A HERMENEUTIC PHENOMENOLOGICAL STUDY OF TEACHER PERCEPTIONS OF THE EFFECT MOVEMENT STRATEGIES HAVE ON STUDENT LEARNING

by

Mary Catherine Strickland

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

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APPROVED BY:

David Vacchi, Ph.D., Committee Chair

Roger Stiles, Ed.D., Committee Member

Abstract

The purpose of this hermeneutic phenomenological study was to understand teachers' use of movement strategies to improve students' learning. The theory guiding this study was Shapiro's embodied cognition theory, which asserts that the body plays a significant role in cognitive processing. The study attempted to answer the central research question: How do teachers perceive and understand movement and learning in the classroom? The teachers who participated in the study came from a private school in the Southern United States and were chosen using purposeful criterion sampling to ensure their familiarity with movement as a strategy. Data was collected through in-depth interviews with each participant, observations of participants using movement strategies in their classrooms, and a focus group. Data was analyzed using van Manen's phenomenological reduction, which included extracting themes from the data and writing to synthesize the data. The themes extracted from the data were the importance of movement, frequency of movement, types of movement, direct and indirect connections to learning, and teacher support. The findings indicated that movement is a viable classroom strategy and teachers' experiences with movement yield a positive connection to learning. This study's significance was to add to the available literature that examined movement strategies but could not solidify a link to learning.

Keywords: movement, learning, cognitive processes, embodied cognition

Copyright Page

Acknowledgments

I have the utmost respect for classroom teachers. They do the hard work of preparing students for their future and typically get very little praise. I intentionally did a qualitative study to give teachers a voice by sharing their experiences. I would like to thank my chair Dr. Vacchi for hanging in there with me through the COVID crazy. You helped me more than you can know by allowing me to believe in myself.

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List of Abbreviations

Central Research Question (CRQ)

Covenant Saint Academy (CSA)

Data-Driven Decision Making (DDD)

Embodies Cognition Theory (ECT)

Magnetic Resonance Imaging (MRI)

Movement Integration (MI)

Physically Active Lessons (PAL)

Professional Learning Community (PLC)

Sub Question One (SQ1)

Sub Question Two (SQ2)

CHAPTER ONE: INTRODUCTION

Overview

Traditional classroom learning for developing children can be monotonous, and static teaching approaches may not enhance learning as much as movement approaches espoused by an increasing number of K-12 educators. The purpose of this hermeneutic phenomenological study was to understand teachers' use of movement strategies to improve students' learning. This chapter contains a detailed background of the problem and its purpose. The central research question and two sub-questions are presented. An explanation of the study's significance and definitions related to the study are included.

Background

This section explains the study's historical, social, and theoretical contexts. From the historical context, I explain how movement and learning evolved. I explore who was affected by the study from the social perspective. I discuss the theoretical concepts and principles that defined the study from the theoretical context.

Historical Context

Increasing student achievement is a topic of research and discussion for all educators (Sesmiarni, 2015). In recent years, brain science became a tool to help educators understand how learning occurs to find ways to increase cognition (Sen et al., 2015). Cao and Li (2018) studied the hippocampus and amygdala related to memory. They found that the hippocampus is responsible for moving information from short-term to long-term memory (Cao & Li, 2018). The amygdala, which resides at the end of the hippocampus, is responsible for emotional behavior (Cao & Li, 2018). Information goes through the amygdala as it is transferred to long-term memory, and negative emotions can thwart that transferal (Cao & Li, 2018). Cao and Li (2018)

recognized that an increase in long-term memory happens when positive emotions encourage the transfer of information. The need for positive emotions certainly impacts the use of strategies in the classroom. Courchesne and Allen (1997) connected the cerebellum to attention, as it prepares the brain for what is to be learned or committed to long-term memory. They concluded that the cerebellum needs to be ready for what is understood (Courchesne & Allen, 1997). By examining the brain using magnetic resonance imaging (MRI), Desmond et al. (1997) saw the cerebellum activate when simple body movements begin. Mayer (2017) studied cognitive processes during learning and found that neural activity can measure meaningful learning. Increased neural activity, which MRI can read, leads to long-term retention of knowledge (Mayer, 2017). Blackmer (2018) reported that the brain releases four critical chemicals during movement. They are serotonin, dopamine, endorphins, and cortisol, and each of them contributes to improved attitudes and moods (Blackmer, 2018). Based on brain research, educators concluded that advances in cognitive neuroscience open up possibilities for classroom practices that help develop more in-depth and long-term learning in students (Lavis et al., 2016).

One brain-based strategy teachers use in the classroom is movement (Lavis et al., 2016). The concept of processing information actively through movement strategies such as role-playing brings meaning and more profound learning to students (Zhang & Zhang, 2018). Researchers found that the external stimulus of movement increases learning by establishing neural connections in the brain (Cao & Li, 2018). One teacher reported that she set up her classroom activities to allow for movement at least every 20 minutes and initially encountered resistance from the students (Lavis et al., 2016). However, after just one class period of sporadic movement, the students were more alert (Lavis, 2016). Another teacher found that students appear more excited about learning when movement is used (Benes et al., 2016). A third teacher

believed that her students are happier because they are not sitting at their desks (Benes et al., 2016). A fourth teacher expressed that the main benefit of movement strategies is increased student attention (Benes et al., 2016). Therefore, understanding brain research and how different brain parts are activated concludes that movement in the classroom should positively impact learning.

Social Context

Both teachers and students have a stake in how brain research can contribute to learning through movement. Benes et al. (2016) found that students enjoy moving while in their classrooms and that movement helps to refocus students on the task at hand. Teachers saw that as attention wanes, adding movement to the lesson recaptures the attention (Benes et al., 2016). Daly-Smith et al. (2018) found that classroom behavior improves when teachers incorporate movement. Blackmer (2018) asserted that moving improves mental health issues, ultimately affecting learning. According to Dinkel et al. (2017), all students need to get up and move.

Doherty and Miravalles (2019) claimed that activity and cognition are undividable in the classroom. According to their study, increased motion increases blood flow in the brain, which leads to higher comprehension (Doherty & Miravalles, 2019). Fedewa et al. (2018) looked at teacher behavior during movement in the classroom and found that teacher encouragement and involvement positively impact students' attitudes. This study aimed to understand how teachers perceived movement and its connection to learning. Given the evidence of better moods, better focus, and better mental health, a positive perception of the relationship between activity and learning can impact the ways teachers approach teaching.

Theoretical Context

The theoretical framework for this study was embodied cognition theory (ECT) (Shapiro,

2019). Shapiro (2019) is a recognized pioneer in embodied cognition theory. Standard cognitive learning theories assert that the brain is responsible for perception, memory, and learning (Shapiro, 2019). ECT departs from traditional cognitive approaches in that the body is an essential part of learning and cognitive development (Shapiro, 2019). Soliman et al. (2015) claimed that embodied cognition is a framework based on a combined and active sensorimotor complex that includes the brain. Therefore, movement as a strategy for increasing cognitive activity supports ECT.

Teachers agreed that movement creates a positive environment in the classroom, but the effect on learning is less specific. Preschool teachers saw a better recall of concepts when movement was a part of the lesson (Gehris et al., 2014). Elementary school teachers were excited about the increased enjoyment they saw in their students (McMullen et al., 2019). Teachers in all grades described positive movement outcomes, but most had difficulty directly connecting learning and movement (Benes et al., 2016). The basis of ECT is movement and how it increases understanding. Therefore, a relationship should be possible between movement and learning.

Problem Statement

The problem is that conventional approaches to promoting increased learning achievement have fallen mainly short as student performance declines in the classroom. For the last 20 years, educators have used a combination of mind, brain, and research to look for better ways to promote learning that addresses achievement gaps. (Lavis et al., 2016). Many educators and researchers believe that education needs to be changed to empower the brain (Sesmeniari, 2015). Neuroscience confirms the link between the brain and learning (Sen et al., 2015). Researchers continue to find that the connection between the brain and learning lends itself to teaching strategies used in the classroom (Lavis et al., 2016; Mayer, 2017). One suggested

teaching technique from brain research is incorporating movement (Erol & Karaduman, 2015; Gehris et al., 2014). The active student is more likely to make learning permanent in the brain (Erol & Karaduman, 2015; McMullen, McPhail, & Dillon, 2018; Zhang & Zhang, 2018). Additionally, research suggests movement facilitates better connections between the right and left brain (Cao & Li, 2018) and increases concentration (Goh, 2017). Shapiro (2019) introduced the theory of embodied cognition, based on the belief that the body is more important for cognition than initially understood in cognitive science.

