their brains are getting the oxygen-rich blood needed for the highest

performance. Physical movement increases the energy of students that can enhance their engagement,(Boone, 2016) and kids are less likely to be disruptive when they are active (Yancey, 2006).

The bodily-kinesthetic intelligence and brain-based education are the two theoretical frameworks the researcher used to examine teacher perceptions of flexible seating in elementary classrooms. Flexible seating gives students extra movement and those who need extra sensory input, or who need to get their wiggles out, the perfect opportunity for much-needed movement (Drobnjak & Heffron, 2016; Lynch, 2010).

Research Questions

1. What are elementary teacher perceptions regarding uses of flexible seating in the classroom?
2. What are elementary teacher perceptions on the influence of flexible seating on student engagement?
3. What are elementary teacher perceptions on the influence of flexible seating on student achievement?

Limitations

For the purpose of this study, only elementary teachers were selected to participate in a suburban public-school district; therefore, results may not be generalizable to all school districts. Factors outside the control of the researcher could influence the results of this study. These factors may include: teachers have different teaching and classroom management styles and student expectations for the use of flexible seating may vary by teacher.

Delimitations

The researcher has focused this study on teachers who work at the elementary level in suburban, urban, and/or rural schools in public-school districts in western Missouri to gain an understanding of the influence and use of flexible seating in the classroom on student engagement and student learning. Therefore, the results are not generalizable to other elementary schools, middle schools, or high schools in the United States.

Assumptions

The assumptions of this study were participants had similar years of classroom experience, classroom management skills, and students were taught expectations for each alternative seating mechanism prior to using. The researcher assumed participants responded honestly to the interview questions and the analysis of data by the researcher reflected truthful perceptions of the participants.

Organization of the Study

This research study is presented in five chapters. Chapter One includes the background of the study, statement of the problem, purpose of the study, significance of the study, definition of terms, theoretical framework, research questions, limitations, delimitations, and the assumptions of the study.

Chapter Two presents a review of the literature, which includes the history of classroom seating, the brain and movement in the classroom, flexible seating, types of flexible seating, advantages of flexible seating, disadvantages of flexible seating, flexible seating and student achievement, and flexible seating and student engagement. Chapter Three describes the methodology used for this research study. It includes an explanation

of the research design, the participants and setting of this particular study, and an explanation of data sources used throughout. This chapter will also focus on the data collection process that will lead to the results.

Chapter Four presents the results of the interviews while further providing information about the interview sites and a description of the interview subjects. In conclusion, Chapter Five provides a summary of what the researcher has gained from the study. It will discuss what the findings actually mean, and what other studies could be needed to further this research.

Chapter Two

Review of the Literature

Introduction

The purpose of this study is to provide a review of the literature regarding the relationship between flexible seating and student engagement and achievement in elementary students. Studies show that movement is a prerequisite for learning (Krog & Kruger, 2011), movement and physical activity anchors learning (Hannaford, 1995; Krog & Kruger, 2011), and exercise boosts brain function (Medina, 2008).

Effective teachers incorporate instructional strategies to promote student engagement, which impacts student achievement. It has been reported that in many schools, the amount of recess has been shortened to make room for more academic time and many children are sitting for the majority of the school day. At home, children have more screen time than ever before and some studies have associated this with lower cognitive abilities, early reading and math skills, and language development (Lin, Cherng, Chen, Chen, & Yang, 2015). The literature in this study provides related studies on the effects of using movement, physical activity, and flexible seating in elementary classrooms as a strategy to improve student engagement and achievement.

Specifically, Chapter Two is organized into classroom seating, the brain and movement in the classroom, diversions, breaks and physical activity in the classroom, the types of flexible seating, advantages and disadvantages of flexible seating, and the effects of flexible seating on student achievement and engagement. The review of the available literature will identify a gap in the literature dealing with flexible seating and its impact on student achievement and engagement.

History of Classroom Seating

Through the nineteenth century, the one-room schools were used for church, community get-togethers, meetings, and lectures. Children of all ages would attend school in this one room. Every student sat at a desk, whether it be a long, wooden pew, or individual wooden chairs and desks that were attached. If they were too far from the stove, they would freeze, but too close to the stove, they would be too hot (Sauceman & Mays, 1999), but all were expected to sit quietly, and still.

In the late nineteenth-century, students began to be seated by their level of ability. This usually meant that younger students were in the front of the room while the older students were in the back. In the early twentieth century, seating arrangements were mostly rows with every student at their own individual desk while sitting on a metal chair. Recently, researchers have found seating arrangements to have more of an impact on student learning, so much that some say that it can positively or negatively affect student performance (Moslemi Haghighi, 2012) while also influencing classroom behavior. In classrooms more recently, you will find more group formations or clusters of desks, so the students are able to collaborate, and problem solve. Research shows that seating locations are related to academic achievement and classroom participation because often the location decreases behavior problems that would lead to less instructional time (Wannarka, 2008). When given an option of where to sit, most students would want the opportunity to choose their seats, and such choice can have much to do with the student's level of participation (Jolivette, Stichter, & McCormick, 2002).

Classroom seat selection and arrangement. While most teachers would see that students sitting by their friends would cause distractions, and believe it is best not to have

students choosing seats while doing independent seatwork (Bicard, Ervin, Bicard, & Baylot-Casey, 2012), some studies have shown that seat selection contributes to whether a student does well or poorly (Perkins & Wieman, 2005). Researchers Axelrod, Hall and Tams (1979) compared student behavior in different seating arrangements in two separate experiments in 1979. One experiment took 17 inner-city second graders, who were below grade level, to see if they had a better study behavior (raising hand, complying with directions) when their desks were seated in a table formation (a group of four, one group of five) or while seated in rows. They used an ABAB design that consisted of table formation (A) and rows (B). The students' desks were in table formation for the first seven days and the mean study level was 62%. The next seven days, the teacher moved the desk into rows and the mean study level for students was 82%. In the following seven days, they went back to the table formation and the study means level went to 63%. They ended the study with desks in rows and the mean study level went up to 83%. The results showed that positive study behavior was more frequent while in the rows. In the second study, Axelrod, Hall, and Tams had 32 upper-middle-class, seventh graders who were on grade level to find which desk formation had less talk-out behavior. The researchers used an ABA design, with desks being table formation, groups of four or five (A) and desks being in rows (B). They found significantly fewer instances of talking without permissions when seated in rows rather than in a cluster where students were face to face (Axelrod, Hall, & Tams, 1979).

Much research has had similar results comparing the students sitting formation of desks to Axelrod, Hall, and Tams. A study in 2000 from the National Training Laboratories found that only about five percent of information delivered lecture style was

retained (Miller, 2008). Many educators have asked what they can do to change this level of retention and what will help students become more engaged in classroom discussions (Cole, 2008). Furniture companies, like HermanMiller, (2008) who supply classroom furniture to schools are looking at research to find other ways of building furniture to encourage more comfortable seating, active learning, and more student engagement.

Sitting in the Classroom

In 2011, researchers at Duke University found that a student's ability to concentrate is one of the best predictors of success (Abdelbary, 2017). Pediatric occupational therapist, Angela Hanscom, has said (as cited in Korbey, 2014) "children spend too much time in a constant upright position which limits their ability to pay attention because their core muscles are not developed enough to keep from fidgeting" (p. 3). While Hanscom says one of the keys to keeping students' attention in school is to develop the vestibular, or balance system, located in the inner ear, it still wouldn't help just to go from sitting to standing. To create a vestibular movement, children need to move their head in all different directions. This is why it is important for children to do whole-body movements like swinging, spinning, and rolling when they are very little for their development (Hannaford, 1995; Jensen, 2005; Dennison, 2006; Lengal & Kuczala, 2010).

James Levine, professor of medicine at the Mayo Clinic, said that "sitting is more dangerous than smoking, kills more people than HIV, and is more treacherous than parachuting" (Levine, Sitting is the New Smoking, 2017). He went on to say that the chair is out to kill us and that we are sitting ourselves to death. Mark Benden, Associate Professor of Environmental and Occupational Health at Texas A&M Health Science

Center, also says that sitting is bad for our health and many challenges like obesity and attention disorders that our children are facing are due to the number of students being in chairs (Benden, Zhao, Jeffrey, Wendel, & Blake, 2014). In his research, 374 elementary students in Texas were divided into two groups; one control group who would be sitting at traditional desks, and the other group who would be standing at standing desks, along with a tall stool. The students in the standing desk group wore Fitbits on their arms to track several measurements, heart rate and intensity of movement, for the researchers were also looking if the benefits for overweight or obese children were more than children of normal weight. For two years, psychologists who were not aware of the study sat in classrooms watching students and measuring their attentiveness and engagement. The findings by Benden showed students who were more engaged in the environment were the ones allowed to stand versus the ones in the traditional seated environment (Benden, Zhao, Jeffrey, Wendel, & Blake, 2014).

The Brain and Movement in the Classroom

Movement in the classroom has been shown to help students be more on-task because exercise helps stimulate the brain (Jensen, 2005; Active Living Research, 2015; Hannaford, 1995). Studies for the past 40 years have shown that movement facilitates cognition (Jensen, 2005), that physical activity anchors learning (Hannaford, 1995), and that exercise boosts brain function (Medina, 2008). The growing field of cognitive neuroscience has begun to provide educators with information of how the brain learns and how as educators, we can help students become successful and confident learners (Blaydes, 2012). Researchers have discovered many things about the brain, one being that "exercise is strongly correlated with increased brain mass, better cognition, mood regulation, and new cell growth" (Jensen, 2005, p. 3). Many studies have directly linked

exercise to the growth of new brain cells, which is called neurogenesis (van Praag, 2008; Lengel & Kuczala, 2010). Due to the development in technology, the activity in the brain can be scanned and analyzed to see the effects of exercise on the brain (Hillman C. , et al., 2009).

Researchers who have studied the brain have learned that the part of the brain that processes movement is the same part of the brain that processes learning (Jensen, 2005). A study done by Dr. Henrietta Van Praag (2008) determined that physical activity improves learning. The reason for her study was to show how exercise impacts neurogenesis (the growth of new brain cells) in the hippocampus, which is the learning and memory center of the brain. It was found that when large muscle movement taxes the muscle, it releases a compound that initiates the growth of new neurons in the hippocampus. More brain cells do not make you smarter, but it gives you more capacity to learn (Blaydes, 2012) and "the harder you use your brain, the more it will grow" (Hannaford, 1995, p.27).

According to Howard Gardner's Theory of Multiple Intelligences, students learn and understand in different ways, one way being kinesthetically (Davis, Christodoulou, Seider, & Gardner, 2011).

Movement-based learning. Paul E. Dennison's research in the 1960s on movement-based learning, led him to create Brain Gym. "Brain Gym (2006) consists of integrated, cross-lateral, balance-requiring movements that mechanically activate both hemispheres of the brain via the motor and sensory cortexes, stimulate the vestibular (balance) system for equilibrium, and decrease the fight-or-flight mechanism" (p. 8). The right and the left hemispheres must work in harmony for the brain to function normally

(Melillo, 2009). Occupational therapists work on incorporating movements that cross the midline of the body realizing that these integrated movements force the two hemispheres to work together, which helps students prepare to learn and focus the brain to improve concentration (Dennison, 2006; Lengel & Kuczala, 2010).

Movement in the classroom is needed to enhance circulation, to get more oxygen to the brain (Jensen, 2005), and to stimulate brain function (Dennison, 2006). Flexible seating can promote core strength, balance, coordination, and posture (Delzer, 2016; Smith System, 2017). When students sit on a therapy ball or a wobble chair while the teacher is talking, the students are adjusting, so they do not fall too far to one side or the other (Lynch, 2010). Weak core muscles are one reason some kids begin to fidget while remaining too long in one position. While sitting or standing in alternative seating options, they build core strength and build coordination while also staying engaged in the lesson (Drobnjak & Heffron, 2016).

Diversion, Breaks, and Physical Activity in the Classroom

Humans are not made physically, or mentally, to sit still (as cited in Ravn, 2013) and many find it difficult to focus on a task for an extended period of time. Alejandro Lieras, University of Illinois (2011), didn't believe the thought that people lose attention when performing or focusing for a long amount of time. In a study from the University of Illinois at Urbana-Champaign, research showed that brief diversions from a task can improve one's ability to focus for a prolonged period. Their study had 84 study subjects and they would all perform a 50-minute repetitive computerized task. Participants were divided into four groups; the control group who would do the 50-minute task without breaks or diversions, the switch group who memorized four digits prior to the task and

told to respond when they saw one of the digits, the no-switch group who also had four digits to memorize before the task but did not have any of the digits show during the task, and the digit-ignored group who were shown the same digits given to the switch groups but were told to ignore them. Most participants' performance significantly declined over the course of the task, but those in the switch group saw no drop in their performance over the 50 minutes. Having them take two brief breaks from their main task, which was to respond to the digits, allowed them to stay focused during the whole experiment (University of Illinois at Urbana-Champaign, 2011).

Active Living Research (2013) researched the impact of programs created to give students activity breaks in the classrooms as a way to increase physical activity and time-on-task among children. The Texas I-CAN program incorporates movement into the classroom lessons, in 10-15 minutes, to achieve academic curricular goals (Grieco, Jowers, & Bartholomew, 2009). Students had small increases in time-on-task after an active lesson, although not statistically significant. However, there was a significant decrease in time-on-task after students participated in an inactive lesson (Active Living Research, 2013). Another program called The Energizers, allows students to stand and move in 10-minute intervals using teacher-led activities (Mahar, et al., 2006). The students showed a 20 percent improvement in on-task behavior among the least on-task students after participating in The Energizers program.

Instant Recess® is a program used to introduce 10-minute physical activity breaks in the classrooms on a schedule determined by the teachers (Glover, Ham, & Yancey, 2011). The results from Instant Recess® were significant, showing an 11 percent

increase in the percentage of time students devoted to on-task behavior (Active Living Research; Glover, Ham, & Yancey, 2011).

The Physical Activity Across the Curriculum (PAAC) program promoted 90 minutes per week of active academic lessons through moderate-to-vigorous physical activity and was a three-year controlled trial (Donnelly, et al., 2009). Children participating in the PAAC evaluation experienced greater improvements in composite, reading, math, and spelling scores compared to children in control schools (Active Living Research). Another program for elementary school students is the Making the Grade with Diet and Exercise (Sibley, et al., 2008). This program consists of teacher led activities for 10-20 minutes at the beginning of each school day. It was found that the number of discipline referrals was 58 percent lower after implementing the program than it was before the program (Active Research Living). The academic performance improved dramatically after implementing the program also, going from passing one of the current state indicator proficiency tests before the program, to passing all three tests after implementing the program (Sibley, et al., 2008).

Physical activity in the classroom. Since the No Child Left Behind Act was created in 2001, the focus on higher academic achievement has been at the forefront of many school districts. As the push for academics gets stronger, the need for more academic time in the school day needs to be established, and this has often been done by cutting physical education classes (Howie & Pate, 2012). Researchers have been examining the connection between physical activity and academics for more than 50 years, and while some studies have reported small, negative associations, some have found strong, positive relationships between the two (Fedewa & Ahn, 2011).