Teachers understood the importance of movement in the classroom but could not make significant associations between moving and learning (Benes et al., 2016). Dyrstad et al. (2018) reported that movement creates helpful variation in the classroom, which both teachers and students enjoy. According to Erol and Karaduman (2018), active learners experience increased motivation. Gammon et al. (2019) reported that dynamic lessons involving movement are cost-effective and feasible. Those are compelling reasons to use movement strategies, but none make a concrete connection to movement and learning. Therefore, the literature gap that needed addressing was how teachers understood the relationship between movement strategies and learning. The study of teachers' perceptions of movement in this hermeneutic phenomenological study added to the literature. It addressed the gap by focusing on the experiences of teachers who used movement strategies in their classrooms.

Purpose Statement

The purpose of this hermeneutic phenomenological study was to understand teachers' perceptions of the effects movement strategies had on students' learning at Covenant Saints Academy. At this stage in the research, the definition of the effect of movement strategies on students’ learning is how teachers perceive that incorporating movement strategies in their

classroom impacts students' learning (Benes et al., 2016). This study's theory was embodied cognition theory (Shapiro, 2019). ECT challenges typical cognitive views in that it places importance on the body and environment in learning and cognition (Shapiro, 2019). Teachers' perceptions of movement and its effect on learning were examined in light of the theory above by looking through the lens of students' experiences with movement and the possible connection those experiences had with achievement.

Significance of the Study

This study's significance is explained from this section's empirical, theoretical, and practical perspectives. This study's empirical significance is that teachers found movement strategies helpful but could not articulate the effect on learning (Benes et al., 2016). In a study conducted by McMullen et al. (2019), teachers noticed that students like movement because it is fun. Still, those teachers could not make a definite correlation between movement and learning in their classrooms. However, brain-based research continues to provide a rationale for using strategies founded in neuroscience (Courchesne & Allen, 2019). Courchesne and Allen (2019) specifically looked at the cerebellum and its function. They concluded that movement, of even small amounts, increases the responses in the cerebellum (Courchesne & Allen, 2019). Kim et al. (1994) found the same increased cerebellar activity with small amounts of movement. Therefore, the teacher's perceptions of movement's effect on learning should add to the literature regarding movement strategies.

This study's theoretical significance is that embodied cognition is a relatively new cognitive theory. Traditional cognitive approaches began with Piaget and his development theories, which focus on brain development at different times in life (Barrouillet, 2015). Advanced technologies allow for better brain studies through MRI and other imaging, opening

up neuroscience research (Bjorklund, 2018). As a result of neuroscience, scientists are able to study different parts of the brain and how each develops (Bjorklund, 2018). The theory of embodied cognition is that sensorimotor experiences balance the brain (Galetzka, 2017). According to Galetzka (2017), MRI studies show that the brain's sensorimotor areas are active at the same time as the comprehension areas of the brain are involved. He concluded that embodied cognition accounts for meaning-making when movement is coupled with a cognitive task.

Zhu (2018) studied embodied cognition as it relates to education. He referred to the theory of embodied cognition as second-generation cognitive science and defined it as cognition that occurs when the body engages the physical world (Zhu, 2018). Zhu (2018) encouraged teaching within an embodied cognition framework that promotes movement and activity to boost cognition. However, ECT that drives educational practice needs exploration. According to Galetzka (2017), there are still unanswered questions regarding cognition and learning. Therefore, this study added to the literature regarding the theory of ECT related to learning.

This study's practical significance is related to the experiences of teachers who use movement strategies in their classrooms. Benes et al. (2016) studied teachers' perceptions of movement in the classroom setting. They found that teachers see increased focus and attention, more enjoyment, and fewer discipline issues when including movement in their daily lessons (Benes et al., 2016). Dyrstad et al. (2018) also reported that teachers and students enjoy the ways movement strategies create a sense of newness in the classroom experience. However, teachers' ways of seeing movement relating to learning are less apparent (Benes et al., 2016). Teachers and students enjoy movement as a teaching strategy, but they will not make it a regular practice if they cannot see how it affects learning (Benes et al., 2016). Therefore, this study added to the literature regarding movement and its effect on learning.

Research Questions

Several research studies focused on teachers' experiences using movement strategies (Benes et al. 2016; Blackmer, 2018; Dinkel et al., 2017; Gehris et al., 2014; Martin & Murtagh, 2017; Michael et al., 2018). However, the previous studies could not definitively connect movement and learning. The central research question sought to understand teachers' experiences with movement and its effect on learning and achievement.

Central Research Question

What were the experiences of K-12 teachers who use brain-based movement strategies to affect student achievement?

Sub Question One

What student cognitive gains did teachers perceive to be influenced by movement?

Sub Question Two

In what ways did ECT manifest in learning environments that employed movement techniques?

Definitions

The terms and definitions below are significant to this study and based on the literature related to the theoretical framework, the research design, or the subject.

1. *Movement* – Physical activity that has positive benefits for academic progress (Benes et al., 2016).
2. *Learning* – Acquiring knowledge and skills that influence current and future development (McMullen et al., 2019).

3. *Embodied cognition* – Cognition is grounded in embodied action, lived history, and the environment (Shapiro & Stolz, 2019).
4. *Hermeneutic phenomenology* –Human science studies show how humans experience the world (van Manen, 2016).

Summary

The problem that drove this study was that conventional approaches to promote increased learning fell short as student performance declined in the classroom (Kamran et al., 2019). This hermeneutic phenomenological study aimed to understand teachers' movement to improve students' learning at schools where teachers studied movement strategies. The study's empirical significance is the literature gap in teachers' perceptions of how movement in the classroom connects to learning. The study's theoretical significance is the connection of movement found in the theory of embodied cognition and how it applied to learning. The practical significance is how the relationship between movement and learning could impact classroom practices for teachers. This study aimed to address all three areas of significance and the gap in the literature by answering the research questions.

CHAPTER TWO: LITERATURE REVIEW

Overview

This chapter offers an overview of the literature and theoretical framework related to movement strategies in the classroom. It begins with a discussion of the theoretical framework for this study. It includes a literature review that will lay the foundation for studying teachers' perceptions of movement and learning. This chapter consists of a brief history of educational reform, some of the more recent educational trends in the United States, and how those reforms equated student success. It also includes the background and implications of embodied cognition theory. It also describes brain research that confirms the viability of the embodied cognition theory and how brain research has informed instruction. It also includes descriptions of the current use of movement strategies in the classroom and how they relate to school learning. The chapter summarizes the literature review and theoretical framework and establishes the gap in the literature that this study endeavored to fill.

Theoretical Framework

Cognitive learning theories focus on the conditions in which students and teachers learn (Stankovic et al., 2018). Piaget was the widely recognized father of cognitive learning and development theories (Barrouillet, 2018). Piaget's cognitive theories focused solely on the brain and its ability to process information (McSparron et al., 2019). Scientists believed cognition is the brain's function alone and that mental processes are accomplished simply through thinking (McSparron et al., 2019). Dewey was one of the first to recognize that cognition does not exclusively happen inside the brain (Dreon, 2019). He lobbied for student-centered education that includes active ways of learning (Leshkova & Spaseva, 2016). Shapiro's (2019) embodied cognition theory arose from the understanding that the brain is not the only part of the body that

contributes to cognition. He based his view on the principle that learning processes interacting with the body and the environment enhance cognition (Shapiro, 2019). Through Shapiro's lens of ECT, this study explored teachers' understandings of movement and how it connected to student learning. Shapiro's (2019) ECT has three components, specifically conceptualization, replacement, and constitution, to explain how the mind and body work together to increase understanding or cognition (Shapiro, 2019). ECT is distinguished from traditional cognitive approaches by referring to conventional theories as disembodied cognition theories (Shapiro, 2019).

The first component of ECT is conceptualization (Shapiro, 2019). According to Shapiro (2019), conceptualization means that the organism's body influences how the organism interacts with the world. In the eyes of embodied cognition theorists, conceptualization means that experience activates the brain's same neural regions in which cognition occurs (Shapiro, 2019). Shapiro believes that conceptualization challenges traditional cognitive theories because experience plays an essential role in cognition (Shapiro, 2019).

The second component of ECT is replacement (Shapiro, 2019). The emphasis of replacement is on the body and nervous system and how they interact with the world (Shapiro, 2019). The idea of replacement is that all living beings are in contact with the world and that continuous contact stimulates cognition (Shapiro, 2019). Shapiro also believes that replacement conflicts with standard cognitive theories because of the necessity of interactions required for understanding (Shapiro, 2019).

The third component of ECT is constitution (Shapiro, 2019). The concept of constitution is that the body and the world connect through the mind. Essentially, Shapiro (2019) believes that cognition is incomplete without integrating the body with the mind. Like the other two

components of embodied cognition, constitution challenges traditional cognitive science that claims cognition happens entirely within the brain (Shapiro, 2019).

Related Literature

Brain research is one area of study that can help inform instruction in the classroom. Technology advances in recent decades make the study of the brain much more accessible, which leads to important discoveries that can positively impact education. The brain-based strategy of movement integration is one that teachers use in their classrooms. Literature related to all of those topics follows below.

History of Educational Interventions

One thing that stays the same in education is the constant pursuit of increased academic achievement. Americans agree that quality education is essential for social, economic, and civically success (Hirschland & Steinmo, 2003). In general, educators continually seek to find educational interventions that are cost-effective and easy to implement (Steenbergen-Hu et al., 2106). There is a long history of research about academic improvements and their effectiveness. Each new study reveals evidence that points to the efficacy of the proposed intervention, but not everyone agrees on what constitutes evidence (McNeill & Berland, 2016). McNeill and Bertrand (2016) defined evidence as empirical data, comparison, personal experience, or scientific theory. Given that broad definition, it is not surprising that educational reform looks different in classrooms across the globe.

Lee and Ready (2009) studied the history of educational reform in the United States. They reported three phases of reform from the 1980s to the early 2000s (Lee & Ready, 2009). They found that educational initiatives in the 1980s focused on students needing more school courses to succeed (Lee & Ready, 2009). In the 1990s, school reform offered students a college

preparatory curriculum (Lee & Ready, 2009). By the early 2000s, schools required all students to take college preparatory classes (Lee & Ready, 2009). Anderson-Levitt (2021) studied education reform in the first two decades of the twenty-first century. Since 2009, educational change has focused more on skills than knowledge, as seen in the twenty-first-century skills movement (Anderson-Levitt, 2021). Interestingly, none of the reforms accomplished what was promised (Lee & Ready, 2009; Anderson-Levitt, 2021). Therefore, reforms that lead to increased student achievement are still needed.

There remains a persistent image of education that puts students in neat rows of desks facing the teacher; the knowledge owner relaying content to the students (McNeill & Berland, 2016). Bolick (2017) postulated that rows of students with the teacher in the front of the room remain the standard in most American classrooms. Kamran et al. (2019) agreed that those traditional methods do not yield the desired level of academic achievement in students. Shah and Ahmad (2020) insisted that teaching needs to be dynamic rather than stagnant. Most educators agree that passive learning is no longer relevant but disagree about implementing classroom models.

One suggestion is to tie knowledge to real-world contexts to make it relevant (McNeill & Berland, 2016). Another possibility is to use a student-centered approach to teaching and learning (Debs et al., 2019). Those student-centered approaches include various strategies that include active learning, project-based learning, and discovery learning (Debs et al., 2016). Some teachers combine real-world applications with the student-centered approach to maximize the impact for students (Debs et al., 2019). Noreen et al. (2019) suggested activity-based learning as a solution to increasing both interest and achievement in the classroom. Including students in the learning process through active lessons increases enjoyment and understanding (Noreen et al.,

2019). Kamran et al. (2019) found that students taught using differentiated methods show higher overall achievement and knowledge retention than students instructed in the more traditional lecture method. However, their study did not identify which differentiation strategies work best.

Researchers agree that the teacher is the most crucial factor in the academic achievement of the student (Shah & Ahmad, 2020). Gialamas and Pelonis (2017) pointed to school staff as the most significant influence and responsibility in students' lives. Strategies targeted at the learning needs of the students replaced memorization and other out-of-date teaching practices (Shah & Ahmad, 2020). Many teachers returned to the philosophies of John Dewey that call for less theoretical knowledge and more active learning (Gialamas & Pelonis, 2017). Classroom teachers are encouraged to assess their students' learning needs and use the appropriate tools to meet those needs (Shah & Ahmad, 2020).

Given that teacher-student interaction is one of the most critical factors in student learning, teachers need to know which strategies best met students' needs (Shah & Ahmad, 2020). With so many opinions and options available to teachers, teachers need data-driven models that work to increase learning. This study used data from brain research, embodied cognition theory, and teachers' perceptions to inform the use of movement as a strategy in the classroom.

Educational Change in the Twenty-First Century

Garcia-Huidobro et al. (2017) identified several significant themes in educational change in the twenty-first century. One of those themes is empirical research, with data-driven recommendations that lead to educational practices (Garcia-Huidobro et al., 2019). Wenner and Campbell (2017) found that educational initiatives based on sound models and data found in empirical research surpass those based on opinions or experiences. According to Shih-Yeh and

Shiang-Yao (2020), the way to ensure that educational change is impactful is to follow empirical research that examines cause and effect and sustainability. Lee et al. (2017) believed in building educational models from theories established in research. Singer and Alexander (2017) proposed that empirical research informs educational practices by providing proven evidence for the likelihood of success of the initiative.

Another theme in educational change in the twenty-first century is recognizing teachers and administrators as vital parts of educational reform (Garcia-Huidobro et al., 2019). Garcia-Huidobro et al. (2019) concluded that educational change in the twenty-first century should be school-wide and sustainable to be the most effective. Scafidi (2016) found that teacher effectiveness is essential to student learning. Likewise, he blamed the decline in American education on ineffective teachers who lack training and experience (Scafidi, 2016). Scafidi (2016) believed that even minimal increases in teacher efficacy lead to vast improvements in student learning. Jennings (2018) also found the training and preparation of teachers to be vital to the overall success of students. He found that the most effective school improvement plans focused on training teachers and improving curricula (Jennings, 2018). Jennings (2018) believed education should focus on the teacher, the students, and the content. Brain-based strategies based on embodied cognition theory are only effective if grounded in empirical research and executed well by teachers.

Reform That Equated to Student Success

The ultimate aim of any reform initiative in a school setting is to increase learning and achievement. Cohen and Mehta (2017) claimed that school reform aims to make teaching and learning consistently more dynamic, stimulating, and mentally engaging. Waiwaiole et al. (2016) studied student success and found that the reform's quick results and longevity are necessary for

any new program. Unless improvements in achievement are seen relatively quickly with a new strategy or program, teachers and administrators move on to another idea (Waiwaiole et al., 2016). They also cautioned that leaders must closely monitor interventions to ensure the plan is followed correctly (Waiwaiole et al., 2016). Cohen and Mehta (2017) studied the history of school reform and found that the most successful reforms align with the school's values. They also found that effective change is conveyed in a considerate, cooperative way that gives teachers buy-in of the reform (Cohen & Mehta, 2017). Fullan (2009) believed that the most powerful way to improve academic achievement is through data-driven instruction that allows teachers to adjust based on individual needs.

Several studies examined marginalized students and educational innovations that impact student academic success. Murray (2015) found that underserved students need activities in the classroom that increase engagement and foster a feeling of inclusion. She added that support from teachers and administrators is vital to the success of minority students (Murray, 2015). Wilson et al. (2019) found that classroom cultures that invite students to participate actively and got them out of their desks are essential for students of color. They encouraged teachers to pay attention to their underserved students' needs and adjust instruction based on those needs (Wilson et al., 2019). Ferrante et al. (2017) encouraged teacher intervention as the best means of guiding marginalized populations. They also emphasized that any good educational reform for underserved students is suitable for all students (Ferrante et al., 2017). Hardrick and Montas-Hunter (2017) also studied students of color and the educational reforms that work for them. They found that active lessons and quick teacher intervention are two of the most critical tools for marginalized students (Hardrick & Montas-Hunter, 2017).

Toste et al. (2020) explored the connection between motivation and achievement and found that any intervention that helps increase motivation leads to increased learning and scores. Erol and Karaduman (2018) studied student achievement and confirmed that motivation increases learning. They pointed to various teaching strategies that increase motivation, including active learning (Erol & Karaduman, 2018). Zhang and Zhang (2018) researched school reform and student achievement and found that increased motivation equates to student success. Therefore, any school reform program should include components that increase motivation in students.

Taggart (2018) studied factors that contribute to student success. She found five influences on achievement, and three of them are cultural, socioeconomic, and psychological. (Taggart, 2018). While schools influence those three areas, institutions do not ultimately control or regulate those factors. However, schools can address the other two facets of the school environment and academic experiences (Taggart, 2018). Li (2017) also looked at factors that contribute to academic success. He found that resilience in students can lead to higher achievement (Li, 2017). According to his study, strength is built in students when teachers and staff provide educational support (Li, 2017). Positive interactions during class time, readiness to answer questions, and differentiated ways of presenting content are some of Li's (2017) supportive habits suggested. Therefore, school reform initiatives should include components that add to students' resilience, increase achievement, and are grounded in solid data.

Data-Driven Decision Making

The historical perspective of school reform reflects the need for data-based decisions to inform educational initiatives (Wenner & Campbell, 2017). Educational choices based on

comfortable or familiar do not always translate into increased student achievement. Data is an essential tool that teachers and administrators use to inform instruction.