Charles Hillman, a professor of kinesiology and community health, researched his thought that physical activity would increase students' ability to pay attention, which also would result in better performance on academic tests (ScienceDaily, April 1, 2009). His study tested 9-year-old children, (eight girls, 12 boys) two different days after 20 minutes of rest; and then after 20 minutes of walking on another day. The tests put before the students were a series of stimulus-discrimination tests to assess their inhibitory control. The inhibitory control is being able to concentrate and choose correct answers, even though there are disruptions. Hillman found the students who had 20 minutes of exercise had a higher rate of accuracy, especially when the task was more difficult. They took the research one step further by placing an electrode cap on the students to measure electroencephalographic (EEG) activity. This would measure P3 amplitude which would see how well students were able to tune out interruptions, for instance, noise. The results showed after walking, the children had a larger P3 amplitude, suggesting that students were better able to tune out environmental interruptions, noise, for instance, to still attend to the task and choose the correct answer. After these results, they wanted to see how the 20 minutes of walking related to actual classroom learning. They chose academic achievement tests in reading, spelling, and math for the students to complete after 20 minutes of rest and 20 minutes of walking, on separate days. They found that the highest effect was in reading comprehension, equaling to a full grade level (Hillman, C., et al., 2009).

Similarly, to Hillman's study, Matthew Pontiflex (2013) also did a study showing a direct correlation between children with ADHD and exercise. His study included 20 students with ADHD, and a control group of 20 students without ADHD, ranging from

eight to 10 years old. Both groups were instructed to spend 20 minutes walking on a treadmill and 20 minutes seated while reading on different days, and then given a test. Students played a computer game that assessed their ability to ignore distraction and other stimuli while staying focused. The students were given the Wide Range Achievement Test -3rd edition, to assess performance in reading comprehension, spelling, and math. Both groups exhibited enhanced performance following exercise on tests of reading comprehension and arithmetic relative to following the seated reading condition. Their findings support the need for physical activity throughout the school day, not only for students with ADHD but also for students without the diagnosis (Pontifex, Saliba, Raine, Picchietti, & Hillman, 2013).

Dr. Antronette Yancey, a physician-scientist, has studied the effects of physical activity of developing minds. John Medina points out in his book, Brain Rules, what many others have; that exercise improves children. Children who are physically fit are able to identify visual stimuli much faster, which appears to help them concentrate better (Medina, 2008). In 2002, The California Department of Education (CDE) did a study with 954,000 students who were in grades five, seven, and nine and linked all three grades with higher academic performance to higher levels of fitness. This study matched standardized test scores to the results of the physical fitness test that was state-mandated. Results showed a clear match between a student's academic achievement and fitness scores in all three grades (Scheuer & Mitchell, 2003).

Physical movement increases the energy of students that can enhance their engagement (Boone, 2016) and kids are less likely to be disruptive when they are active (Yancey, 2006). In the book, The Kinesthetic Classroom, Lengel and Kuczala (2010) say

that academic standards can be met, test scores can be improved, and important life skills can be developed by using movement. Students have to be engaged to learn and research has confirmed that being engaged activates more of the pleasure structures in the brain than doing simple memorization tasks (Poldrack, et al., 2001). By adding flexible seating to a classroom environment, teachers foster a positive and comfortable working environment (Carter, 2017) to which might motivate students to be more engaged in the classroom discussions.

Flexible Seating

Some researchers believe incorporating flexible seating into a classroom provides more opportunities for students to move throughout the day, which increases blood flow to the brain, promotes mental clarity (Abdelbary, 2017), and assists children in their learning (Merritt, 2014). Flexible seating allows the students to move and change physical positions, therefore providing them with vestibular input, proprioceptive input, and discrete physical activity (Schilling & Schwartz, 2004). Dr. James Levine from the Mayo Cinic has suggested that the inactivity among children needs to be addressed and his examinations imply that exercise balls in place of chairs address the concern (DiBitetto, 2015). Alternative seating options have been found to influence student behavior and engagement in the classroom (Burgoyne & Ketcham, 2015; Fedewa & Erwin, 2011; Bagatell et al., 2010; Haghighi & Jusan, 2012) and some research suggests that teachers broaden their knowledge about flexible seating in their classrooms.

Flexible seating defined. Flexible seating is the environment where there are a variety of seating mechanisms for students to choose from instead of the typical desk and chair seating in a classroom (George Lucas Educational Foundation, 2015). When referring to alternative seating, the researcher will be referring to, but not limited to

alternative seating such as a wobble cushion, a seat cushion, stability/therapy/exercise ball, standing table, tall stool, short stool, yoga mat, and a wobble stool.

Flexible seating for students with Attention Deficit Hyperactivity Disorder. This researcher believes studies should be examined with flexible seating used with children having Autism Spectrum (ASD) and Attention Deficit Hyperactivity Disorders (ADHD). Examining such studies is important because if the results of these studies are beneficial for students with ADHD, then research involving flexible seating used with all students in the general education classroom might also be conducted. Recently, many educators have been adding some kind of movement break in classrooms, throughout the day, or alternative seating to help students stay engaged (Lengel & Kuczala, 2010; Action for Healthy Kids, n.d.). These short breaks and extra movement give those who need extra sensory input, or who need to get their wiggles out, the perfect opportunity for the much-needed movement break (Drobnjak & Heffron, 2016; Lynch, 2017). Adding flexible seating in the classroom for all students allows movement and a bit of comfortableness (Smith System, n. d.) to those who may have difficulty staying engaged.

Many students first get labeled in the classroom with Attention Deficit Disorder (ADD) or ADHD because of their constant movement. These students are wiggling and constantly turning their heads and fidgeting, so they can stay alert (Hannaford, 1995). According to the Centers for Disease Control and Prevention, in 2011 there was an estimated two million more children reported to have been diagnosed by a doctor with ADHD compared to 2003 (Centers for Disease Control and Prevention, 2013). Asking these students to sit up and pay attention will cause a reduced activation of their brains (Hannaford, 2005). A study from the University of Central Florida, published in the

Journal of Abnormal Psychology, tested 52 boys between the ages of 8 and 12 years old, 29 of them being diagnosed with ADHD. The children performed a series of tasks that tested their short-term memory skills. Researchers noticed the students with ADHD who moved the most while working, performed the best (Moeny, 2015).

Stability balls for ADHD students. ADHD is often associated with poor grades and lower academic achievement scores (Loe & Feldman, 2007). For that reason, many who work with children who have been diagnosed with ADD/ADHD have looked for alternative ways to keep these students focused in the classroom. One alternative seating mechanism that has been tried has been the use of a stability/therapy ball in place of the typical metal chair. While sitting on the stability ball seats, children are given tactile stimulation while they are working on balance, which helps their brains to learn (as cited in Boone, 2016).

Schilling, Washington, Billingsley, Deitz (2003) investigated the effects therapy balls had on in-seat behavior and legible word productivity versus regular chairs with students having ADHD. The study was an ABAB design and consisted of three participants diagnosed with ADHD in a fourth-grade class during their daily language time. During the first and third phases, the participants sat on chairs. During the second and fourth phases, participants sat on therapy balls. Student in-seat behavior was observed using 10-second intervals. Legible word productivity was assessed using five random writing assignments and each word was scored by independent raters for legibility. Results showed improvements in sitting behavior for all the participants when seated on a ball. One student would show sleeping behaviors in addition to out of seat disruptions during phases one and three, which was while he was seated in a chair. There

were no sessions in which he was asleep in phases two and four while on the ball. Another participant was in constant motion and often out of her seat while seated in the chair, but during the ball phases she remained in her seat. The third participant was in his seat about 75% of the time while seated in the chair for the baseline, but while seated, he would often be reading a book for pleasure instead of participating in the class activities. When he was out of his seat, he was talking to classmates, removing items from other students' desks, and interrupting the teacher frequently. After his first week on the ball, his in-seat behavior was consistently above his behavior on the chair. This study showed that improvement in seating behavior was evident for all of the participants when using the therapy balls for seating. This same study also showed legible word productivity was higher for all three ADHD participants when seated on the therapy balls.

In another study of students with attention and hyperactivity concerns, Fedewa and Erwin (2011) measured the effect of stability balls on attention, levels of hyperactivity, and increased time on task and in-seat or on the ball. At the beginning of the year, the teachers of four different fourth and fifth grade classrooms assessed all the students by using the Attention-Deficit/Hyperactivity Disorder Test (ADHDT). The students who scored above the 92nd percentile were classified as "high" or "very high" probability of ADHD and were the target students for behavioral observations through the intervention. Overall, they analyzed 76 students, including the eight that scored above the 92nd percentile, in four classrooms on the effects of the stability ball intervention. All students received stability balls instead of a regular chair, but they assessed the severity of behaviors only on the eight students whose attention and hyperactivity levels were classified as most severe. The study used momentary time

sampling, to which the observers would code student behavior every 30 seconds, over the course of 12 weeks. The results showed that the in-seat average went from 45% while on the chair, to 94% while seated on the ball; and on-task behavior went from 10% while seated on the chair, to 80% while seated on the ball. All 76 participants had improved attention and hyperactivity levels when the stability balls were implemented in the classroom, while the greatest effect occurring with the eight children who were in the high percentile of attention and hyperactivity difficulties (Fedewa & Erwin, 2011).

Flexible seating for Autism Spectrum Disorder. Due to the wide range of behaviors and difficulty with engagement, attention, and classroom behavior, many educators and therapists try interventions within the classroom setting with children who have been diagnosed with Autism Spectrum Disorder (Schilling & Schwartz, 2004). The website, Autism Speaks, (2018) refers to "Autism, or Autism Spectrum Disorder, as a range of conditions characterized by challenges with social skills, repetitive behaviors, speech and nonverbal communication, as well as by unique strengths and differences" (para. 1). There are a lot of sensory issues with children who have ASD, so taking a sensory approach to interventions in a classroom setting might help them be more successful in the classroom (Schilling, Washington, Billingsley, & Deitz, 2003).

Therapy balls with children of ASD. Schilling & Schwartz (2004) constructed another study on the effects the therapy balls had on classroom behavior in children with ASD. The researchers chose four preschool males each having a diagnosis of ASD. The four students were chosen for this study based on teachers' reports indicating difficulty with in-seat behavior and maintaining engagement to task. The intervention was delivered in an ABAB design for three of the participants and a BAB for one. The BAB

design was used without an initial baseline to be more like an actual classroom teacher might implement the intervention. The intervention phases were carried out for a minimum of two school weeks and data were collected on sitting and engagement. The results showed that all participants had an improvement in classroom behavior during the use of therapy balls for classroom seating. For three of the participants, the in-seat behavior showed immediate improvement while sitting on the therapy ball. Likewise, when they returned to the chair phase, there was an immediate decline in in-seat behavior. For the fourth participant, who had a behavior plan in place for his oppositional behavior, researchers found that while seated on the therapy ball, there was an increase in his engagement, a decrease in oppositional behavior, and the teacher did not have to implement his behavior plan. However, when he returned to the chair phase, he was oppositional on one or more times per session and teachers had to implement his behavior plan. The second area assessed was engagement and all four participants had improvements in engagement. Very similar to the results for the in-seat behavior, all participants demonstrated an immediate decline in engagement when returning to the typical classroom seating (Schilling & Schwartz, 2004).

Krombach (2016) conducted a replication of the Schilling & Schwartz (2004) study by testing in-seat behavior and attending behavior with students having ASD. The study took place in the homes of each participant during their therapy sessions. Ages of the participants were 12, 4, 6, and 7 years old. The children were all referred to the study due to an inability to stay seated for an extended time. The study had three phases for each participant, the baseline in which there was no change from a regular session and the seating option was a chair, the intervention in which the child was asked to sit on the ball

for the session, and a choice phase to which allowed the child to choose between the ball and the chair. Results showed an increase in both in-seat and attending behaviors for the four participants with ASD. The ball was chosen most often by three of the four participants for seating and all were engaged in movement while on the ball seat. The longer the intervention phase went, the higher the behavior levels were, which suggests continuing to use the ball would lead to continued better behavior while seated on the ball. Although parents were supportive of the seating choice, therapists found the bouncing to be distracting and sometimes dangerous (Krombach, 2016). This suggested that using the ball chairs in a classroom or during therapy sessions might not be to every educator or therapist's preference, and that a few days of introduction with rules for the balls would be beneficial to the students' safety (Krombach, 2016).

Flexible seating for sensory processing disorder. When children are expected to sit still for an extended amount of time at school, they begin to fidget and wiggle as they try to keep their bodies and minds alert (Hannaford, 1995). These actions stimulate childrens' vestibular, tactile, auditory, and proprioceptive systems (Drobnjak & Heffron, 2016). Occupational therapists who have been working in elementary schools have been incorporating accommodations and modifications with seating for students with sensory processing disorders for many years. Collins and Miller describe sensory processing disorder as a "complex disorder of the brain that causes people to have problems with interpreting and regulating responses to everyday sensory information" (Collins & Miller, 2012). Many students who have sensory processing disorders do not engage in many activities, for example climbing, touching sticky things, and seem to avoid loud environments, sunlight and certain smells. Sensory processing issues are not seen as a

disorder under the Individuals with Disabilities Education Act (IDEA), so having sensory issues will not qualify children on its own for special services (The Understood Team, n.d.) so adding flexible seating may improve behavior and help them be engaged within the classroom (Sadr, Haghgoo, Samadi, Rassafiani, & Bakhshi, 2015).

Flexible seating in the general education classroom. Flexible seating has been gaining attention by occupational therapists in school settings for some time, but recently, teachers have been incorporating flexible seating into the regular education setting in hopes that the extra movement will keep students engaged (Dennison, 2006; Lengel & Kuczala, 2010). All children need to move in order to function (Drobnjak & Heffron, 2016). Many learning problems like reading, writing, and math are thought to be due to the lack of vestibular stimulation (Jensen, 2005). The vestibular system is "most critical for cognition and is the first sensory system to develop" (as cited in Lengel & Kuczala, 2010, p. 6), controls the sense of movement and balance (Hannaford, 1995), and controls eye movements so images remain steady and in focus (Lengel & Kuczala, 2010). Many behaviors began to show when students are expected to sit still for a long period of time because they use their whole bodies to move, explore, learn, and sometimes just to stay alert (Hannaford, 1995; Dennison, 2006; Lengel & Kuczala, 2010; Blaydes, 2012). For students to be engaged, they need to feel safe (McLeod, 2017), comfortable, and have vestibular and proprioceptive needs met (Jensen, 2005; Hannaford, 1995). Research suggested that the use of flexible seating in elementary classroom settings might be what children need to improve attention and behavior (Fedewa & Erwin, 2011) which in turn, could lead to better academic scores (Sadr, Hahgoo, Samadi, Rassafiani, & Bakhshi, 2015; Merritt, 2014; Korbey, 2014; Olson, 2015).

Several studies show that students' behavior and engagement is influenced by the classroom environment (Haghighi & Jusan, 2011) and while using flexible seating in their classrooms, teachers feel the students take more ownership of the classroom, instead thinking of it as the teacher's classroom (Havig, 2017; Paterson, n.d.). In many flexible seating classrooms, it is set up for the students to choose where they sit, and what they sit on, but only after being taught the rules, trained on each alternative seating item (Schimke, 2013), and understanding the reasons why they think they work better in certain places or with certain items. When students feel they have some control over where they sit in a classroom, they feel a sense that they belong (Miller, 2008) and are more motivated to stay engaged and to learn (Healy, 2017; Smith System, 2017).

When students must sit for a long period of time, their posture may cause them to lose focus, motivation, and hinder learning. Many who are looking to best-practices in teaching are realizing the importance of students being more involved in classroom discussions rather than only listening to the teacher lecture (Harvey & Kenyon, 2013). With flexible seating, the students would have items that let them quickly move from group discussions to individual work (Harvey & Kenyon, 2013). Research suggests that sitting in fixed-type desks and chairs could affect the development of musculoskeletal disorders, poor posture, back pain, neck pain, and other health-related concerns (Thariq, Munasinghe, & Abeysekara, 2009). When seated, only 14 percent of an individual is supported by their feet while 86 percent of their weight is supported by the chair (Milshtein, 2006). In times where there are more and more students doing work in front of a computer, it is important to think ahead to prevent these postural problems by engaging in active-dynamic sitting, which means the seating mechanism moves when the

body moves (Mobility Management, 2011; Breithecker, 2006). This can be accomplished by having a chair that enables any movement when seated, which promotes movement to help blood circulation, stimulate muscles, and allows for spinal shifting (Breithecker, 2006; Harvey & Kenyon, 2013).

Types of Flexible Seating

Kinesthetic Learning Tables. Natalie Boone (2016) researched the impact Kinesthetic Learning Tables (KLT) had on student on-task behavior and academic growth in reading skills in a first-grade classroom and a fourth-grade classroom. The KLTs provide a variety of movements in the classroom including bicycle pedals, balance seats, ski swings, cross lateralization, and elliptical type movements while students are seated or standing. Boone found a significant increase in reading achievement of those fourth-grade students who used the KLTs over the fourth-grade students who were without them, although the first-grade class data showed there was a statistically significant decrease between those with KLTs and without KLTs. Boone also found that the fourth-grade students using the KLTs had a 14% higher on-task rate than the fourth-grade class without the learning tables. There showed no difference in the on-task rate for the first graders with or without the learning tables (p. 78). Studies like Boone's, continue to show that movement can promote more on-task behaviors in older elementary students, thus increasing learning opportunities (Havig, 2017; Mead, Scibora, Gardner, & Dunn, 2016; Kilbourne, 2009).

Therapy/stability balls. Molly Burgoyne and Caroline Ketcham (2015) led an observational study of classroom performance of therapy balls as substitutes for chairs. This study consisted of hour-long observations of nineteen students in second-grade. The first observation was conducted when the students were using the regular chairs, and two

more observations were done when students used therapy balls during the classroom activities. Researchers observed the behavior of students on each sitting device, including on/off-task, effort level, attitude, interactions, seating behavior (bouncing/rocking/stationary/other) and intensity level of participation in the classroom activities. Results showed that "on-task behavior increased significantly with the use of therapy balls" (Burgoyne & Ketcham, 2015). When comparing the results from the first and second observations, the use of the therapy ball as seating correlated with increased on-task behavior. Likewise, the third observation showed that students using therapy balls were more likely to be on task. The third observation was completed after three months of the students using the balls and researchers noted that the movements while on the ball during the first two observations were vigorous, and the third observation showed more subtle and controlled movement. This led the researchers to conclude that the students were able to learn what movements they needed to meet their needs and to be on task. This research also supported that therapy balls were used "to engage the vestibular system, which provides the brain with information about the position of the head in space to help with balance" (Burgoyne & Ketcham, p. 47, 2015). The therapy balls offered more opportunities than the chairs for sensory stimulation that sequentially results in more observed on-task behavior (Burgoyne & Ketcham, 2015).

In a pilot study that replaced classroom chairs with stability balls at Dr. Levesque Elementary School in Frenchville, researchers found that students had improved academic performance and better health during the study (The Aroostook Medical Center, 2013). The study took place in 13 classrooms and students spent part of all of each day sitting on the stability balls at their desks or in other parts of the room. They

found that over half of the students were able to sit still and stay on task, while also showing improved posture while seated on the balls. The study also found that about 80 percent of students improved their standardized test scores over the course of the year. Teachers gave their opinion in the district as the benefits being better than they imagined. The students were quieter and moved more quickly between tasks and it was added that the students took great ownership of the stability balls (The Aroostook Medical Center, 2013).

Standing desks. As mentioned earlier, Mark Benden found that students are more active and burn more calories at the standing desks (Benden, Zhao, Jeffrey, Wendel, & Blake, 2014; Korbey, 2014). Studies suggest that when given the option to sit or stand during class, children choose to stand (Hinckson, et al., 2016). Benden wanted to know if standing desks improved learning, so he had Texas A&M's educational psychology department study whether students were more engaged with the teacher and with their work when they were standing. The psychologists knew nothing of the study, and they sat in classrooms for two years watching students and measuring their attentiveness and engagements. Results showed that students were more engaged in an activity while in the standing learning environments than in traditional seated environments (Benden, Zhao, Jeffrey, Wendel, & Blake, 2014). Standing classroom interventions have reduced the sitting time by up to 60 minutes per day and increased standing time by 55 minutes per day (Hinckson, et al., 2015). Educator Katie Caritey found that the standing desks worked wonderfully with the students that tend to be more active, fidgety, or tired (Korbey, 2014). While one may use a tall table or a tall desk, there are standing desks or tables with a footrest, or a top that can tilt (Kinckson, 2015).

Sit-to-stand desks. In the UK and Australia, a study was done with 9-15-year-olds using sit-to-stand desks (Clemes, et. al, 2014). These sit-to-stand desks moved up and down manually with a lever and allowed the children to work in a seated or standing position. In the UK classroom, six regular desks were replaced with three sit-to-stand desks (fits six children) and each of the 27 students was able to be at the sit-to-stand desks once a day for at least one hour for nine weeks. In Australia, all 26 standard desks, including the teachers, were replaced with sit-to-stand desks. The students were told they could sit on the stools provided or stand when using the desks. In both places, a control classroom had no change in desks or seating. Students in the intervention were given an activPAL3 accelerometer (PAL Technologies, UK) to wear on the thigh for seven consecutive days. The activPAL3 is a valid measure of time spent sitting, standing, and walking in children (Clemes, et. al., 2014). Reductions in total daily sitting time were observed in both intervention groups, although the proportion of time spent sitting and standing in the UK did not differ between the baseline and follow-up when examined over the course of a whole school day, they had a significant increase in step counts. In the Australian study, a significant increase in the proportion of time spent standing on a weekday was noticed with the intervention group (Clemes, et. al., 2014).

Stools/Wobble stools. There are many types of stools that can be used in a flexible seating classroom. When using standing desks, many pair a tall stool with them to have the option to rest between sitting and standing due to the hips not being at a 90-degree angle. The tall stools give another option with less pressure on your joints (Fiorenzi, 2018). Wobble stools are also used as an alternative seating mechanism in

classrooms due to the slightly curved bottom, it allows kids to rock either way and help their bodies to release energy (Russell, 2017).

Advantages of Flexible Seating

Several studies have been done showing the impact the learning environment and spaces in schools have on classroom engagement (Haghighi & Jusan, 2012; Castellucci, Arezes, Molenbroek, Bruin, & Viviani, 2016), participation, and academic achievement (Fernandes, Huang, & Rinaldo, 2011). Modern pedagogies have recently gone from teacher lecturing, or giving students only verbal information, to more active learning where students are able to use critical thinking skills while working with others (Harvey & Kenyon, 2013). Flexible seating allows students to be empowered by having more choices in the classroom and the ability to move to collaborate with those around them, while also getting the benefit of sensory needs that help children focus and process information (Hyche & Maertz, 2014).

For many children who have sensory issues, a therapy ball gives them sensory input, which means it stimulates the students' sense of touch, which helps them focus and process information (Smith System, 2017; Lynch, 2017). For students to learn, they need to be comfortable and while not all students will be comfortable or be able to learn while sitting on a stability ball, the extra movement while on a ball, might be what some students need to help them focus and stay on-task (Boone, 2016; Delzer, 2016). While having the sensory needs met of many students, teachers will be more likely to have less off-task behaviors which would leave more time for learning (Almer, 2017) and more engaged students.

If given a choice, the majority of students would rather choose where to sit and what to sit on in the classroom than have the teacher tell them. When students are

allowed the freedom to choose, it helps them feel they have a voice in the classroom and in what they do (Jolivette, 2002). Students, along with teacher guidance, will learn what seating method works for them and the parts of the day when certain alternative seating works or does not work. A goal of educators is to help build children into problem solvers and critical thinkers (Delzer, 2016). When using flexible seating, the students can become more aware about how they learn best and what type of seating helps them learn best.

Introducing flexible seating into classrooms can help students' physical health (Smith System, 2017). Our society as a whole has become more sedentary in the past few decades (Owen, 2010). A sedentary lifestyle has been linked with an increased risk of many diseases, cancers, and poor health (Grauer, 2013; Mercola, 2015). With flexible seating, students will have the opportunity to burn more calories, use up excess energy, create better oxygen flow to the brain, and improve core strength and overall posture (Delzer, 2016). Physical movement has been shown to increase student engagement (Marzano Research, 2016) and since our bodies were designed to be active and to move (Ravn, 2013), flexible seating could help keep our future generation engaged in learning and healthy.

Disadvantages of Flexible Seating

While many teachers have found flexible seating as a positive inclusion into the classroom, from some teachers' experience, flexible seating is not for them and their classroom because they feel the disadvantages outweigh the advantages (Morris, 2017; Durgin, 2018). Paul Emerich, teacher and writer, writes on his website, a case against flexible seating. Emerich points out that even if you have desks, you can cluster them in collaborative groups, like you might see in a classroom that has flexible seating, and that

the furniture is not what is needed, but teachers who promote collaboration (Emerich, 2018).

The beginning of the year is an important time for teachers to establish their classroom management by setting the rules and expectations. The teachers face many decisions, one being how they will seat the students, especially since seating arrangements have been found to influence classroom climate and student relationships (Gremmen, van den Ber, Segers, & Cillessen, 2016). A review by Wannarka and Ruhl (2008) showed that seating arrangements can increase on-task behavior, which consisted of hand raising and complying with requests; and decrease off-task behavior, which consisted of students talking out of turn or being out of their seat without permission. While they suggested that, the type of academic task should dictate what type of seating arrangement there are, Wannarka and Ruhl (2008) found that rows were the arrangement that showed the students with the most on-task behaviors.

Although empirical research is limited on the disadvantages of flexible seating, a few teachers have written about their experiences through their thesis and on their websites and blogs. Many of them agree, by saying that a flexible seating environment is not always best for every teacher, or every student. Teacher, a blogger, and professional development speaker, Kayse Morris, found that when she began her school year with flexible seating, students were territorial of the seating devices and places they sat, she was not able to monitor students very well during assessments, and students were not as engaged in her instruction (Morris, 2017).

Erin Messinger (2014) was curious about the effects of stability balls and created a short experiment that gauged student behavior while using stability balls versus chairs

in the classroom, while also getting the students' perception on the use of the balls. The participants were 24, fifth-grade students that, according to their former teachers, had the reputation of being hard to manage. The students had begun the year sitting on stability balls and had been using them for two months when Messinger began her experiment. The research used the current teacher's behavior system to monitor throughout the study. The first week the students sat on regular chairs and the teacher measured their behaviors using her class and individual behavior systems. The students would sit on the stability balls the second week while having the same behavior systems in place. Researchers took only the information on the normally scheduled days to compare the behaviors of the students sitting on the regular chairs versus the days sitting on the stability ball as a chair. Using the data from the behavior management plan of the teacher, Messinger found that the students behaved better as a whole with regular chairs than with stability balls, leading the researcher to believe that flexible seating caused more off-task behaviors. Although when surveying the students, the majority of them enjoyed the stability balls and thought they were a benefit to themselves, and not a distraction for their neighbors, making the researcher believe that the students like the alternative seating, but not always for the academics, but for the socialization.

Each teacher has different preferences for what their classroom looks and sounds like during work time. Some teachers will not like the constant movement that a flexible seating environment may present. Paul Emerich (2018) agrees children need to move, but they also need to be able to regulate their bodies and be able to sit and attend to less physical tasks for short periods of time. The A[esthetic] Classroom (2017) says while a comfortable and safe environment will promote a positive impact on student learning, it

may not provide enough structure, making the classroom too comfortable for the students. Kayse Morris (2017) noticed when she had flexible seating in her classroom, a student started sleeping a lot in class. She also noted that quickly became a race to see who could get to the favorite seating area. Children need and want structure, and not knowing where they are going to sit from one day to the next can cause anxious feelings for some children (Durgin, 2018).

Flexible Seating and Student Achievement

Although limited, research is available investigating the use of flexible seating in the classroom setting with students that have sensory issues and attention/hyperactivity deficit, although limited to mostly behavior and on-task observations. There has been very little research on whether flexible seating has an effect on academic scores and achievement.

Teachers have reported that when students are seated on a stability ball, they are more attentive, better focused, and have higher achievement outcomes (Bill, 2008; Olson, 2015; Kilbourne, 2009). Stacey L. DiBitetto (2015) researched the use of stability balls instead of chairs with a sixth-grade classroom, and the impact it had on mathematical achievement growth. The researcher conducted a quantitative study and measured math data from two standardized assessments, the Illinois Standards Achievement Test (ISAT), which is given once a year and was compared to the previous years' scores, and the Discovery Education Assessment, which is administered three times per year. The results from both the Illinois Standards Achievement Test and the Discovery Education Assessment showed no significant difference overall in mathematic growth scores between students using the exercise balls and those using traditional chairs. The researcher furthered the study by dividing the participants into different class groups, one

being general education students and honor students. According to the ISAT scores, the achievements did not differ by comparing the two groups. However, on the Discovery Education Assessments, students in the general education group earned higher mean growth scores while using the ball rather than the chair (DiBitetto, 2015).

To show more reasons needed for research on determining if the use of stability balls instead of chairs improve academic scores is the research by Mead, Scibora, Gardner, and Dunn (2016) whose results showed sitting on stability balls were more productive academically. The purpose of their study was to compare academic performance of sixth-grade math students between three classes; the class that used stability balls during instruction time, the class who did short, five-minute activity breaks during class instruction time, and the class that maintained sedentary during class instruction. The researchers used the Measures of Academic Progress (MAP) for the standardized test which the students took at the beginning of October and again at the end of May, and the Minnesota Comprehensive Assessments (MCAs) which are state achievement tests given in late April. Researchers computed a one-way ANOVA on different scores (posttest-pretest) for both the MAP and MCA tests (2016). Results showed that sitting on the stability balls positively affected the math standardized test scores, and the short physical activity breaks and being sedentary during class time were not effective in improving math scores.