Using Data-Driven Decision Making in Schools

According to Osman and Elragal (2021), data-driven decision-making (DDD) involves making decisions based on data rather than feelings or assumptions. They found that decisions made using data yield higher productivity overall (Osman & Elragal, 2021). Given the pressure in educational institutions to produce academically successful students, DDD provides a framework for accountability in decision-making for schools (Faller et al., 2016). Specifically, schools can ensure their programs are student-centered and individualized by utilizing current research and recent standardized testing (Faller et al., 2016).

How Teachers Use Data-Driven Decision Making

Dunn et al. (2013) explicitly studied DDD and its relation to teaching, learning, and cognition. They found that using data can help teachers make better decisions in the classroom that result in better differentiation of instruction for each learner (Dunn et al., 2013). Ultimately, DDD gives teachers the tools to ensure students achieve academic success (Dunn et al., 2013). Using data to inform instructional decisions is the most powerful approach to educational reform (Pak & Desimone, 2019). Since outcomes typically measure student success, DDD provides the pathway to match the appropriate reform with the desired product (Pak & Desimone, 2019). Roegman et al. (2021) found that using data to drive decisions increases student learning and helps shape teachers' opinions about best practices in their classrooms. District leaders typically make reform decisions (Roegma et al., 2021). Still, Roegman et al. (2021) discovered great benefits from data analysis done by teachers with the intent of improving their instruction. They believed that classroom teachers are the most knowledgeable about their students and can make

sound instructional decisions using the data educators collect daily (Roegman et al., 2021). According to Marsh and Farrell (2015), teachers use data to address educational gaps in their students based on instructional knowledge and content. Essentially, they found that teachers' beliefs and values regarding education influence data interpretation and decision-making (Marsh & Farrell, 2015). Schelling and Rubenstein (2021) studied teachers' perceptions of using DDD to inform instruction in the classroom. They found that teachers are often unwilling to make changes mandated from the district level (Schelling & Rubenstein, 2021). Teachers are more inclined to engage in reform based on classroom experience using data collected from assessments of students (Schelling & Rubenstein, 2021). Based on the findings above, it makes sense that teachers' perceptions of any educational reform are vital because those perceptions affect the implementation in the classroom. Teachers are willing to use data from their classrooms to inform the strategies that increased student achievement and learning. Brain research provides data relevant to student learning, and it also helps teachers analyze achievement gaps.

Brain Research

Brain research is one area of study that helps inform instruction in the classroom. Technology advances in recent decades make the study of the brain much more accessible, which leads to important discoveries that can positively impact education. The brain-based strategy of movement integration is one that teachers use in their classrooms. Literature related to all of those topics follows below. Researchers have studied specific parts of the brain related to movement and learning.

Parts of the Brain Related to Learning

Cao and Li (2018) specifically looked at the hippocampus and amygdala functions and how those two brain areas process memory (Cao & Li, 2018). They described the hippocampus as where short-term memory is stored, and the amygdala is where emotions and fear are housed (Cao & Li, 2018). The amygdala aids in encoding information from short-term to long-term, and Cao & Li (2018) cautioned that negative emotions can prevent the data from transitioning to long-term memory. Courchesne and Allen (1997) explained the cerebellum function as triggering different neural systems and housing long-term memory. Desmond et al. (1997) also studied cerebellar activation and found similar results. They concluded that the cerebellum is responsible for working memory, making its activation essential to learning (Desmond et al., 1997).

Through neuroimaging, Kim et al. (1994) found that body movement increases the cerebellum's activation, increasing the size of the dentate nucleus. The dentate nucleus's increased size correlates with improved cognitive processing (Kim et al., 1994). According to Thomas et al. (2019), the cortex connects perceptual information and motor responses. The posterior cortex stores content-specific information and the prefrontal cortex is where control exists (Thomas et al., 2019). Based on the research, the hippocampus, amygdala, cerebellum, dentate nucleus, and cortex all contribute to learning. Effective learning strategies increase function in those areas of the brain. Movement is one of the classroom strategies that address those parts of the brain.

Ways to Increase Learning

Knowing how movement affects different parts of the brain leads to ideas for learning. Cao and Li (2018) suggested that classroom activities, like group work and interactive games, enhance positive emotions and increase long-term memory acquisition. Courchesne and Allen

(1997) found that learning increases when the cerebellum is activated and ready. Through neuroimaging, the researchers discovered that any sensory or motor task is sufficient to activate the cerebral cortex, which has significant implications for active learning in the classroom (Courchesne & Allen, 1997). Desmond et al. (1997) looked at movements as simple as finger-tapping and found increased activation in the cerebellum is the result. Kim et al. (1994) suggested that energetic classroom activities activate the cerebellum and dentate nucleus to enhance learning. The evidence is compelling that movement starts the brain and increases cognition. This study aimed to connect movement with learning by understanding teachers' classroom experiences with movement.

Applications of Brain Research to Education

Mayer (2017) believed that brain science should focus on four things in the educational setting. They are the subject area, authentic learning, cognitive processing, and instructional techniques. Additionally, professional development related to brain research and the limitations are examined.

Subject Area Applications

According to Mayer (2017), the first area to focus on is subject areas instead of learning in general. Lavis et al. (2016) are proponents of brain-based learning strategies in specific subject areas. They studied a faculty development program focused on brain-based design for teachers in each subject (Lavis et al., 2016). The participating teachers spent 20 months in professional development activities that promoted brain-based teaching (Lavis et al., 2016). In their post-program interviews, the teachers reported better engagement and overall performance due to the brain-based approach in their classrooms (Lavis et al., 2016). Mo et al. (2017) studied math education and brain science. They found that achieving math mastery requires multiple parts of

the brain and therefore necessitates a multi-pronged approach from the teacher (Mo et al., 2017). The theory of embodied cognition and the connection between movement and learning are essential parts of that multi-layered approach. Qui (2018) studied brain-based teaching in science, where he found that students' involvement in their education is vital to a successful grasp of the concepts. Zacharia (2015) also studied brain-based teaching in science and concluded that the physical aspect of experiments and labs is advantageous to the learning process. Zhang (2018) reviewed the teaching of English in light of brain-based strategies. She found that using photos and images helps with pronunciation and memory of the meaning (Zhang, 2018). Zhao and Li (2017) researched brain science in physical education. They found that physical activity enhances connections in the brain and that brain activity is affected by the environment (Zhao & Li, 2017). While most physical activities improve cognition, Zhao & Li (2017) cautioned that fear and stress counteract those positive outcomes. Researchers agreed that brain science should inform classroom practices related to specific subject areas, especially in the area of movement.

Authentic Learning

The second focus area is tasks that lead to authentic learning (Mayer, 2017). Erol and Karaduman (2018) also believed that brain science supplies classroom strategies that lead to authentic learning. Their study did not describe specific brain-based methods. Still, it revealed that students who receive brain-based instruction show statistically significant increases compared to their peers who do not receive the brain-based learning strategies (Erol & Karaduman, 2018). Wu and Xie (2018) were also concerned with authentic learning using brain science. They studied a group of English language learners in China whose teachers use brain-based strategies in their classrooms (Wu & Xie, 2018). They found a positive connection

between brain-based design and students' test scores and increased satisfaction in school for those students (Wu & Xie, 2018). Friedman et al. (2019) conducted a study to discover how brain research can improve teaching and learning. They suggested that a blend of neuroscience, neurocognitive psychology, and education is needed (Friedman et al., 2019). They named that blend neuropedagogy and believe that training in those three areas is essential to advancing the cause of teaching and learning (Friedman et al., 2019). Brain-based strategies that lead to authentic learning directly affect student achievement.

Cognitive Processing During Learning

The third area of focus is on cognitive processes during learning (Mayer, 2017). Olulade et al. (2013) used MRI to study neural movement during reading and were able to see higher cognitive activity for students who are successful at reading, indicating that success in the task increases cognition. Sesmiarni (2015) also examined cognitive processes during learning. He encouraged teachers to make their classrooms safe and active based on his understanding of the need for positive emotions for cognition (Sesmiarni, 2015). Makransky et al. (2019) found that the most effective instruction methods for students are ones that increase cognition. They found that teaching styles and strategies directly affect the amount of cognition attained by students (Makransky et al., 2015). Huang (2011) advocated for learning environments that are complex and multi-dimensional and suggested using instructional games to increase students' cognitive processing. Wang et al. (2020) advocated for more student-centered learning strategies as the best way to ensure high cognition in students. They encouraged active collaboration as one of the strategies that increase the cognitive load in learners (Wang et al., 2020). Tenison et al. (2016) used MRI images to study cognition during learning. They found that regularly using active problem-solving as a classroom strategy renders increases in cognition in their studied students

(Tenison et al., 2016). Franco et al. (2012) studied the ways students' epistemic beliefs affect cognitive processing. They explained epistemic beliefs as what students believe about their ability to learn and retain knowledge (Franco et al., 2012). They found that motivation significantly impacts how positively students view their abilities (Franco et al., 2012). Active teaching strategies that increase motivation directly affect cognitive processing (Franco et al., 2016). The researchers all agreed that brain-based strategies to improve cognition are the most effective ways to increase student success.

Instructional Techniques

The fourth area of focus is on instructional techniques that lead to meaningful cognitive processing (Mayer, 2017). Although Mayer (2017) did not give specific approaches to address each area of focus, he repeatedly pointed to neuroscience contributions as the place to find those strategies. Zhang and Zhang (2017) studied teaching reform based on brain cognition at the college level. After completing the course, the researchers polled students using brain-based strategies (Zhang & Zhang, 2017). Students reported that their motivation levels increased, and their satisfaction with the course increased compared to previous classes (Zhang & Zhang, 2017). Students also believed their overall grade in the class was better than it would have been with traditional teaching techniques (Zhang & Zhang, 2017). Wang (2018) studied adult learners and found that teachers who understand the brain structure of their adult students are more likely to be better teachers and more aware of how to engage their learners. He observed that teachers can form strategies and plans to address learners' needs (Wang, 2018). This study explored movement as the specific brain-based strategy connecting learning. Brain research supports the effectiveness of teaching strategies aimed at cognition.

Professional Development

Kelleher and Whitman (2018) firmly believed that professional development for teachers should connect brain research and education. Raising the quality of instruction through teacher training equates to increased student achievement (Kelleher and Whitman, 2018). Kelleher and Whitman (2018) proposed a combination of training for teachers and collaboration between teachers as a way to make that happen. Teachers in their study received basic training in brain-based strategies then collaborated with colleagues to find what works best for their students (Kelleher and Whitman, 2018).

The principles of brain research also applied to the ways teachers best learn in a professional development setting. According to Sharma and Jagwinder (2018), teachers are most successful at learning and implementing new strategies through collaboration and problem-solving with their colleagues as active participants in the innovation. Avidov-Ungar (2016) agreed that teachers need to be dynamically involved in goal setting and implementing any new reform. Jones et al. (2020) suggested that teachers benefit from hands-on learning in their professional seminars as much as students do in the regular classroom. Koukis and Jimoyiannis (2019) studied active participation and collaboration in professional learning settings. They found that training that models brain-based strategies within the innovation presentation is more effective than speaker-centered workshops (Koukis & Jimoyiannis, 2109). Bergmark (2020) found that lasting success in any professional development initiative requires active engagement from the school staff. Campbell (2017) insisted that the quality of education is only as good as the teachers in the classrooms. She agreed that professional development settings should model evidence-based practices for classroom use (Campbell, 2017). Effective teacher training is essential to increasing student learning, according to Sancar et al. (2021). They found that

supportive and active seminars aimed at improving teaching are the most effective (Sancar et al., 2021). Therefore, following brain research in adult learning environments is as crucial as in school settings.

Limitations and Neuromyths

Ferrero et al. (2016) did a study about neuromyths in education. They cautioned that there is a strong link between brain science and education, but teachers should use wisdom and caution when using neuroscience to inform their classroom practices (Ferrero et al., 2016). Their concern is that research can be distorted and misinterpreted (Ferrero et al., 2016, p. 9). Instead, Ferrero et al. (2016) suggested professional development and training for teachers in brain-based teaching. Friedman et al. (2019) also saw limitations in the vast area of brain research related to education. They suggested narrowing down neuroscience concepts to only those applicable to teaching and then training teachers in practical strategies, rather than too much theory (Friedman et al., 2019). Qui (2018) found that teachers need to understand clearly why brain science helps improve learning before trying the strategies. However, Thomas et al. (2019) remained uncertain that any applicable information from neuroscience is likely accessible in classroom applications. Van Atteveldt et al. (2019) concluded that better collaboration between researchers and educational practitioners needs to exist to overcome neuromyths. The central research question and two sub-questions sought to address Mayer's (2017) four areas of focus and the issues of professional development and limitations related to the brain-based strategy of movement in the classroom and its effect on learning.

Early Attempts at Brain-Based Learning

As early as the 1980s, brain-based teaching was an option for increasing student achievement (Neve et al., 1986). Neve et al. (1986) studied a school in New Jersey that was one

of the first to apply brain research to learning. The program focused on moving away from students' typical passive learning posture into more student-friendly and active learning strategies (Neve et al., 1986). Friedman and Cocking (1986) found that environment influenced cognition, suggesting that enhanced classroom environments yield the highest gains for students. They specifically pointed to environmental stimulation as a key to increased cognitive function (Friedman & Cocking, 1986). Caine and Caine (1990) began pulling all the different aspects of brain research together to help teachers apply it to their classrooms.

Neve et al. (1986) quickly recognized that students enjoy learning more, but the fear was that standardized test scores would drop. Instead, test scores consistently increased during the pilot program, which confirmed the viability of brain-based theories and their benefits (Neve et al., 1986). Friedman and Cocking (1986) discovered that learning strategies that are active and encourage problem-solving increased standardized test scores in the studies examined. Caine and Caine's (1990) principles of brain-based learning provided understanding for achieving more profound knowledge and making learning more interactive.

Kirk (1983) was one of the first to promote active learning based on neuroscience. According to Kirk (1983), an infant's cognition and acquisition of knowledge are always active and participatory and, therefore, model the ways teachers should approach learning and instruction. She believed the active learner, not the passive one, achieves academically (Kirk, 1983). Danesi (1987) applied brain research to teaching, and the study's findings revealed the importance of activating both the right and left sides of the brain to maximize learning and retention (Danesi, 1987). Movement is one way to ensure both sides of the brain are keenly involved in the learning process (Danesi, 1987). Early researchers in brain-based education laid

the groundwork for what is now widely understood about brain research and its effect on learning.

Significance of Embodied Cognition in Education

Several studies helped to emphasize the ways that ECT can impact education. ECT influences both the classroom and the curriculum. Combining knowledge about brain science and understanding the body's part in increasing cognition should help inform educational decisions.

In the Classroom

Shapiro and Stolz (2019) looked at ECT's significance in education. They suggested that teachers need to acquaint themselves with the best practices that go along with ECT, specifically related to movement in the classroom and how to use it (Shapiro & Stolz, 2019). They referred several times to using gestures to enhance instruction and as a tool to check for understanding (Shapiro & Stolz, 2019). They summarized their suggestions by suggesting that part of embodiment is the teacher's practice of looking for non-verbal cues like body language to check for understanding and readiness (Shapiro & Stolz, 2019). They concluded that there is a need for further research in ECT and its use in the classroom (Shapiro & Stolz, 2019). Duijzer et al. (2019) studied embodied learning environments in science, technology, engineering, and mathematics. They found that classrooms that encourage students' motion are the most conducive to positive learning outcomes (Duijzer et al., 2019). They encouraged body movement that quickly relates to learning as one key to an embodied learning environment (Duijzer et al., 2019). Many researchers agreed that ECT can and should impact classroom practices.

In the Curriculum

Wang and Zheng (2018) explored how ECT can impact the curriculum. They suggested

that an embodied approach will connect the body with knowledge construction through active processes (Wang & Zheng, 2018). Zhu (2018) also found that ECT can impact pedagogy by focusing on body movement through collaboration, project-based learning, and learner-centered activities. Dackerman et al. (2017) studied basic number sense under the theory of embodied cognition and found it beneficial and groundbreaking. Van Boening and Riggs (2020) did a similar study of gestures in geology learning. Their findings confirmed that embodied cognition provides a meaningful framework for educational decisions (Van Boening & Riggs, 2020). Based on the research, ECT has a place in academic endeavors, and more research helps define how it is functional. Duijzer et al. (2017) used ECT to conduct a study on touchscreen technology to increase the learning of math concepts. They found that the simple act of using the touchscreen purposefully in the classroom increases perception and understanding in the students involved (Duijzer et al., 2017). While their findings related to mathematics learning, Duijzer et al. (2017) recommended further study that could benefit all subjects. From the curriculum perspective, research supports the use of ECT in instructional decisions.

Studies Related to Embodied Cognition Theory

Many researchers and theorists embrace the idea of ECT. Since embodied cognition is a relatively new theory, it is essential to look at how others have studied and applied it. Both the theoretical and practical perspectives of embodiment are examined.

The Theoretical Perspective

From the theoretical perspective, Zhu (2018) claimed that ECT is the next step in cognitive science theories as to the mind, body, and environment working together to create meaning and understanding. Wang and Zheng (2018) found that the interplay between humans and the environment is the foundation of their belief about curriculum design using ECT.