Flexible Seating and Student Engagement

Student engagement, as defined by the Glossary of Education Reform (n.d.), is the "degree of attention, curiosity, interest, optimism, and passion that students show when they are learning or being taught, which extends to the level of motivation they have to learn and progress in the education" (para. 1). Part of a teacher's classroom management

plan is the physical design of the classroom, especially the seating arrangement, for it has the potential to encourage desirable behaviors or contribute to students' misbehavior (Daniels, 1998). The seating arrangement has shown to be important for both the academic and social development of students (Gremmen, van den Berg, Segers, & Cillessen, 2016).

As mentioned before, there are many ways to arrange a classroom. Some of these arrangements consist of straight rows, a cluster in small groups, U-shaped seating, or flexible seating arrangements that are undivided or grouped, but students decide where they take their work. Their seating device could be anything from an exercise ball to a tall stool, to a pillow on the floor. One intervention for increasing students' focus and enhancing levels of attention has been the integration of stability balls in place of chairs in the classroom (Fedewa & Erwin, 2011). Travis (2017) did a study on student choice and student engagement while using alternative forms of seating. Her data showed there was a positive significant difference in the engagement level of students who were using flexible seating in comparison to students who were in traditional seating (Travis, 2017). Merritt (2014) examined the use of alternative seating with preschool students during their reading instruction time and her results showed a significant drop in the number of times each teacher had to stop instruction to address misbehavior or off-task behavior while the students were using the alternative seating.

Schilling, Washington, Billingsley, and Deitz (2003) investigated the effects of therapy balls when used as seating on in-seat behavior with children with ADHD and results demonstrated improved time on task with an emphasis on attention while using the therapy balls (Gamache-Hulsmans, 2007**).**

Their study suggested that the use of therapy balls is one strategy teachers could use when working with children with ADHD who are having difficulty staying on task. In a study from the Journal of Rehabilitation Sciences and Research, Sadr, Haghgoo, Samadi, Rassafiani, and Bakhshi (2015) found an increase in on-task and in-seat behaviors in students with Autism Spectrum Disorder (ASD) when seated on air seat cushioned chairs. Schilling and Schwartz (2004) investigated the effects of therapy balls as seating on engagement and in-seat behavior of young children with ASD. The findings of this study showed improvements in in-seat behavior and engagement for the participants when seated on therapy balls (Gamache-Hulsmans, 2007).

Fredricks and McColskey (2018) say that students become more disengaged as they get older and some estimates show that 25%-40% are showing signs of disengagement. The advancements of technology are starting to determine how our children's brains develop (Taylor, 2012) because technology is full of action and it affects the way children process information. When parents read to their children, and children look at the pictures of a story, their brains are encouraged to be focused and imaginative. The readily use of the internet is strengthening our ability to scan information quickly and efficiently (Taylor, 2012) although now our children are looking at many things at one time, seeing the surface of things, rather than thinking critically about a certain topic (Patel, 2017).

It is no wonder with the high use of technology available to our students, that many students have a low tolerance for lecture-style teaching in the classroom (Kimball Learning). The Gallup Student Poll of 2015 (Gallup, 2016) contained nine questions that measured student engagement and involvement in and enthusiasm for school. Studies

suggest there is a link between engagement and school success (Gordon, 2006). Teachers must learn what to do to make sure the students are getting the information they need. This is where many researchers are seeing flexible seating in the classroom being of good use. In a survey, teachers, who used flexible seating options, were asked what the biggest benefits to students and the top answers included better attention/focus, less restlessness, and increased participation (Drobnjak & Heffron, 2016). Gamache-Hulsmans (2007) did a study on students with students in grade two and grade five on the effects of stability balls on on-task behavior. Four students from each grade, with one student in each class having ADHD, were observed. Her results showed improvement with both students with ADHD although the second-grade student started taking medicine during the study so that might be the reason that student's results improved drastically by 34.5%. The on-task behavior improved for all second-grade students while sitting on the stability balls, although in the fifth-grade class, only the student with ADHD had improved task behavior. Kinesthetic learners have a very strong need to move while they learn, yet they need to be able to move and be quiet, focus on instruction, and not distract others (Stalvey & Brasell, 2006). Giving students space they need to accommodate their learning needs can make a huge difference in the way they learn and behave (Burgeson, 2017).

Summary

The literature reviewed on flexible seating indicates that the use of alternative seating has become more prevalent in elementary schools the past few years. There are advantages and disadvantages of flexible seating and in much of the reviewed literature, the authors encouraged teachers to do what they feel is best for the type of activity and for the students they have at that time. Although there is limited literature supporting the

use of flexible seating in elementary classrooms as a way to improve student engagement and student achievement, a great number of research studies supports the use of flexible seating as a positive for students with ADHD (attention deficit hyperactivity disorder), autism, and sensory disorders. The use of alternative seating devices showed positive results by lessening off-task behaviors due to the need for extra movement, which leads these students to be less distracted and more engaged to learn. It was found that a therapy ball often stimulates the students' sense of touch, which helps them focus and process information (Smith System, 2017; Lynch, 2017).

While some teachers suggest that flexible seating provides students with opportunities to move and collaborate yet remain on task (Delzer, 2016), others disagree. Messinger (2014) found that students behaved better as a whole with regular chairs and believed that flexible seating caused more off-task behaviors. The students liked the flexible seating and did not think it was a distraction for them, which made the researcher feel the students enjoyed it not for the academics, but for the socialization. While each teacher has their preference, flexible seating allows students to be empowered by having more choices in the classroom. Flexible seating also was seen as an advantage due to the ability of students to be allowed to collaborate with those around them, which is a way to build valuable 21st-century skills (Burns, 2016).

Howard Gardner's Theory of Multiple Intelligences is said to be child-centered because it looks at how a child learns and realizes that not all children learn information in the same way (Lane, 2008). It is suggested that flexible seating gives the students the chance to meet their physical movement needs, while also learning to become problem solvers in discovering the ways they learn best. While the literature includes many

positive studies identifying students with ADHD and ASD and flexible seating, there are deficiencies in the literature for effects on the general education student population. This research will be further adding data to the effects flexible seating has on the general education student population.

In Chapter Two, existing literature of peer-reviewed dissertations, master's thesis, journals, websites, and blogs were reviewed to find a connection, if any, on the use of flexible seating and student engagement. The methods and procedures applied in this study are reported in Chapter Three. In Chapter Four, there is an outline of data and analysis of findings. In Chapter Five, the conclusions and recommendations for further research are addressed.

Chapter Three

Research Methodology

Introduction

The primary goal of this study was to explore the research questions relating to flexible seating and its influence on student engagement and student learning. The effects of flexible seating on student engagement and student learning in elementary grades were examined. Qualitative methods were used to analyze data of the perceptions that teachers have of flexible seating. This chapter is organized into five sections: research design, participants, the role of the researcher, data collection, and data analysis. Three research questions served as the focus of this study.

1. What are elementary teacher perceptions regarding uses of flexible seating in the classroom?
2. What are elementary teacher perceptions on the influence of flexible seating on student engagement?
3. What are elementary teacher perceptions on the influence of flexible seating on student achievement?

Research Design

The researcher conducted a phenomenological qualitative study exploring teacher perceptions of using flexible seating in elementary and special education classroom settings. According to Hesse-Biber and Leavy (2011), phenomenology "is a methodological (theoretical) perspective aimed at generating knowledge about how people experience" (p. 19). Semi-structured interview questions were used with teachers in general education classrooms as well as teachers in special education classrooms, in suburban and rural schools in western Missouri. The researcher invited teachers from

public elementary schools in western Missouri who were willing to participate in the study. Participants signed a consent form to participate in the research study prior to any interview taking place. Selected participants were those who have used flexible seating in the past, currently use flexible seating, or have never used flexible seating in their classrooms. Interviewees were given the opportunity to withdraw from the study at any time throughout the research study.

All interviews were recorded, and memo writing was used by the researcher to capture relevant topics needing further elaboration or clarification. Once the researcher reached a saturation point during the interview process the interviews were completed. Data were then coded and analyzed to identify possible themes aligned to each of the three research questions. Prior to conducting any research, the researcher received approval by the William Woods University Institutional Review Board.

Selection of Participants

The participants for this study included an intensity sampling (Lunenburg & Irby, 2008) of elementary teachers, including general education and special education teachers in elementary schools in western Missouri. The researcher sought permission from school districts and schools prior to conducting research. Such permission was granted by the superintendent or the researcher needed to complete a research application process. Upon written permission from each school district, elementary school principals were emailed to ask for permission to contact teachers by email, phone, or face-to-face. Participants for this study were derived from elementary schools in western Missouri, with teachers having a variety of educational backgrounds and years of experience. The interview process ended when information collected by the researcher had reached a saturation point.

Role of the Researcher

The researcher did not work at the same school as any of the research participants. The participants were informed that the interviews were going to be recorded, and they may cease participating at any time. The experience of the teachers reflected a wide range in the number of years teaching and having varying degrees of educational training. The teachers selected to be interviewed were those who currently use flexible seating in their classrooms and have used flexible seating in the past. The interviewer was also curious about the perceptions of those teachers who have never incorporated flexible seating in their classrooms and were also interviewed. The elementary grades that the teachers being interviewed taught ranged from Kindergarten to sixth grade and were from suburban and rural school districts in western Missouri.

Data Collection

The researcher collected data through semi-structured, open-ended interviews of elementary teachers and special education teachers (Lunenberg & Irby, 2008; Hesse-Biber & Leavy, 2011). The researcher had each participant sign a consent form before being interviewed. Participants had the option to withdraw from the study during the interview or at any point following the interview. An interview guide was developed to include interview questions that were used with each participant. The researcher allowed for further probing of some questions depending on the interviewee's responses. All interview questions were aligned to the three research questions for this study. Hesse-Biber & Leavy (2011) state that "memo writing assists researchers in elaborating on their ideas regarding their data and code categories" (p. 308). The researcher used memoing to categorize the data related to each research question, by taking notes during interviews and comparing the data between interviews to correlate similarities and differences.

Interviews were held in person or by Google Hangout and were recorded. Interviews lasted approximately 20 minutes. The questions asked allowed participants time to reflect upon their perceptions and uses of flexible seating and how they relate to student engagement and achievement. The researcher finished the interview process at a saturation point when the interviews no longer revealed any new information expressed by the participants.

Data Analysis

The researcher transcribed, coded, and developed a set of analytical categories to analyze all interviews to determine similar and dissimilar relationships between participant perceptions. The researcher used online transcribing services entitled Rev.com and HappyScribe.com to transcribe all interviews. To protect the anonymity of school districts and school buildings where interviewees were employed, letter codes were used. Identities of interview participants were protected by assigning pseudonyms such as Teacher A, B, and C.

Coded interview data was analyzed using Dedoose.com to determine common themes and differences of teachers' perceptions pertaining to uses of flexible seating and its influence on student engagement and student learning. Coded interview data was downloaded on the researcher's Google Drive on a password-protected computer and will be destroyed after three years.

Summary

This phenomenological qualitative study utilized teacher interviews to determine perceptions about using flexible seating in elementary classrooms and the effect it had on student engagement and student achievement. Teacher perceptions about noted differences between incorporating flexible seating options versus traditional seating were

of particular interest to see how they are similar in the perceptions of how the seating affects the student engagement and achievement of the students. Measures using a coding process were put in place to keep teacher interviews anonymous and was explained to each participant with the understanding that consent could be withdrawn at any point during the study.

Chapter Four

Results

Introduction

The purpose of this chapter was to provide a description of the sample used for the current study, a summary of the results of the study, and the details of the qualitative data collected and results pertaining to this study. The interviewer worked with five suburban school districts in Missouri to interview elementary teachers who have used, currently use, or have never used flexible seating. After completing 15 interviews with elementary teachers, the researcher used computer programs called HappyScribe.com and Rev.com to transcribe the interviews into Word Documents. The researcher then used a computer program called Dedoose to help in coding and analyzing the data to develop themes. This chapter presents the results of the data analysis.

The presentation of results is arranged by the three research questions: 1) What are elementary teacher perceptions regarding the uses of flexible seating in the classroom? 2) What are elementary teacher perceptions of the influence of flexible seating on student engagement? and 3) What are elementary teacher perceptions on the influence of flexible seating on student achievement? The purpose of the semi-structured interviews was to gather in-depth qualitative data to provide a greater understanding of elementary teacher perceptions of flexible seating and their influence of flexible seating on student engagement and student achievement. This was accomplished by looking for similarities and differences in the teacher perceptions provided. During these interviews, open-ended questions were used and the researcher used the results to identify themes. This section presents demographic data of each participating school, descriptions of the interview subjects, and the results and themes found under each research question.

Results

The five interview sites were public school districts located in Missouri. The five rural and suburban school districts were similar in size and demographics ranging from 1,000 to 3,000 students. In total, the five districts served around 10,000 preschools through sixth-grade elementary students. One of the five schools represented was a suburban upper elementary school with slightly more than 600 students, serving fifth and sixth-grade students, while another suburban area consisted of slightly less than 2,100 pre-kindergarten through sixth-grade students. Two of the smaller school districts represented in this research were rural communities, one district serving pre-kindergarten through fourth-grade having slightly more than 1,000 students and the other district serves early childhood through fifth-grade, having slightly over 3,000 students. Lastly, a growing rural area school district involved in this research consisted of kindergarten through sixth grades enrolling more than 1,600 students.

Research participants. The researcher interviewed 15 elementary and special education teachers who taught kindergarten through sixth grade. Of the 15 teachers, four had taught between three and nine years, six had taught between ten and fourteen years, and five had taught between fifteen and twenty-five years. The range of students in the classes who were interviewed ranged from 20 to 25 students each year. Of the participants, nine taught kindergarten through grade three, four taught fourth grade through sixth-grade, and two were special education teachers. Teachers interviewed for this research were given the pseudonyms A, B, C, E, F, H, I, J, K, L, M, N, and O. Of the participants, Teachers A, B, C, E, F, H, I, J, K, L, and N used flexible seating. Teacher O had used flexible seating in the past, while Teachers D, G, and M have never used flexible seating.

Research Question One. Research Question One (RQ 1) asked: What are elementary teacher perceptions regarding uses of flexible seating in the classroom? The researcher found common themes in how the teachers learned about flexible seating, the type of items the teachers used, advantages and disadvantages, student choice, and what happened when students could not handle the flexible seating items or areas.

How teachers learned about flexible seating. The first theme identified from RQ 1 was centered on the various ways teachers learned about using flexible seating in classrooms. Nine of the 15 participants referenced a co-worker or, the teacher down the hall as ways they first learned about flexible seating. Teacher G said her daughter's second-grade teacher used flexible seating and she learned about it from her daughter. She said:

> Her (Teacher G's daughter) classroom in second grade had it (flexible seating) and she seemed to really love it. She told me she loves it because if one day you are not sitting where you want to, you have another chance to sit somewhere else the next day. If the seat wasn't comfortable, then tomorrow she could get another one.