Scorolli (2019) looked at psychoanalysis through the lens of ECT and found that there are promising possibilities. In a study of ECT, Hardcastle (2017) concluded that the body and movement are essential to attaining deep cognition. McVeigh (2020) studied ECT and concluded that understanding and cognition need to include the structure and function of the body. Tschentscher (2017) explored cognitive neuroscience and concluded that knowledge is attained when both sensory and motor processes are activated. Guell et al. (2018) studied ECT and the cerebellum, looking for the relationship between the two. They concluded a strong connection between ECT and scientific understanding of the cerebellum (Guell et al., 2018). According to Galetzka (2017), ECT solves the cognition barrier by linking the mind and sensorimotor actions. He concluded that ECT offers a vital piece to the puzzle of meaning-making in the brain (Galetzka, 2017). It appears that ECT inextricably links the body and cognition, therefore making it a viable approach for educational constructs.

The Practical Perspective

From the practical perspective, Dackermann et al. (2017) conducted a study to identify how motor movement impacts numerical cognition and found embodied numerical training is beneficial in numerical cognition. Lan et al. (2015) found compelling evidence that body sensations and actions affect learning and comprehension. Van Boening and Riggs (2020) found valuable insights into how geology students use gestures to increase understanding. Corcoran (2017) conducted a study of reading achievement using the ECT approach. She discovered that using principles from ECT shows a clear association with increased student achievement in reading (Corcoran, 2017). She also explained that their study showed a significant increase in reading scores between the pretest and posttest for all students involved (Corcoran, 2017). Morett (2019) found that perception and action are connected through ECT. She showed that

body motions related to the topic activate perception (Morett, 2019). She used the example of hand gestures, widely used by young learners, as a way to solidify learning under the embodied cognition lens (Morett, 2019).

Sadoski (2018) studied reading comprehension as an embodied concept. He found that the multisensory experience founded in ECT provides the groundwork for increasing meaning and perception (Sadosky, 2018). She added that body movement and brain cognition are connected in imaginary and concrete movements. Springborg and Ladkin (2018) studied the idea of simulations under ECT. They found that using simulations to interact with the environment falls in line with the view of embodied cognition (Springborg & Ladkin, 2018). The previous studies linking ECT to neuroscience and the body make Shapiro's (2019) theory an ideal lens to view this study. Understanding that ECT and body movement connects to brain cognition makes a strong case for connecting movement strategies and learning. Therefore, studying teachers' perceptions of that phenomenon added to the literature regarding ECT and how movement affects learning.

Movement as a Brain-Based Strategy

Many teaching strategies fall under the umbrella of brain-based methods. Brain-based movement strategies connect ECT with brain research and brain-based learning. Blackmer (2018) encouraged movement in the classroom because of its link to releasing positive chemicals in the brain. Activity releases serotonin, dopamine, endorphins, and cortisol (Blackmer, 2018). Together, those four chemicals regulate mood, lower and combat stress, and provide motivation (Blackmer, 2018). Studies regarding movement for differing levels of learners are explored below.

Movement for Preschool and Lower Elementary

Several studies explored movement in younger children. Callcott et al. (2015) studied movement related to phonological awareness in preschoolers. Their study conclusively showed that students in the movement group performed significantly better than those not (Callcott et al., 2015). Additionally, those students scored better in literacy and spelling (Callcott et al., 2015). Gersak et al. (2020) used wearable devices to study the effects of physically active lessons in lower elementary grades. The control group was taught in the typical sedentary manner, while the experimental group participated in movement-based classes (Gersak et al., 2020). The results revealed that the experimental group showed a higher level of mental and cognitive engagement, which resulted in more long-term retention than the control group exhibited (Gersak et al., 2020). Vazou et al. (2017) saw longer oral and group engagement periods after preschoolers engaged in physical activity. They found that learning motivation is tied directly to active learning experiences (Vazou et al., 2017). Vazou et al. (2017) concluded that dynamic movement "facilitates comprehension of concepts [and] promotes academic achievement" (p. 242). Everyone agrees that young children needed to be active, and the present research shows another compelling reason for that activity due to cognitive benefits.

Movement for Upper Elementary

Several studies examined movement for upper elementary grades. Fedewa et al. (2018) conducted a study that found verbal encouragement and enthusiasm from the teacher improve how engaged the students are (Fedewa et al., 2018). They also found that movement during academic periods yields higher test scores, particularly in math (Fedewa et al., 2018). Leung et al. (2018) conducted a study at an elementary school that revealed movement-based lessons can make a meaningful contribution to the overall physical activity of students (Leung et al., 2018).

The researchers also concluded that movement-integrated lessons are helpful in the classroom and produce higher levels of engagement (Leung et al., 2018). Skoning et al. (2017) conducted a study exploring teaching vocabulary through movement in older elementary students. The students in the study learned using movement strategies at least half of the time (Skoning et al., 2017). The study results favored movement as an effective teaching strategy, showing that scores increase when movement is incorporated (Skoning et al., 2017). Vazou et al. (2020) also studied movement integration interventions for elementary students. They thoroughly reviewed various movement integration interventions to evaluate their effectiveness (Vazou et al., 2020). Vazou et al. (2020) concluded that movement integration is an excellent instructional exercise and that evidence satisfactorily shows the advantages of movement in academic achievement. Goh et al. (2018) found that brief periods of moving lead to increased on-task behavior in students. They encouraged several short movement breaks throughout the day to maximize academic focus all day long (Goh et al., 2018). Movement and activity for upper elementary children are already understood needs, but the specific learning effects of movement as a classroom strategy still need to be understood.

Movement for All Elementary Ages

Several studies examined movement across all elementary grades. Daly-Smith et al. (2018) studied physically active learning (PAL) in elementary-aged children. They found that time-on-task improved significantly for the students who participated in PAL (Daly-Smith et al., 2018). Additionally, classroom behavior improved, with fewer office referrals for PAL students (Daly-Smith et al., 2018). Kreider (2019) looked at ways to implement movement strategies in elementary classrooms. She believed that students who spend time away from their desks have tremendous academic success (Kreider, 2019). She found that movement builds cognitive and

judgment skills (Kreider, 2019). McMullen et al. (2019) studied students' experiences of movement-based classroom activities. The students were overwhelmingly positive about movement activities, which motivated the teachers to do more (McMullen et al., 2019). Miller and Lindt (2018) studied an elementary school that implemented a movement intervention, and they focused on the teachers' feelings about the initiative. The teachers could see more student interest, more student engagement, and authentic learning during active lessons (Miller & Lindt, 2018). Moon and Webster (2019) studied the concept of movement integration (MI) in elementary classrooms. They encouraged teachers to recognize that many movement strategies require no extra resources, no additional time, and little planning (Moon & Webster, 2019). Reeves et al. (2016) studied integrating physical movement in the classroom. While part of their rationale for moving was for the fitness benefits, Reeves et al. (2016) also observed more on-task behavior and increased motivation and school satisfaction for students who participate in active lessons (Reeves et al., 2016). Stewart et al. (2019) studied a movement integration program at a lower-income elementary school. The study revealed that classroom teachers are critical to the effectiveness of movement strategies and that school satisfaction increased for students during the program (Stewart et al., 2019). Martin and Murtagh (2017) studied the integration of movement into academic lessons and found that using physical activity as an instructional activity improves learning and activity levels. Michael et al. (2019) found that movement integration of any kind adds to both enjoyment and competence in the classroom. They said that several short periods of movement improve on-task behavior (Michael et al., 2019). Roth (2016) studied movement to increase understanding in elementary mathematics. He found that using something concrete, like body movement, to learn abstract concepts in math increases performance (Roth, 2016). For example, using the body to form an octagon shape makes

connections between body and mind that increase retention of learning (Roth, 2016). Russ et al. (2017) developed an evaluation instrument for observing movement in elementary classrooms. They concluded that movement of any kind increases on-task behavior, cognitive function, and has an overall positive effect on learning (Russ et al., 2017). Turner and Chaloupka (2016) also studied elementary students and found that brief periods of activity increase learning outcomes. They asserted that activity breaks and active lessons increase academic achievement (Turner & Chaloupka, 2016). Schneller et al. (2017) conducted a study of movement in settings outside of the classroom. They studied teachers who regularly take their students to other parts of the school campus for learning (Schneller et al., 2017). They found that the change of setting, coupled with the movement involved, increases learning, satisfaction, and social behavior (Schneller et al., 2017). Studies related to all elementary students fall in line with those focused on only upper or lower grades. Across the board, teachers agree that movement in the classroom is a positive teaching strategy.

Movement for High School and College Students

There are also several studies related to movement for high school and college students. Gammon et al. (2018) studied a school that implemented physically active lessons (PAL) with its teachers and students in a secondary school. They found that PAL initiatives are highly cost-effective, and student enjoyment increases when active lessons are incorporated (Gammon et al., 2018). Sugahara et al. (2016) studied the ways teaching and learning are affected by movement in the college classroom. Similar to other educational levels, movement increases students' motivation (Sugahara et al., 2016). The specific significance of increased motivation at the college level is the potential influence on future career choices and course selections (Sugahara et al., 2016).