Teacher E has taught early childhood, kindergarten, and first grade, for 20 years and explained:

> What I learned about flexible seating I think it had to do with brain research and how the brain learns. And my first experience with flexible seating had to do with my special needs students that I had. I always had several special needs students in my classroom. And so just doing flexible seating with that, whether it was a rocking chair or having them sit on a little bubble seat in their chair, or having

> them sit on their knees when they came to the carpet or on a stool. So that was really my first experience and I think also with the brain research and how the brain learns is really exposed me to the flexible seating.

Teacher J, a general and special education teacher, had always worked on a CWC (class within a class) team. A CWC is a class when students having an Individual Education Plan (IEP) are in the classroom with regular education students. She mentioned always using what she called flexible seating because she had special education student needs that were not necessarily of the general group. Teacher J explained:

> The more I saw how much those kinds of seats helped special needs kids, I just started offering to all of my kids who had the wiggles, ADHD, or had a need to move around more so I started buying the stability balls and wiggle cushion type things.

After a couple of years, Teacher J got rid of the stability balls after some were purposefully damaged and used just the wiggle cushions and she had one for everyone. Teacher J stated, "You didn't have to use it if you didn't want to but that was my best way to offer it without having the ball in the classroom."

Teacher K started thinking about flexible seating when her youngest daughter started having some sensory issues. She began to research more about multiple intelligences and how everyone has a different need to move and she took that to her classroom. Teacher K said, "I started to realize that everybody's at a different point for finding comfort and as long as they are focused, it should be okay."

Uses of flexible seating. The second theme identified for RQ1 focused on various

uses of flexible seating in the classroom by teachers. All 15 teachers mentioned having some kind of option for how students could work in their classrooms, having standing or sitting on the floor as an option. Each still had desks and regular chairs in their classrooms for those students who wanted to use them. Stability balls, yoga balls, and exercise balls were mentioned by eight out of 15 teachers while beanbags were mentioned by two teachers. Five teachers mentioned having low tables in their room so students could have the option of sitting on the floor while four teachers mentioned the use of pillows around the room. Three teachers mentioned having wiggle cushions and three mentioned seat cushions to be used on the chairs or the floor. The use of wobble stools in the classroom was mentioned by three teachers while regular stools were mentioned by three other teachers. Three teachers mentioned having scoop chairs while three others mentioned the use of rolly chairs. Five of the 15 teachers mentioned having more than eight flexible seating options available for their students to use while working in the classroom. Teacher L was one that mentioned having a few varieties of flexible seating options for students. She said:

> Maybe some of them do need that stability ball to kind of move around on. I have like a stationary bike that they can sit there and they can pedal and I have rubber bands on some of my chairs that they can kick their legs. I have kind of like a high kitchen table with bar stools because they have the choice to sit on the bar stool or they can stand if they want because it is a higher table.

Teacher I also mentioned bringing in a kitchen table as well as other furniture for her flexible seating. She explained, "I brought in a kitchen table to have another seating area. I had a desk where you stand at only, more tables that were lowered, and a couch I

brought from home." Teacher O explained that in her classroom, each student has a home base that consists of tables or desks, then during their individual or work time, they will use pillows, stools or chairs that could fold up and be put away.

In contrast, three out of the 15 teachers interviewed mentioned they did not use flexible seating. Teachers D, G, and M each said they did not use flexible seating, although each mentioned how the students could stand or sit to do their work throughout the day. Teacher G said she had two students who used cube chairs last year and explained, "Those students just needed to kind of be aware of their body, where it should be, and things like that to help them not lay down when they were tired" while having one student who sat in a scoop chair because he could keep moving by being able to rock. Likewise, Teacher M mentioned having all sorts of cushions and comfy chairs that students could drag around and sit on whenever they were working. Her reason for not thinking she did flexible seating was because she did not have any structured routine for certain designated spots.

Advantages and disadvantages of flexible seating. The third theme identified for RQ 1 revealed the advantages and disadvantages of flexible seating by participants. Interviewees explained comfort, student choice, and increased engagement and focus by students. Advantages and disadvantages of flexible seating are discussed below.

Comfort advantage. An emerging theme that was identified describing the advantages of teacher perceptions was the comfort of students. Twelve out of 15 participants described students being comfortable and meeting their students' needs as an advantage of flexible seating. Teacher B stated:

I think we have gone from, 'I have to sit quietly in my chair at my desk' mentality

> to 'I can be comfortable and still learn' mentality. If I want them to learn as much as possible, they need to be as comfortable as they can be, because, for me, I would rather be sitting on the couch with my feet up with a blanket on me. I've adopted the whole mentality of if you learn best in that situation then I am going to provide that as long as you can handle it. I think it makes the kids more comfortable like I truly have seen them more engaged in their work. If you are comfortable while you work, you are going to work harder.

Teacher O described how having different options helped the students that are not able to sit still or get focused. She explained:

> The kid that cannot sit still definitely benefits from the flex seating, from having lengthy yoga balls to be able to have some movement, or even just having a band across the bottom of the chair flex seating. But it is because you're doing something to meet their needs. So I mean, I've done that for those kids and just even if it helps them hold their attention for three extra minutes, it's three extra minutes that they've been able to focus.

Teacher M and D, who both mentioned they did not really use flexible seating, mentioned that they understand that people can be comfortable with different things and in different ways. They admitted letting the students find where they are most comfortable in return will help them be able to think and be more present in what they are learning. Teacher M explained, "So once the kids are comfortable I mean, that's when the learning happens."

Choice advantage. Another theme that was identified as an advantage of flexible seating was giving students choices. Nine out of 15 participants expressed how giving students the choice of where to do their work empowers the students giving them a sense

of ownership. Teacher I stated:

> I think it empowers the kids. It keeps the teacher from getting into a power struggle. Yes, we need them to focus while we are doing direct instruction, but flexible seating allows the child some empowerment to where they are able to still move, or get their wiggles out, however they need to still be able to focus and pay attention. It really is nice to see the progression that they do actually stop using the things that don't work for them.

Likewise, Teachers A, D, F, and L said that a flexible seating environment gives students ownership helping them feel more connected to the classroom community. For instance, the students felt like it is not only the teacher's room, but their room and they get to choose where they are going to sit and decide how they will handle that choice. Teacher D felt that comfort is the main thing. The students are comfortable with their own choice of how they are getting to sit or stand.

Teacher L elaborated:

> I think just the community building of giving students choices makes them feel responsible. I feel third graders are still young, but giving them that responsibility of knowing, 'when I walk in every day, my teacher is expecting me to make a good choice and my teacher is expecting me to sit where I know I can sit and be under control to work. Flexible seating allows them that freedom, but also with some restrictions.

Teacher L and K had similar perceptions to Teacher A about building a community within the classroom by giving the students a choice where and how to sit.

Even though not all students get along in their classes, the students enter the room and find their spot for the day. Teacher L and K expressed that choice gives students an opportunity or forces kids to sit next to someone they wouldn't normally work with or talk to, so they are learning to get along with other classmates and build their classroom family.

Increased engagement and focus advantage. Eight out of 15 participants felt that the use of flexible seating was an advantage that helps students be more engaged and focused for longer periods of time. Teacher N explained students really needed flexible seating in her class because they were constantly up and down and she said it was a battle to keep them in their seat to do their work. She said the first year she had tables and chairs and her classroom environment felt stuck. She tried flexible seating as a way to help keep them engaged. Teacher K and D both said they noticed the students being more engaged and focused when they were working while using flexible seating because they had the ability to move without feeling restricted, such as having to sit up straight in a hard chair and at a desk.

Teacher J stated:

> I think it makes the kids more comfortable like I truly have seen them more engaged in their work. If you're comfortable to work, you're going to work harder. That's how I truly feel. If you're sitting at a boring old desk and you're uncomfortable, you're not going to want to work. I really have seen that in my students and they have proven the theory that people have found that if you are comfortable, you're going to work.

Within the analysis of interview responses, four themes emerged from the data

taken when participants were asked what, if any, do they see as disadvantages to using flexible seating. Four themes emerged: 1) a lot of classroom management, 2) too much choice for some students/younger students, 3) objects seen as a distraction, and 4) cost. The themes found under the disadvantages of flexible seating are discussed below.

Classroom management challenges. Although Teachers A, I, and K believed there were more positive than negative aspects to flexible seating, one disadvantage that all three mentioned was the difficulty of classroom management. Teacher A said:

> It takes a lot of classroom management to do flexible seating and you have to be on your game. You have to stick with it. These are the expectations. If you can't follow them, then I move on, you get it taken away, and we'll try it back in two weeks.

Teacher O also mentioned that one has to be prepared to lose some instructional time as flexible seating is being introduced into the classroom. There are a lot of expectations to review and practice, and that it does take time to build up the kids' stamina to using some of the seating options. A reoccurring comment was depending on the age of the students, teachers using flexible seating have to be on top of their classroom management and must reiterate the rules and reinforce them often. To avoid classroom management issues, seven out of 15 teachers interviewed started the school year off by introducing a few flexible seating items at a time while going over reasons for the items, expectations, having expectations posted, and consequences for not following the expectations. Two of the 15 teachers interviewed mentioned the use of a Flexible Seating Contract so the students developed an understanding that flexible seating is a privilege. If expectations were not followed, teachers explained that flexible seating

privileges could be taken away from students.

All 15 of the participants claimed that if students are not able to use the flexible seating correctly, they are removed from the seating. Eight out of the 15 participants mentioned the possibility of a student being able to continue the use of flexible seating after misusing or not following the expectations, however, after more than one redirection, students could be moved to a different spot in the classroom by the teacher. Teacher E explained if a student is having an issue with the choice they had made with the flexible seating, then:

> Maybe it wasn't the right choice or maybe I needed to offer something different. So giving them something different like the rocking chair would be better, that the way they can sit there and move and still be able to focus and participate.

Too much choice and distraction as a disadvantage. Another common factor expressed by four out of the 15 participants regarding whether teachers do flexible seating, or continue it, is the makeup of the students in the class and if the students are able to handle it. Teacher E stressed to make it successful, training the students on the expectations is a huge part of flexible seating being successful. Teacher B was very excited about introducing and using flexible seating into her classroom for her first year because she had five diagnosed cases of ADHD, three students on IEPs for behavioral needs, and four students who were identified with tier 3 behavioral concerns. She understood the need for the classroom needing to be a sacred place for people with anxiety disorders since she had an anxiety disorder herself and knew these flexible seating items were really good for anxiety and ADHD. However, Teacher B found while teaching in the kindergarten classroom, flexible seating was too much, even just

introducing the items one by one. The items seemed to be too much choice for the students and the items became more of a distraction, but even more, it became very dangerous. She had to remove all the items because they were using them to hit each other. Teacher E stated, "I feel like it became too much for them, even though honestly, they are the ones that probably needed it the most since they have the highest need." Teacher D, who taught kindergarten for many years and was currently teaching first grade, discussed having a lot of younger kids who were easily distracted by a noise from the hallway, so she believed each class would be different on the amount of freedom they received for a choice of flexible seating.

Likewise, Teacher F and L mentioned certain classes they have had when some students were not able to handle the student choice involving flexible seating, even with practice and practice. Teacher L had a very close-knit class, who had lived by one another, played sports with one another, and played after school together for years. She mentioned having the need for many class meetings and would explain why she would be choosing the spots for them for a few weeks. She would give the students another chance, and those that could handle it, would get to choose and those who couldn't choose wisely, then she would continue to choose for them. Teacher F and I both said they would continue to use flexible seating but would choose where the students sat and sometimes would establish set boundaries on where they would be seated. For example, Teacher F would have the students move to a desk and chair for the first time, then try the flexible seating again the next day. But if a child was having difficulty with flexible seating over and over again, she would choose a spot for them to stay for the week and let them try again with flexible seating the following week.

Cost of flexible seating as a disadvantage. The cost was another disadvantage identified by five out of 15 participants. Teacher I claimed, "Cost is a disadvantage because not every district supplies what you want." Along with seeing flexible seating as a distraction to some students, Teacher D also did not believe she had the resources needed to do flexible seating in her classroom. Teacher D stated, "I mean there is some money that goes into buying all the different types of seating that they use." Teacher J and C commented that the only disadvantage with flexible seating is the student who wanted to tear up items, which meant the teachers would have to have them replaced, which takes money. Teacher I explained, "You have to find it on your own and pay for it, whereas obviously if you're going to use desks and chairs, that's paid for by the district." Teacher I went on to say, "So it's me going out and finding the resources to bring into the classroom."

Research Question Two. Research Question Two (RQ 2) asked: What are elementary teacher perceptions on the influence of flexible seating on student engagement? The researcher found common themes in student movement, student engagement, typical behavior how students have their individual needs met by finding a choice seating that worked for them and how students are more on task while having better self-control while using flexible seating.

Student movement. The first theme from RQ 2 on the influence of flexible seating on student engagement was centered on the student movement. Eight out of the 15 participants expressed that boys moved the most during the school day to help them be more engaged. Teacher A taught sixth-grade ELA and responded:

Usually, the kids that are on the metal stools...but boys, always the boys tend to

move more. They need that movement, I guess. I have learned to expect it, and be okay with it, and try to help."

Likewise, Teacher I said, "Yes, I would say my boys. I had some very, very mobile boys this year. They just go and go and go." Two of the 15 teachers, both kindergarten teachers, responded that all of their students needed more movement to stay engaged. Teacher E, being a kindergarten teacher for 20 years, knew her students needed a lot of movement, so she always gave them options while sitting at the carpet. She said, "If we read at the carpet, they had their option of knees, criss-cross applesauce, and then I had other seating options like the rocking chair, or they could pull up the bench, or sit on a stool." Teacher B said, "I definitely think all of my students were pretty wiggly...they're kindergartners." Six of the 15 participants said that the students having ADHD, or the more fidgety students, moved the most during the school day. Teacher C said, "My boys definitely, obviously my ADHD kids whether they're medicated or not. Most of the time it's those kids that I want to be in the movement type flexible seating." Teacher L responded, "Those are the more needy kiddos that have struggles with staying on task anyway."

When asked when students move the most, eight out of the 15 participants replied after lunch. Teachers B, E, and G, the three kindergarten teachers, said students move all of the time, while teacher I said during writing time, and Teacher O said before lunch. Teacher 0 said:

> Usually before lunch because we don't have recess until 2:00 so we don't really have a break until lunch, so like 45 minutes before lunch I notice they're starting to get really squirrelly and then right before recess. So usually between 11:30 and

2:00 every single day is when they seem to be at the squirreliest.

Student engagement activities. Another emerging theme that was identified for RQ 2 was the various ways teachers engaged their students. Seven out of the 15 mentioned doing brain breaks, which usually involved movement, dance, or yoga. Four of the 15 participants mentioned brain breaks while using the website, Go Noodle. Teacher E knew that her kindergarten students needed movement, so she always used a lot of songs and options for them while sitting. She commented, "I feel like music is very important and so definitely bringing in a lot of the movement, music, chants, and the finger plays and things like that to get students engaged." Five out of the 15 participants said that flexible seating is what they used to keep students engaged. Teacher J said, "We've had to incorporate movement in our day because recess has been cut so short, but the flexible seating helps with that a ton." Teacher K mentioned in the afternoon there seemed to be a decline of focus, and so she added activities like a four corner game or for the students to make something, but the chatter sometimes would get to the point of students no longer being on task. To help them focus a little longer she said, "Giving the students more voice at where they were going to sit gave them a little bit more freedom."

Students on task. The third theme identified from RQ 2 on the influence of flexible seating on student engagement was students being more on task. Seven out of 15 participants voiced students performing more on task when using flexible seating. Teacher N said many people asked her, "Aren't the students distracted by their seats and moving all around?" and she responded:

> I don't really find that at all. When the expectations are set for our kids and flexible seating is a get to do, they know the expectation is to be engaged. If they

are off task and not engaged, they know they have a good chance of losing that opportunity.

Eight out of the 15 participants used flexible seating during the students' individual work time. Teachers N and L mentioned students being more on task because they were comfortable while working. Teacher L communicated:

> Honestly, I feel like it's (behavior) better because they get to set their body up to how they are going to be able to learn, like during math. If they're using their workbook, they may not be on the tabletop. They may be laid out on the ground, but I feel like that's how their body needs to work. Some are standing but some are stretched out.

Teacher C and O mentioned they would do whole group instruction together and then students would go to their flexible seating spot. Teacher O, a fifth-grade teacher said she let students use flexible seating and move with each subject.

> When they're in their desk and chair, it's for directions or if I am doing something whole group like a mini-lesson for like five minutes max, and then I will give them their transition time. They have two minutes to transition and in those two minutes they need to have everything they need for their work block. There is no getting up and going back to their home base or cubby because that was just enough time for the kids to get off task. They were trained to have everything at their flex seating spot.

Teacher M commented, "Sometimes, I let them sit wherever, and then...it's like magic time. I think it makes them feel kind of independent and that I trust them." Teacher C said she felt using flexible seating was being proactive, so behaviors did not

happen. She referred to those students who often get up to ask many questions, or those who get up to take a break. When they are in their flexible seating spots, Teacher C, L, and E all said the students were having their needs met, so they did not need to get up and move around the room.

Differences in student behavior. The fourth theme identified from RQ 2 on the influence of flexible seating on student engagement showed differences in student behavior through the use of flexible seating. Teacher N and M noticed a difference in student behavior with students that usually needed a lot of redirection and attention. They mentioned when those students were using the flexible seating they felt most comfortable, they needed fewer check-ins and less attention by not asking as many questions. Teacher N mentioned she did not see a big difference in the students that were able to do well no matter where they were sitting, but definitely thought for the students who were prone to needing to move, she did not have to check in as much with them. Teacher N communicated:

> I don't think that it affects all students as much as it affects the students who are disruptive. I have seen a change in behavior in the students that are just typically a lot of maintenance, a lot of checking in proximity. I think that I have to do less of that because the flexible seating is set for them.

Teacher K admitted sometimes it depended on the time of day, but for the most part, when the students were given the choice of their desired spot, they usually performed better because they were happy and felt they had more control. Teacher C has been using flexible seating for the past five years, and she said,

> The year before last, I had two students with severe behaviors and flexible seating

> worked wonders for them! There are times where I will give a kid a spot on a stability ball every single day because that works for them and they like that. Sometimes kids will ask to sit in the safe spot because they know it will help them focus, so I let them, and I find a different spot for the safe spot."

Teacher E explained that letting the students choose where they feel they will be successful empowers them, and since they are getting their individual needs met, she is helping the students get what they need to be focused during instruction time. Teacher J and H both taught special education and both expressed that their students, at all age levels, were more engaged when they got to choose where they did their work. Teacher H said in years past, she would try to have her students do their work at a table where she was also doing their instruction or lesson. She said:

> When I had them at the table with me it was to get them to work. They would do a little and then be like, I'm not going to do it and shut down. When I started doing a little small group at the table and then okay, now you go pick your spot...they were more engaged and more likely to do their work.

Likewise, special education Teacher J, said she was able to actually compare six different classroom settings last school year. She explained:

> I've had the awesome advantage of working with six different classes and so I can go into the classes and those who are sitting in chairs and those desks, how antsy they are and how much redirection that teacher had to give versus the other lady who's got her kids in scoop chairs and stools. I saw this year from a different perspective and the behavior was improved in rooms that had flexible seating.

Likewise, Teacher O who taught fifth grade, believed flexible seating can seem like a good bribe for kids, even though they do not realize it, but they will work for a little longer than normal while in flexible seating spots.

Research Question Three. Research Question Three (RQ3) examined: What are elementary teacher perceptions on the influence of flexible seating on student achievement? Within the analysis of interview responses for RQ 3, one theme emerged from participants as flexible seating benefits work instruction and work time. A second theme with RQ 3 was students' benefit from flexible seating when seated in a comfortable place to work. Both themes indicated students are more likely to be engaged and on task which could lead to improved achievement.

Flexible seating benefits instruction and work time. The first theme identified from RQ 3 on the influence of flexible seating on student achievement was centered on the time that teachers use flexible seating in their classrooms. Six out of the 15 participants commented that they felt flexible seating benefitted instruction and work time. Teacher J said, "I think it has actually probably given me more instructional time than I had before since I don't have to redirect behaviors as often." Teacher N saw flexible seating as a huge benefit by the way she had seen her students working with each other. She responded that the curriculum has moved to increased time for collaborative learning and flexible seating saves time because students are able to quickly turn and talk or get into groups to work. Teacher J commented how she noticed flexible seating minimized the students getting up and asking the teacher questions when they are allowed to sit and work with friends. Teacher B explained that flexible seating was just one of the things she taught the students how to use at the beginning of the year, set

expectations, and practiced throughout the year, just like going over rules and routines.

Four out of the 15 participants commented they felt that flexible seating benefits students during independent work, but not during instructional time. These teachers felt students needed to be gathered and focused in the area where the teacher instructs during instructional time. Although Teacher A felt flexible seating benefitted instructional time, she also discussed the way it could harm instructional time because there are some students teachers have to redirect constantly. Teacher A expressed how flexible seating benefited instructional time by saying, "It gives the students time to discuss. It's quick. It's easy, where they can just turn and talk and then come right back." Teacher H also felt flexible seating should be used during independent work time, but not during instruction time because it would be a lot harder to create a learning environment in her special education room that is conducive. Teacher L expressed that she expected everyone to be present on the carpet while she was teaching whole group instruction. Teachers F and E also do a whole group instruction and then split off into small groups or individual work having the students then choose their flexible seating spots. Teacher E explained:

> It benefits because you're helping the students. You're giving them what they need so they can focus during that work time. I think it's vital for kids to have their attention on you during direct instruction.

For Teacher G, whose daughter's teacher used flexible seating in her second-grade classroom, saw flexible seating as a benefit for responsible students. She explained, "Like for her, she is a responsible student so she is going to place herself near someone or away from people depending on who she knows will bother her or how she

will work best."

Being comfortable as a way to improve student achievement. Another common theme found under RQ 3 on the influence of flexible seating on student achievement was being comfortable while using flexible seating. Nine out of the 15 teachers interviewed saw flexible seating improving student achievement because the students felt they could be successful by being able to choose a spot where they could be successful. Teacher C felt flexible seating increased their achievement because the students were able to move around and interact with their classroom rather than sit the whole day in one spot. Teacher A said, "They (students) are just more engaged in what we're doing. As you know, the more comfortable they are, the more engaged they can be."

Similarly, Teacher H and Teacher K commented that they got more engagement and effort out of students when they were comfortable. They said they saw students working harder and staying engaged when they used flexible seating. Students can achieve because they can be comfortable, attentive, and engaged. Teacher I stated:

> I honestly think it is that higher engagement, more comfortability. I even let my kids sit in their flexible seats for tests. If a kid wants to lay down to take a test, they can lay down and take a test.

Teacher B uses flexible seating as a way to give students more ownership and build relationships with them. She feels that when kids have the choice, they feel the teacher cares about them enough to give them what they need, and in return, they will feel more comfortable and more inclined to learn. Teacher M agreed and felt when using flexible seating, the students' brains are able to actually think about their learning first, not secondary after worrying about how uncomfortable they are.

Teacher N said, “I do believe they’re more engaged which leads to a little better achievement.” Teacher L and E feel giving the students the option of where to sit helps them be successful because they can choose what works best for them. Teacher E also added when her class does flexible seating, she is giving them movement they need to focus, be engaged, and be more successful academically.

Summary

There were three primary purposes of this study: (1) to explore teacher perceptions regarding uses of flexible seating in the classroom, (2) to examine teacher perceptions on the influence of flexible seating on student engagement, and (3) to explore teacher perceptions on the influence of flexible seating on student achievement. The researcher used three research questions: 1) What are elementary teacher perceptions regarding the uses of flexible seating in the classroom? 2) What are elementary teacher perceptions on the influence of flexible seating on student engagement? 3) What are elementary teacher perceptions on the influence of flexible seating on student engagement? After conducting interviews with 15 elementary teachers, the researcher then used HappyScribe.com and Rev.com to transcribe the interviews in a Word Document and used a program, Dedoose, to help code and analyze the data.

For the first research question, themes identified were the way teachers learned about flexible seating, uses of flexible seating, and advantages and disadvantages. Under the themes of advantages; comfort, choices, and increased engagement/focus were discussed. Falling under the disadvantage themes were classroom management, too much choice, and cost. For the second research question, themes of student movement, student engagement, students on task, and differences in student behavior were discussed. For the third research question, themes identified were flexible seating during

independent work and students being comfortable as a way to improve student achievement.

Chapter Five will summarize the study, discuss the findings, provide implications for practice, provide recommendations for further research, and then address conclusions. Chapter Five will relate the results to the research questions and describe how the results can be applied in practice. It will provide other research ideas and then summarize the research and findings.

Chapter Five

Summary, Discussion, and Conclusions

Introduction

This study examined teacher perceptions on flexible seating in the classroom, specifically the effects it has on student engagement and student achievement. The final chapter of this research study of teacher perceptions of the use of flexible seating will first be summarized. The research questions will then be restated and related to the results presented in the previous chapter. Following this, the researcher will provide implications for current and future practices and make recommendations for researchers. And finally, this chapter will close with a summarization of the research and findings.

Summary of the Study

Previous studies have shown that movement is a prerequisite for learning (Krog & Kruger, 2011), movement and physical activity anchors learning (Hannaford, 1995; Krog & Kruger, 2011), and exercise boosts brain function (Medina, 2008). Research has also shown that the part of the brain that processes movement is the same part of the brain that processes learning (Jensen, 2005) and when students are allowed to use the bodily-kinesthetic intelligence, they learn by moving, touching, and making things (Al-Wadi, 2012; Brualdi, 1996). These outcomes have increased the use of flexible seating in elementary schools. Although there is limited literature supporting the use of flexible seating in elementary classrooms as a way to improve student engagement and student achievement, a great amount of research studies supported the use of flexible seating as a positive for students with attention deficit hyperactivity disorder (ADHD), autism, and sensory disorders (Boone, 2016; Fedewa & Erwin, 2011; Schilling, Washington, Billingsley, & Deitz, 2003). Alternative seating options have been found to influence

student behavior and engagement in the classroom (Burgoyne & Ketcham, 2015; Fedewa & Erwin, 2011; Bagatell, Mirigliani, Patterson, Reyes, & Test, 2010; Haghighi & Jusan, 2012). This study sought to examine teacher perceptions of the uses of flexible seating in the classroom and the influence of flexible seating on student engagement and achievement in elementary and special education classrooms.

The researcher set out to review teacher perceptions because such perceptions are based on the teachers' prior knowledge of student behavior and whether flexible seating was perceived to improve student engagement and student learning. By examining teacher perceptions about the different uses of flexible seating in relation to student learning and achievement, this study provides valuable information to educators who are interested in improving student achievement in elementary classrooms. Exploring varied uses of flexible seating may be valuable to teachers who struggle to keep their students' attention, schools struggling to reach accreditation, or schools wanting to improve their academic scores.

One of the seven intelligences in Gardner's Theory of Multiple Intelligences, bodily-kinesthetic intelligence, provided the framework for this study. Multiple intelligence is said to be "child-centered" as educators look at how the child learns and then develops curriculum, instruction, and assessment based on this information (Hoerr, 2002). Modern pedagogies have recently gone from teacher lecturing or giving students only verbal information, to more active learning where students are able to use critical thinking skills while working with others (Harvey & Kenyon, 2013). The bodily-kinesthetic intelligence is an ability to use one's own body to create products or solve problems (Davis, Christodoulou, Seider, & Gardner, 2011) and challenges the belief that

mental and physical activity are unrelated (Brualdi, 1996). This research study also took into consideration the theoretical framework of brain-based education and how movement and exercise are correlated with the brain and how a child learns (Jensen, 2005).

This phenomenological qualitative study was conducted in five school districts in Missouri that were similar in size and demographics. Fifteen participants agreed to participate in the study. The researcher collected data through semi-structured, open-ended interviews of elementary teachers and special education teachers. The selection of the teachers interviewed was an intensity sample. The intensity sample was obtained by selecting participants who use, have used, or never have used flexible seating in the classroom. The researcher conducted Google Hangout interviews and face-to-face interviews and recorded them for transcription. The interviews were then transcribed to Word Documents by online sites, Rev.com and HappyScribe.com. Prior to the researcher analyzing interview data, each participant was given a letter pseudonym to remain anonymous. The transcriptions and recordings have been saved and are stored on a personal, password-protected Google Drive for five years and will then be discarded.

Three research questions were used to guide this study: 1) What are elementary teacher perceptions regarding uses of flexible seating in the classroom? 2) What are elementary teacher perceptions on the influence of flexible seating on student engagement? and 3) What are elementary teacher perceptions on the influence of flexible seating on student achievement? The researcher analyzed participant interview responses and identified several themes in order to answer each research question. Themes aligned to each research question are discussed below.

Research Question One. There were three themes that emerged under Research Question One: what are elementary teacher perceptions regarding uses of flexible seating in the classroom? Themes identified included how teachers learned about flexible seating, the uses of flexible seating, and the advantages and disadvantages of flexible seating. The three themes identified are aligned to Abdelbary (2017) who believed incorporating flexible seating into a classroom provides more opportunities for students to move throughout the day. In addition, occupational therapists believe movement is important for students because incorporating movement crosses the midline of the body realizing that these integrated movements force the two hemispheres of the brain to work together, which helps students prepare to learn and focus the brain to improve concentration (Dennison, 2006; Lengel & Kuczala, 2010). In this study, the participants saw the need for extra movement throughout the day for all students and flexible seating played an important part of that movement. The participants said when students had the ability to use flexible seating, they were more engaged and focused as they could move to positions they needed to be comfortable. When students were comfortable, the participants from this study saw more engagement and on-task behaviors. The ability to move relates to preparing the brain as occupational therapists feel is needed for increased concentration. The teachers saw the benefit of not only the different flexible seating items, but also the convenience of students being grouped in small groups ready to collaborate.