Parker (2018) added to that argument by suggesting easy ways to use movement in college classrooms. Her suggestions were variations of what teachers are already doing, with just a tiny new twist (Parker, 2018). One example of moving included a different way of dividing students into collaborative teams (Parker 2018). Instead of pre-assigning the groups or allowing students to choose independently, the teacher had them organize themselves based on an opinion question she asked them (Parker 2018). Once students had grouped themselves according to shared opinions, they stayed in those groups to accomplish the collaborative task (Parker, 2018). According to Costa (2018), movement strategies are not complicated. She saw an increase in reading comprehension by simply allowing her community college students to move around the classroom while reading (Costa, 2018). She used a straightforward strategy to create an obstacle course of chairs that students navigated while walking around reading silently (Costa, 2018). Researchers that aimed their studies at older students found that movement is just as important for high school and college students as those younger.

Movement for All Learners

Doherty and Miravalles (2019) studied the link between physical activity and cognition in the classroom across all age groups. They found that neuroscience identifies three ways physical movement impacts the brain (Doherty & Miravalles, 2019). The first benefit of movement is increased vascularization, which the researchers explained is oxygen and glucose levels in the brain (Doherty & Miravalles, 2019). The second is the release of neurotransmitters, which increase memory, motivation, and attention (Doherty & Miravalles, 2019). The third benefit is developing better and more complex connections between neural circuits in the brain (Doherty & Miravalles, 2019). They concluded that physical movement and cognition must be considered inseparable (Doherty & Mirravalles, 2019). Dyrstad et al. (2018) conducted a study in Norway of

all age groups that included a 10-month program at five different schools to incorporate a minimum of two physically active lessons in the academic classroom.

One of the most apparent results in the study was the students' increased enjoyment on the days of physically active lessons (Dyrstad et al., 2018). Teachers saw how much the students enjoyed the classes, encouraging them to continue planning dynamic lessons even after completing the study (Dyrstad et al., 2018). Hernandez (2018) described the benefits of movement in the classroom for all age groups from her perspective. She made a strong argument for active engagement involving physical movement, explaining that students take more initiative in their learning when moving activates their cognitive processes (Hernandez, 2018). Jany (2020) saw moving to build connections between the mind, the body, and intuition. According to Jany (2020), educational environments can be stressful. She found that movement lowers anxiety and allows students to concentrate fully on learning. Kramer (2016) found that students feel more in control of their learning when given more liberty to enjoy movement. Her study focused on making the classroom a welcoming environment, and she concluded that students have more buy-in of their learning when teachers use movement as a strategy (Kramer, 2016). Kramer (2016) also discovered that students make deeper connections to the teaching and feel more comfortable learning when movement is allowed.

There is no apparent difference in the benefits of movement for any age group. The theory of embodied cognition and the research done about movement as a teaching strategy point out that movement is a viable way to add to a classroom. Also, this study of teachers' experiences in several different grade levels added to the literature regarding movement and its place in any school.

Teacher Perceptions of Movement Strategies

One important aspect of movement strategies and their integration is how teachers perceive them and their effectiveness. Researchers studied teachers of students in all age groups to get their opinions regarding movement as a teaching strategy. Those studies contributed to this study and also helped to establish the gap in the literature.

Preschool Teachers

Gehris et al. (2014) studied preschool teachers' perception of movement and its connection to learning. The teachers in the study expressed their perceptions in four major themes (Gehris et al., 2014). They said movement is (1) a way for young children to prepare for learning academic concepts; (2) a way to build social skills and confidence; (3) a way for teachers and students to bond; and (4) a way to make students aware of the world around them (Gehris et al., 2014). Given that preschool children are predisposed to movement in every situation, preschool teachers' perceptions of movement strategies are always positive (Gehris et al., 2014).

Elementary Teachers

Several studies focused on teachers' perceptions of movement with elementary school children. Martin and Murtaugh (2017) interviewed elementary teachers and students to understand their perceptions of active classrooms. The teachers studied expressed positive perceptions of movement strategies used in their classrooms (Martin & Murtaugh). They enjoyed how the dynamic lessons made them like the subject matter better and liked being active (Martin & Murtaugh, 2017). Teachers spoke of their perceptions of the students' educational benefits and enjoyment (Martin & Murtaugh, 2017). In educational benefits, the teachers felt that their teaching improved, the learning was more profound, and the content was more straightforward

when education involved active lessons (Martin & Murtaugh, 2017). In student enjoyment, teachers expressed excitement about the level of fun the students experienced during movement activities (Martin & Murtagh, 2017). Mullins et al. (2019) studied student and teacher perspectives of physical integration in elementary classrooms. The teachers reported that their students love the physical activities and focus more on the movement activities (Mullins et al., 2019). The study conclusively found that teacher enthusiasm regarding movement integration is essential for teachers and students (Mullins et al., 2019). Stylianou et al. (2015) asked teachers about their perceptions of movement in the classroom. The teachers interviewed expressed positive perceptions of movement strategies and saw them as beneficial for students' attention and readiness to learn (Stylianou et al., 2015). They also saw better focus, active engagement, and enjoyment in their students (Stylianou et al., 2015). Webster et al. (2017) also looked at teacher perceptions of movement integration. Like other studies, teachers expressed positive perceptions of increased focus, student engagement, and enjoyment (Webster et al., 2017).

Teachers of All Age Groups

Various studies examined teachers' perceptions of movement across all grade levels. Benes et al. (2016) explored those perceptions with experienced teachers across all grade levels who integrated movement in their classrooms. The study's teachers described positive feelings about movement as a strategy (Benes et al., 2016). They also expressed an interest in learning more about movement and incorporating it into the classroom (Benes et al., 2106). Dinkel et al. (2017) also investigated teachers' perception of movement in all grade levels. All study participants expressed an interest in movement integration in their classrooms (Dinkel et al., 2017). They were also able to articulate behavioral, academic, and health benefits of physical activity in school (Dinkel et al., 2017).

Teachers reported positive perceptions of movement as a teaching strategy regardless of the grade level taught. Their perceptions confirmed the theory of embodied cognition and neuroscience, which is that movement positively affects the brain and its ability to process. The benefits of better attention spans and more enjoyment in students can significantly increase cognition and learning, representing indirect connections to learning. As previous studies showed, this study aimed to understand teachers' perceptions of how movement could be connected directly to learning rather than indirectly.

Barriers to Using Movement

Teachers' perceptions about movement in the classroom include some hindrances when making their classrooms more active. The first barrier identified by teachers is a lack of resources. Webster et al. (2020) sought to understand how elementary teachers use movement integration, and their study focused specifically on how teachers use available resources. They found that schools that provide adequate resources, like classroom activity breaks, are much more likely to see movement integration commonly used by their teachers (Webster et al., 2020). In schools where movement integration resources are not available, teachers do not prioritize movement as a strategy (Webster et al., 2020). Another barrier some teachers identified is loneliness when trying a new teaching strategy, like movement. Costa (2018) started using movement in her college classroom long before others saw the benefit in older students. She cautioned that doing something different can feel very isolating (Costa, 2018).

A third barrier to incorporating movement in the classroom is a lack of time. According to Goh et al. (2018), teachers are concerned about the amount of time it takes to prepare movement integration lessons in addition to all of their other lesson planning. Teachers are also wary of how much time movement integration can take away from the mastery of core content

(Goh et al., 2018). Michael et al. (2019) found that teachers are concerned about the pressures of standardized testing and feel movement might take away from the time needed to focus on content. Schneller et al. (2017) stated that schools removed recess and physical fitness to have more classroom-based instructional time. They proposed that classroom-based movement might be the only way students get physical activity during the school day (Schneller et al., 2017).

Many teachers articulated a final barrier: fear of classroom management issues during movement integration. Martin and Murtagh (2017) found that teachers are concerned about losing control of the students during movement activities. Michael et al. (2019) added that teachers who do not receive training in movement incorporation are more likely to fear misbehavior in students. Routen et al. (2018) also showed that fear of off-task behavior on the part of the students is a concern when employing movement in the classroom.

Movement Strategies and Their Connection to Learning

While the studies of teacher perceptions of movement strategies were able to show positive perceptions of student engagement and focus, there remains a gap in the literature when it comes to perceiving a connection between movement in the classroom and academic achievement. Teachers regularly articulated the positive benefits of increased motivation and enjoyment when movement is a classroom strategy. However, movement will only be a viable option for teachers if it does connect to increased learning.