In response to Research Question One, participants from this study mentioned the use of stability balls for students who had difficulty staying on task. These students were ones who would get up to ask the teacher many questions that had already been answered

and students who would get up frequently to sharpen their pencil, get a drink, or use the bathroom. While these students had the ability to sit on a stability ball, the participants saw these students having less off-task behaviors. These results relate to Schilling & Schwartz (2004) who constructed a study on the effects the therapy balls had on classroom behavior in children with Autism Spectrum Disorder (ASD). The researchers chose four preschool males each having a diagnosis of ASD. The four students were chosen for this study based on teachers' reports indicating difficulty with in-seat behavior and maintaining engagement to task. The results showed that all participants had an improvement in classroom behavior during the use of therapy balls for classroom seating. For three of the participants, the in-seat behavior showed immediate improvement while sitting on the therapy ball. When the three students returned to the chair phase, there was an immediate decline in in-seat behavior. Researchers found the fourth participant, who had a behavior plan in place for his oppositional behavior, showed an increase in his engagement, a decrease in oppositional behavior, and the teacher did not have to implement his behavior plan while seated on the therapy ball. However, when he returned to the chair phase, he was oppositional on one or more times per session and teachers had to implement his behavior plan. The second area assessed was engagement and all four participants had improvements in engagement. Very similar to the results for the in-seat behavior, all participants demonstrated an immediate decline in engagement when returning to the typical classroom seating (Schilling & Schwartz, 2004). Participant, Teacher M, comment related to the research of Schilling & Schwartz (2004). She said,

> It's so hard for them (students) to sit in a desk and sit still. I always give the option, even if they are at their desk so that's not something they are focusing on, to sit the correct way or trying to be quiet and still in a desk and chair."

The response from Teacher H also related and confirmed the results of Schilling & Schwartz (2004) for the students that tend to move more than others. She said, "I wouldn't have had anybody working in my room. I mean, that's what they need."

Research Question Two. The second research question referred to the influence of flexible seating on student engagement and involved the themes of student movement, student engagement activities, students on task, and differences in student behavior. In relation to student movement and student engagement activities, results for Research Question Two showed the participants used flexible seating and movement breaks to keep students on task and engaged. The kindergarten teacher participants responded that all of their students needed more movement to stay engaged. Seven out of 15 participants mentioned doing brain breaks to give students additional movement throughout their day to keep the students engaged during instructional and learning time. Teacher J mentioned the need to incorporate more movement into the day due to recess being cut short while other participants mention students' attention seemed to decline in the afternoon. Giving students the opportunity to use flexible seating and have brain breaks throughout the day were two ways the participants used to keep students engaged and on task.

These results for Research Question Two related to other researchers who claimed many behaviors begin to show when students are expected to sit still for a long period of time because they use their whole bodies to move, explore, learn, and sometimes just to stay alert (Hannaaford, 1995; Dennison, 2006; Lengel & Kuczala, 2010; Blaydes, 2012).

Educators have asked what they can do to change the level of retention and what will help students become more engaged in classroom discussions (Cole, 2008). Active Living Research (2013) researched the impact of programs created to give students activity breaks in the classrooms as a way to increase physical activity and time-on-task among children. Instant Recess® is a program used to introduce 10-minute physical activity breaks in the classrooms on a schedule determined by the teachers (Glover, Ham, & Yancey, 2011). The results from Instant Recess® were significant, showing an 11 percent increase in the percentage of time students devoted to on-task behavior (Active Living Research; Glover, Ham, & Yancey, 2011). A program called The Energizers, allowed students to stand and move in 10-minute intervals using teacher-led activities (Mahar, et al., 2006). The students showed a 20 percent improvement in on-task behavior among the least on-task students after participating in The Energizers program. The research over the different programs created to give students breaks throughout the day relates to what the participants of this research said in relation to Research Question Two. Seven out of the 15 participants mentioned doing brain breaks, which usually involved movement, dance, or yoga, throughout the school day to give students extra movement and a short learning break so, as research showed, when they went back to instruction time, they will be ready to learn.

Research Question Three. Finally, two themes emerged from the third research question: what are elementary teacher perceptions on the influence of flexible seating on student achievement? The two themes identified included flexible seating benefits instruction and work time, and being comfortable as a way to improve student achievement. These two themes relate to other researchers who found that seating

arrangements have more of an impact on student learning; so much that some say that it can positively or negatively affect student performance (Moslemi Haghighi, 2012). The themes from Research Question Three also relate to information by Lengel & Kuczala (2010) in the book, *The Kinesthetic Classroom*, saying that academic standards can be met, test scores can be improved, and important life skills can be developed by using movement. Research showed that seating locations are related to academic achievement and classroom participation because often the location decreases behavior problems that would lead to less instructional time (Wannarka, 2008). Research by Moslemi Haghighi (2012) and Wannarka (2008) relates to this current research by answering Research Question Three on the influence of flexible seating on student engagement. The participants of this study felt that flexible seating benefitted students during independent work. Teachers H and K commented that they got more engagement and effort out of students when they were comfortable. They said they saw students working harder and staying engaged when they used flexible seating.

Discussion of the Findings

Several studies have been done showing the impact of learning environments and spaces in schools on classroom engagement (Haghighi & Jusan, 2012; Castellucci, Arezes, Molenbroek, Bruin, & Viviani, 2016), participation, and academic achievement (Fernandes, Huang, & Rinaldo, 2011). Interview data from fifteen teachers for this research study revealed three main themes from Research Question One, four main themes from Research Question Two, and two main themes from Research Question Three. Each research question and theme is presented below along with research that supports or negates the themes.

Research Question One. The first research question examined was: What are elementary teacher perceptions regarding uses of flexible seating in the classroom? The three themes identified were 1) how teachers learned about flexible seating, 2) uses of flexible seating, and, 3) advantages and disadvantages of flexible seating.

The growing field of cognitive neuroscience has begun to provide educators with information on how the brain learns and how educators can help students become successful and confident learners (Blaydes, 2012). This could be the reason why over half of the teachers interviewed in this researcher's study, mentioned a co-worker or a teacher down the hall as the way they learned about flexible seating. Teachers interviewed in this study mentioned the frequent need for students to move throughout the day, which aligns with Abdelbary (2017) who found incorporating flexible seating into a classroom provides more opportunities for students to move throughout the day. Frequent movement increases blood flow to the brain, promoting mental clarity, and assists children in their learning (Merritt, 2014). Teachers interviewed in this study learned from co-workers about using flexible seating as a strategy to engage and help students learn as they move in the classroom. These findings align to other researchers who found movement helps students be more on-task because exercise helps stimulate the brain (Jensen, 2005; Active Living Research, 2015; Hannaford, 1995). In this study, teachers also mentioned learning about flexible seating by reading articles and following teacher discussions online of educators who use flexible seating.

The second theme from Research Question One, revealed the different uses of flexible seating in the classroom. While not every participant interviewed said they used flexible seating, each one mentioned the students in their classroom had the option to

stand or sit on the floor or a chair while doing school work. This theme related to the theoretical framework of bodily-kinesthetic intelligence by giving the students what they need to be successful. Different uses of flexible seating described by teachers interviewed for this study related to teachers who have been incorporating flexible seating into the regular education setting in hopes that the extra movement will keep students engaged (Merritt, 2014; Korbey, 2014; Olson, 2015).

The most mentioned item used for flexible seating among the participants was a stability ball, also referenced as a yoga ball, or an exercise ball. Other researchers' results are similar who found when students are seated on a stability ball, they are more attentive, better focused, and have higher achievement outcomes (Bill, 2008; Olson, 2015; Kilbourne, 2009). This theme also related to the inactivity among children needs to be addressed and results imply that exercise balls in place of chairs address the inactivity concern (DiBitetto, 2015). Research by Mead, Scibora, Gardner, and Dunn (2016) showed students sitting on stability balls were more productive academically. They compared the academic performance of sixth-grade math students between three classes; the class that used stability balls during instruction time, the class who did short, five-minutes activity breaks during instruction time, and the class that maintained sedentary during class instruction. Results showed that sitting on the stability balls positively affected the math standardized test scores, and the short physical activity breaks and being sedentary during a class time were not effective in improving math scores. Other popular flexible seating items identified by participants in this researcher's study were wiggle cushions, wobble stools, and pillows on the floor to be used with lowered tables.

The third theme arising from Research Question One were the advantages and disadvantages of uses of flexible seating in the classroom. The three advantages identified by participants were comfort, choice, and increased engagement and focus. These themes related to research that showed teachers adding flexible seating to a classroom environment fostered a positive and comfortable working environment (Carter, 2017); thus, motivating students to be more engaged in the classroom discussions. Twelve of the 15 teachers described the importance of their students being comfortable and how flexible seating met their students' needs while giving the students an advantage for their learning environment. Emerging themes from the participants in this study matched studies that show students' behavior and engagement was influenced by the classroom environment (Haghighi & Jusan, 2011) and while using flexible seating in their classrooms, teachers believed the students take more ownership of the classroom, instead thinking of it as the teacher's classroom (Havig, 2017; Paterson, n.d.).

Although dated, researchers Axelrod, Hall and Tams (1979) showed contrasting results to other studies where they compared student behavior in different seating arrangements in two separate experiments in 1979. One experiment took 17 inner-city second graders, who were below grade level, to see if they had a better study behavior (raising hand, complying with directions) when their desks were seated in a table formation (a group of four, one group of five) or while seated in rows. The students' desks were in table formation for the first seven days and the mean study level was 62%. The next seven days, the teacher moved the desk into rows and the mean study level for students was 82%. In the following seven days, they went back to the table formation and the study means level went to 63%. When students who were seated at desk in rows,

the mean study level went up to 83%. Unlike the results of this researcher's study, Axelrod, Hall, and Tam's (1979) results showed that positive study behavior was more frequent students were seated in the rows.

In a second study, Axelrod, Hall, and Tams (1979) researched desk formations and which had less talk-out behavior. They found significantly fewer instances of talking without permissions when students were seated in rows rather than in a cluster where students were face to face (Axelrod, Hall, & Tams, 1979). These results went against the current research as Teacher E mentioned she often had other teachers, parents, and administrators asking, "Aren't the students just distracted by their seats and moving all around?" Her comment was that she did not find that the case because when the expectations are set for the students, they understand that they are to be engaged and that flexible seating is a privilege, that could be taken away.

The theme of increased engagement and focus as an advantage of flexible seating found in this study relates to Mark Benden's two-year research in 2011 of 374 students to test student engagement in the environment. The students were divided into two groups, one control group who would be sitting at traditional desks, and the other group who would be standing at standing desks, along with a tall stool. Psychologists sat in classrooms measuring students' attentiveness and engagement. The findings showed students who were more engaged in the environment were the ones allowed to stand versus the ones in the traditional seated environment (Benden, Zhao, Jeffrey, Wendel, & Blake, 2014).

The emerging themes under teacher perceptions regarding the uses of flexible seating seen as disadvantages were classroom management, too much choice and

distraction, and the cost of flexible seating. In many flexible seating classrooms, the students choose where they sit and what they sit on, but only after being taught the rules and trained on each alternative seating item (Schimke, 2013). The teachers face many decisions, one being how they will seat the students, especially since seating arrangements have been found to influence classroom climate and student relationships (Gremmen, van den Ber, Segers, & Cillessen, 2016). Many teachers interviewed, whether they did flexible seating or not, mentioned the importance of classroom management. Those that did flexible seating mentioned the importance of setting rules and practicing the correct way to use each flexible seating item throughout the school year. The fear of needing to continue to review the rules and constantly redirect students on the correct ways to use the flexible seating items was the main reason mentioned by one of the participants interviewed for not doing flexible seating.

Although empirical research is limited on the disadvantages of flexible seating, a few teachers have written about their experience on websites and blogs (Morris, 2017; Durgin, 2018). Many of the participants interviewed in this study agreed by saying that a flexible seating environment is not always best for every teacher, or every student. At the beginning of the year, teachers face many decisions, one being how they will seat the students. Four of the 15 interview responses saw flexible seating as a disadvantage because it involves too many choices for the students. Pre-kindergarten through grade 2 teachers interviewed in this study represented the largest group who believed varied flexible seating arrangements offered to students in the classroom involved too many choices.

Research Question Two. The second research question explored elementary teacher perceptions on the influence of flexible seating on student engagement. Four themes were identified and included student movement, student engagement and activities, students on task, and differences in student behavior.

The need for movement is supported by Eric Jensen (2005) who claimed movement in the classroom is needed to enhance circulations, to get more oxygen to the brain, and to stimulate brain function (Dennison, 2006). Of the 15 interviews, there were eight teachers who said the time of day when students moved the most was after lunch, while eight of the teachers said boys and students with Attention Deficit Hyperactivity Disorder (ADHD) moved the most. Results from this researcher's study align to Hannaford (1995), who found many students with Attention Deficit Disorder (ADD) or ADHD wiggle and constantly turn their heads and fidget so they can stay alert. A study from the University of Central Florida tested 52 boys between the ages of eight and twelve years old, 29 of them being diagnosed with ADHD. The children performed a series of tasks that tested their short-term memory skills. Researchers noticed the student with ADHD who moved the most while working performed the best (Moeny, 2015).

The second theme that arose from the influence of flexible seating on student engagement was incorporating student engagement activities. Participants in this research study revealed the various ways teachers engaged their students such as giving the students breaks throughout their day to move. These finding relate to a study from the University of Illinois at Urbana-Champaign, where research supported the need for brief breaks as a way to keep students engaged by having participants of the study perform a 50-minute repetitive computerized task (University of Illinois at Urbana-

Champaign, 2011). Among four groups, one group took no breaks and had no diversions, another group had to remember a four-digit code to enter when they saw one of the digits, another group who had four digits to remember before the task but did not have any digits show, and the digit-ignored group who were shown the same digits given to the other groups but were told to ignore them. Over the 50-minute task, most participants' performance significantly declined over the course of the task, but those in the group who were told to respond when they saw one of the digits they had been told before the task saw no drop in their performance over the 50 minutes. Having them take two brief breaks from their main task allowed them to stay focused during the whole experiment (University of Illinois at Urbana-Champaign, 2011).

The student engagement programs researched for this study incorporated movements or activity breaks and showed an increase in students being on task. The review of these engagement programs incorporating movement leads to the third theme identified for Research Question Two involving student engagement and students being on task when flexible seating is used. Physical movement increases the energy of students which can enhance their engagement (Boone, 2016); and children are less likely to be disruptive when they are active (Medina, 2008). There are many programs now created to give students activity breaks in the classroom as a way to increase physical activity and time-on-task among children (Active Living Research, 2013). A program called The Energizers, allows students to stand and move in 10-minute intervals using teacher-led activities (Mahar, et al., 2006). The students showed a 20 percent improvement in on-task behavior among the least on-task students after participating in The Energizers program. The Texas I-Can program incorporated movement into the

classroom lessons, in 10-15 minutes, to achieve academic curricular goals (Grieco, Jowers, & Bartholomew, 2009). Students had small increases in time-on-task after an active lesson, although not statistically significant. However, there was a significant decrease in time-on-task after students participated in an inactive lesson (Active Living Research, 2013), which showed a positive for adding movement into the school day.

The teachers interviewed in this research related students being more on task while using flexible seating. Research by Burgoyne and Ketcham (2015) aligned to this theme by concluding therapy balls offered more opportunities than the chairs for sensory stimulation, which resulted in more observed on-task behavior by their observational study of classroom performance in second grade. Likewise, a study by Fedewa and Erwin (2011) of fourth and fifth-grade students with attention and hyperactivity concerns measured the effect of stability balls on attention, levels of hyperactivity, and increased time on task while in a seat or on a ball. All students received stability balls instead of a regular chair, but they assessed the severity of behaviors only on eight students whose attention and hyperactivity levels were classified as most severe. The study went over a 12-week period using a momentary time sampling to which observers would code student behavior every 30 seconds. The results showed the in-seat average went from 45% while on the chair, to 94% while seated on the ball; and on-task behavior went from 10% while seated on the chair, to 80% while seated on the ball (Fedewa & Erwin, 2011).

The fourth theme identified while referring to Research Question Two on the influence of flexible seating on student engagement, was the differences in student behavior. When students sit for a long period of time, their posture may cause them to lose focus, motivation, and hinder learning (Harvey & Kenyon, 2013). Educators who

are looking to best-practices in teaching are realizing the importance of students being more involved in classroom discussions rather than only listening to the teacher lecture (Harvey & Kenyon, 2013). Schilling, Washington, Billingsley, and Deitz (2003) investigated the effects therapy balls had on in-seat behavior versus regular chairs with students having ADHD. Their results related to this researcher's findings by showing improvement in sitting behavior for all the participants when seated on a ball. Due to the wide range of behaviors and difficulty with engagement, attention, and classroom behavior, many educators and therapists have tried interventions within classroom settings with children who have been diagnosed with Autism Spectrum Disorder (ASD) (Schilling & Schwartz, 2004). Schilling and Schwartz (2004) studied the effects of classroom behavior in children with ASD. The intervention phases were carried out for a minimum of two school weeks and data were collected on sitting and engagement. The results showed that all participants had improvement in classroom behavior during the use of therapy balls for classroom seating. Schilling and Schwartz (2004) findings with a special education teacher interviewed for this study. She was in a class within a class situation, so she went into six different classrooms. She saw the differences in seating arrangements from one classroom to another and noticed a significant difference in student engagement and behavior with the students using flexible seating versus the students sitting in chairs at desks.

While this researcher's study found students were more engaged in classrooms who use flexible seating, Messinger (2014) found students were less engaged and exhibited negative behaviors while students used stability balls. Messinger (2014) created a short experiment that gauged student behavior while using stability balls versus

chairs in the classroom, while also getting the students' perception on the use of the balls. The participants were 24, fifth-grade students that, according to their former teachers, had the reputation of being hard to manage. Students began the year sitting on stability balls and had been using them for two months before Messinger began the experiment. The first week the students sat on regular chairs and the teacher measured their behaviors using her class and individual behavior systems. The students would sit on the stability ball the second week while having the same behavior systems in place. Messinger (2014) found that the students behaved better as a whole with regular chairs than with stability balls, leading the researcher to believe that flexible seating caused more off-task behaviors. Although when surveying the students, the majority of them enjoyed the stability balls and thought they were a benefit to themselves and not a distraction for their neighbors.

Research Question Three. The third research question explored elementary teacher perceptions on the influence of flexible seating on student achievement. Two themes were identified under Research Question Three: flexible seating benefits instruction and work time, and being comfortable as a way to improve student achievement. Humans are not made physically, or mentally, to sit still (as cited in Ravn, 2013) and many find it difficult to focus on a task for an extended period of time. Several studies have been done showing the impact the learning environment and spaces in schools have on classroom engagement (Haghighi & Jusan, 2012; Castellucci, Arezes, Molenbroek, Bruin, & Viviani, 2016), participation, and academic achievement (Fernandes, Huang, & Rinaldo, 2011). A pilot study that replaced classroom chairs with stability balls at an elementary school found that students had improved academic

performance and better health during the study (The Aroostook Medical Center, 2013). This research related to this researcher's findings where nine out of 15 teachers interviewed believed flexible seating improved student achievement. The Aroostook Medical Center (2013) found 80 percent of students improved their standardized test scores over the course of the year while using the stability balls.

Alternative seating options have been found to influence student behavior and engagement in the classroom by many researchers (Bugoyne & Ketcham, 2015; Fedewa & Erwin, 2011; Bagatell et al., 2010; Haghighi & Jusan, 2012) which relates to the themes of Research Question Three, flexible seating benefits instruction and work time, and being comfortable as a way to improve student achievement. Carter (2017) found that by adding flexible seating to a classroom environment, teachers foster a positive and comfortable working environment to which might motivate students to be more engaged in the classroom discussions. In relation to the study of Carter (2017), the researchers participants had similar comments. Teacher J commented that when students were using flexible seating, she felt they were comfortable where they were while learning, therefore they learned more. Along the same theme of students being comfortable as a way to improve student achievement, Teacher E said,

> You're allowing them the ability to be able to focus when using flexible seating and giving them outlets for the movement they need. This helps them focus and be more successful academically.

Implications for Practice

There are a number of implications from this study on flexible seating that would be noteworthy for teachers K-6 elementary schools in Missouri, and beyond. This research was limited to kindergarten through sixth-grade students, but these factors may

be notable for districts of any size and any grade level looking to achieve more student involvement and engagement in the classroom. This research shows significant opportunities to enhance student engagement and achievement with the addition of flexible seating into the classroom. Teachers often referred to flexible seating as the items they use to sit on, and sometimes flexible seating meant using desks, but the formation of desks would be in groups rather than in rows. School districts, administrators, and teachers can use these findings to facilitate discussions on integrating the different items and management of flexible seating to engage students and improve student achievement.

Participants in this study all mentioned the need for students to move. Brain-based learning relies on how the brain learns and results from this research showed the inclusion of flexible seating giving students the movement they needed so they could be comfortable. Along with the comfort mentioned in the research, the participants found that when the students were comfortable, they were more engaged in instruction and while doing their work. Brain-based education has been constantly evolving over the last 20 years. Jensen (2005) explains when students are active, their energy stays up and their brains are getting the oxygen-rich blood needed for the highest performance. Factors from this study and literature suggest the use of flexible seating for students with ADHD and ASD. Research from brain-based education confirms by saying physical movement increases the energy of students that can enhance their engagement (Boone, 2016). The stability ball was involved in multiple research and studies with students with ADHD, ASD, and students who may need a lot more movement than other students. Yancey (2006) described children being less likely to be disruptive when they are active.

Factors in this study and literature suggested that adding flexible seating to the school environment helped with student engagement, which may lead to improved student achievement. Research in this study clearly showed the importance of using movement in the elementary classroom and the need for students to be comfortable while working in the classroom. Flexible seating was used to help add that movement and comfort into the classroom. Teacher perceptions of using flexible seating in the elementary grades were very positive and felt that using flexible seating helped students focus while having less off-task behaviors.

An implication for practice would be looking closely at the importance of teachers' classroom management with the use of flexible seating. Results from this study revealed the positive results on students' on-task behavior and student engagement when teachers utilized flexible seating. Teachers that implemented flexible seating, all mentioned the need for students to know the expectations for each seating item, practice using the items, and the need to be consistent with the behaviors when students did not follow the expectations. Teachers must be mindful of the importance of implementing and sustaining classroom management of flexible seating in the classroom.

Recommendations for Further Research

Due to the mixed findings from this research and other research studies, continued research needs to be done in the area of flexible seating in the classroom setting. The researcher recommends a more precise definition of flexible seating, including not only the items used, but the positioning of students, for example, standing or sitting, is needed to benefit research in this area. More research is needed at the elementary level to expand knowledge on whether or not flexible seating improves student achievement. In addition, future research in middle school and high school may provide more insight into

the benefits of using flexible seating with adolescents to increase engagement and improve student achievement. Exploring additional teacher perceptions of those who do not use flexible seating in their classroom would be beneficial to schools who may question the use of flexible seating. More research is needed on how to increase the mindset of teachers towards effectively using flexible seating in the classroom. Many classrooms today do not utilize flexible seating. For many years, teachers have set up their classrooms with desks and students in rows. This may be the way everyone did it, or maybe it was deeper into the learned behavior that teachers found to have more students engaged when in rows rather than grouped in clusters. More research is needed in these situations, but the researcher is curious to see how much different the results would be if studied at this time.

While this study reviewed other studies that use the stability ball to provide movement and comfort for students to increase student engagement, further research needs to be done on other alternative seating options such as pillows, wobble stools, wobble cushions, rolly chairs, and so on. Also, further research on student achievement, specifically involving test scores, would be beneficial to see if student achievement improves with the use of flexible seating.

Conclusions

The purpose of this study was to examine the perception of teachers' use of flexible seating in the classroom on student engagement and student achievement. The findings of this research exhibited nine themes that arose from the teacher interview data in response to the three research questions: 1) What are elementary teacher perceptions regarding uses of flexible seating in the classroom?, 2) What are elementary teacher perceptions on the influence of flexible seating on student engagement?, and 3) What are

elementary teacher perceptions on the influence of flexible seating on student achievement?

When examining teacher perceptions regarding uses of flexible seating, three themes emerged; 1) how teachers learned about flexible seating, 2) uses of flexible seating, and 3) advantages and disadvantages of flexible seating, with six emerging themes under the advantages and disadvantages. When examining what elementary teacher perceptions were on the influence of flexible seating on student engagement, four themes emerged; 1) student movement, 2) student engagement activities, 3) students on task, and 4) differences in student behavior. When examining what the perceptions of teachers were on the influence of flexible seating on student achievement, two themes emerged; 1) flexible seating benefits instruction and work time and 2) being comfortable as a way to improve student achievement.

The 15 teachers interviewed for this study, saw flexible seating as a positive addition to their classroom environment to help students be comfortable because when students were comfortable, they are more likely to be on-task and more engaged during instructional time. In return, students believe they have a say in their learning environment and feel the teacher cares about them being successful. Participants felt when students do not need to worry about their surroundings, they can focus, work hard, learn, and achieve.

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To: Dr. Leslie Trogdon

Cc: Pepper Grimm

APPENDIX A:

IRB APPROVAL

From: Tom Frankman, Ed.D.
Chair, Institutional Review Board
Associate Professor, School of Education

Protocol Number: 169

Title: Teacher Perceptions on Flexible Seating in the Classroom: Effects on Student Engagement and Student Achievement

Date: April 25, 2019

On April 25, 2019, the William Woods University Institutional Review Board (IRB) reviewed and approved the above-cited protocol following expedited review procedures.

Please note the following:

1. Please keep copies of the signed consent formed used for this research for three years after the completion of the research.
2. **Any modification to your research (including protocol, consent, advertising, instruments, funding, etc.) must be submitted to the Institutional Review Board for review and approval prior to implementation.**
3. Any adverse events or unanticipated problems involving risks to subjects including problems involving confidentiality of the data identifying the participants must be reported to the Institutional Review Board office.

The anniversary date of this study is April 25, 2020. **You may not collect data beyond that date without WWU IRB approval.** A continuing review form must be completed and submitted to the Institutional Review Board 30 days prior to the anniversary date or upon the completion of the project. You will be sent a reminder prior to the anniversary date.

If you have any questions, please contact me at tom.frankman@williamwoods.edu

APPENDIX B

INFORMED CONSENT FORM

Title of Study

Teacher perceptions on flexible seating in the classroom: Effects on student engagement and student achievement

Principal Investigator and Contact Information

Dr. Leslie Trogdon

William Woods University

Academic Dean

573-592-1725

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Student Researcher's Name

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816-674-2061

Purpose of the Study

The purpose of this study is to examine the perception of teachers use of flexible seating in the classroom on student engagement and student learning. The researcher believes teacher perceptions are important because they are based on the teachers' prior knowledge of student behavior and whether flexible seating is perceived by teachers to improve student engagement and student learning.

Procedures

Participation in this study will consist of taking part in an audiotaped interview that will last approximately 30 minutes. There may be additional follow up through email, or by phone.

Confidentiality

Participation in this study will be confidential. Identifying characteristics of participants and their school districts will be protected in the published final product of the study.

Voluntary Participation

Participation in this study is voluntary and participants reserve the right to terminate their participation at any time.

Information About This Study

Participants will have the opportunity to ask, and to have answered, any questions about this research by emailing or calling the principal investigator and/or the student investigator, whose contact information is listed at the top of this letter. All inquiries will be kept confidential.

Participant's Agreement Statement

I have read the information provided above. I voluntarily agree to participate in the study "Teachers perceptions on flexible seating in the classroom: Effects on student engagement and student achievement." After this agreement form is signed, I understand that I will be contacted to arrange a time to be interviewed.

_____

Name (Printed)

_____

Signature

_____

Date

APPENDIX C

INTERVIEW GUIDE

Interviewee's Name: School/District Name:

Date: Time:

Date informed consent form signed:

Do you have any questions for me at this time?

Demographic Questions

1. How many years have you been teaching?
2. How many different districts have you taught in?
3. What grade levels have you taught?
4. What grade level are you currently teaching?
5. What is the approximate size of the building you are currently teaching in?
6. How many students are in your classroom?
7. Describe your classroom environment. (Expectations for your classroom environment-busy, active, lots of movement, sitting still, mostly silent, etc.)

Research Question 1: What are elementary teacher perceptions regarding uses of flexible seating in the classroom?

1. What do you know about flexible seating and how did you learn about flexible seating?
2. In what ways, if any, have you used flexible seating in your classroom?
3. Why did you decide to implement (or not implement) flexible seating in your classroom?
    a. How did you manage flexible seating in your classroom?
    b. How did you introduce flexible seating at the beginning of the year?
    c. From your experience, what are the advantages of using flexible seating?

d. From your experience, what are the disadvantages of using flexible seating?

Research Question 2: What are elementary teacher perceptions on the influence of flexible seating on student engagement?

1. When do you notice students moving the most during the school day?
2. What students do the most movement throughout the day?
3. What do you do to try to get students engaged, and does the flexible seating play a part in it?
4. When are the times you let the students use flexible seating in your classroom? Do they get to choose where they sit or do you choose?
5. What is the typical behavior while the students are using flexible seating?
6. Have you noticed any differences in student behavior through the use of flexible seating compared to regular seating?

Research Question 3: What are elementary teacher perceptions on the influence of flexible seating on student achievement?

1. In what ways do you feel flexible seating benefits or harms your instructional time?
2. In what ways, if any, do you see flexible seating as a way to improve student achievement?

At the conclusion of my study, I will provide you with an executive summary of the completed dissertation upon request.