Movement and Academic Achievement

In a study conducted by Dyrstad et al. (2018), the primary finding was that students and school staff find lessons involving physical activity to be both beneficial and achievable. The benefits of physically active classes include more variation, fun while learning, and a high sense of achievement (Dyrstad et al., 2018). A vague reference was made about physically active

lessons increasing learning (Dyrstad et al., 2018). However, no specific details in the study confirmed how teachers connect movement to educational gains. The survey conducted by Fedewa et al. (2018) examined teacher behavior during movement activities. The study concluded that movement during academic periods is beneficial when encouraged by the teachers (Fedewa et al., 2018). However, in their closing comments, the researchers admitted that the teacher's perceived movement value needs further study (Fedewa et al., 2018). Stewart et al. (2019) evaluated movement integration programs and found that teachers' perceived needs determine the training direction. They recommended further study on teachers' perceptions of movement strategies that effectively enhance learning to provide the best training for movement integration (Stewart et al., 2019). The studies mentioned above alluded to the need for further research in teacher perceptions of movement and its effect on learning.

Need for Further Research

Three studies directly addressed the need for more research in teachers' perceptions of the connection between movement and learning. The first study, done by Webster et al. (2017), looked at teachers' perceptions of program planning in movement integration initiatives. When appropriately incorporated, they mentioned that movement integration might lead teachers to believe that movement creates an environment for higher academic achievement (Webster et al., 2017). Webster et al. (2017) implied that further study could confirm if movement has a connection to better learning. Benes et al. (2016) conducted the second study, exploring teachers' perceptions of using movement as a classroom strategy. Almost all participants reported positive benefits of using movement or believed that using movement could bring positive results to the classroom (Benes et al., 2016). In their concluding comments, Benes et al. (2016) said, "Teachers in this study understand that movement can be helpful in the classroom but cannot

explain in detail the connections between movement and learning" (p. 130). The third study done by Routen et al. (2017) expressed a need for further research in integrating movement and teachers' perceptions of the delivery and implementation. Several studies explored teachers' perceptions of specific movement strategies, but more is needed regarding movement in general (Routen et al., 2017). Therefore, the gap in literature this study attempted to address was teachers' perceptions of the connections between movement and learning. Teachers already expressed positive feelings about movement, both for themselves and their students. However, for movement to be a viable strategy in the long term, teachers need to see its relationship to learning.

Summary

The recurring themes found in the literature surrounding movement integration and active learning were that movement has a positive effect on the classroom because students are more engaged, more on-task, and had a higher level of enjoyment (Dyrstad et al., 2018; Hernandez, 2018; Moon & Webster, 2019; Reeves et al., 2016). Brain research showed that movement made a difference by activating the brain in areas related to memory and cognition (Courchesne & Allen, 1997; Desmond et al., 1997; Kim et al., 1994). ECT came from the idea that the brain and body connection was essential to cognitive processing (Shapiro, 2019). Teachers' perceptions remained positive towards movement as a viable teaching strategy, but the relationship between movement integration and learning was not explored thoroughly from teachers' thoughts and understandings (Benes et al., 2016; Webster et al., 2017). Therefore, this study attempted to fill the literature gap of how teachers perceive movement integration affecting students' learning.

CHAPTER THREE: METHODS

Overview

This hermeneutic phenomenological study described teachers' perceptions of using movement strategies to effect learning. This chapter includes a description of the research design, the participant selection process, and the research sites. Researcher positionality, including the philosophical assumptions I brought to the study, are incorporated. In addition, I detail the research procedures, data collection, and data analysis methods. I also discuss trustworthiness and ethical considerations in this chapter.

Research Design

This qualitative study was designed as a hermeneutic phenomenology that describes teachers' experiences with movement and its link to learning. Creswell and Poth (2018) defined qualitative research as "the use of interpretive/theoretical frameworks that inform the study of research problems addressing the meaning individuals or groups ascribe to a social or human problem" (p. 7). I chose to do a qualitative study because I was interested in addressing the meaning teachers assign to the movement and learning under the theoretical framework of embodied cognition (Creswell & Poth, 2018). I chose phenomenology because it was the perceptions of teachers' experiences with movement and learning that comprised the study. Van Manen (2016) defined phenomenological research as “the study of lived experience" (p. 9). The qualitative analysis of the phenomenon seeks to describe the essence or nature of the lived experience. Hermeneutic phenomenology, according to van Manen (2016), is “interested in the human world as we find it in all of its variegated aspects” (p. 18). Essentially, hermeneutic phenomenology studies people doing what they typically do (van Manen, 2016). Dilthey (2019)

was one of the first philosophers to lay the groundwork for hermeneutic phenomenology. He based his philosophy on making meaning and sense of lived experiences (Dilthey, 2019).

Additionally, Dilthey (2019) found meaning and worth through critique and interpretation of the experience. Binswanger (1941) distinguished hermeneutic phenomenology by asserting that experience is essential. Earlier phenomenologists focused on the intent behind the incident, but Binswanger (1941) believed the lived experience is critical regardless of intent. Rorty (2009) suggested hermeneutics as the path to making meaning from experiences by examining all aspects of the experience.

According to van Manen (2016), six research activities are involved in hermeneutic phenomenology. Those six activities are (1) studying a phenomenon that interests the researcher, (2) investigating the experience as the participants live it, (3) ruminating on the themes that describe the phenomenon, (4) telling the phenomenon through the skill of prose, (5) sustaining a robust and balanced academic relation to the phenomenon, and (6) maintaining perspective by considering the parts and the whole of the phenomenon. Van Manen (2016) said, "Phenomenology describes how one orients to lived experience, hermeneutics describes how one interprets the 'texts' of life" (p. 4). I chose hermeneutic phenomenology as the research design to get unbiased perceptions of movement and learning from the participants based on their experiences.

Research Questions

Central Research Question

What were the experiences of K-12 teachers who used brain-based movement strategies to affect student achievement?

Sub Question One

What student cognitive gains did teachers perceive to be influenced by movement?

Sub Question Two

In what ways did ECT manifest in learning environments that employed movement techniques?

Setting and Participants

The location for this study was one school in an urban area of the Southern United States. The school has a diverse student population and a diverse faculty. The school serves students PK-12, and the faculty at the school is knowledgeable of movement strategies in the classroom.

Site

The school dedicated a significant amount of its professional development budget towards using movement strategies in the last five years. In addition, movement strategies were an expected part of the classroom day. Leaders in the school hoped to see movement during walkthroughs and formal observations and included movement requirements in their formal teacher evaluations. The school chosen was ideal for this study because movement was a widely used classroom strategy. The school provided teachers of varying experience levels and classrooms for observation. In addition, students of varying ethnicities and income levels attend the school.

The school's name is Covenant Saints Academy (CSA). It is a private, faith-based school with an enrollment of 400 students. For this study, only K-12 teachers were participants. A principal and an assistant principal manage the school. The board of trustees is not involved in the school's daily operations, but all administrators answer to the board of trustees. I used pseudonyms to maintain confidentiality for the research sites and the participants.

Participants

The participants for this study came from the faculty of the CSA. The sampling type used was purposeful criterion sampling. Purposeful criterion sampling ensures that all participants meet the criteria of being trained in movement strategies and had relevant information for the study (Creswell & Poth, 2018; Gall et al., 2007; Yin, 2016). Participant demographic information can be found in Appendix B.

Demographic data provided variation in the sample. Although there are no fundamental rules for sample size in qualitative research, the number of participants in this study was between ten and fifteen, following the principle of "selection to the point of redundancy" (Patton, 2015; Yin, 2016, p. 98). Once the saturation of themes was reached, with no new data emerging, interviews ceased (Moustakas, 1994).

The process for selecting participants began once the Institutional Review Board (IRB) approved the proposal. Once approved, I sent an approval letter to the school's board president chosen for this study (see Appendix C). Once the administrative team supported the study, I reached out to 35 teachers through email. I attached the demographic survey (see Appendix B) and asked for a response from each teacher within seven days. At the end of the seven days, I reached out through mail again to the 35 teachers to remind them about the study. After five days, I had four demographic surveys. I sent a personal email to ten teachers asking them to consider participating. Within 48 hours, I had eight additional demographic surveys. I had hoped that the answers to the demographic survey would provide data to ensure diversity in the participants (Patton, 2015). However, once I had twelve participants agree to participate, I ceased the selection process.

Researcher Positionality

In this section, I discuss the interpretive framework for the study. I include my philosophical assumptions as well. I also reveal potential biases related to my philosophical beliefs.

Interpretive Framework

The interpretive framework guiding this hermeneutic phenomenology is social constructivism. According to Creswell and Poth (2018), social constructivism involves making meaning from lived experiences. Rather than starting with a hypothesis, social constructivism builds the purpose from experiences shared by the participants (Creswell & Poth, 2018). Through interviews and other interactions, theories emerge from the experiences and perceptions of the participants involved (Creswell & Poth, 2018). Social constructivism is typically viewed as subjective and relies on the researcher to interpret the data gathered from the subjects (Creswell & Poth, 2018).

Philosophical Assumptions

Creswell and Poth (2018) found that the philosophical assumptions of the researcher impact the study. I address all three types of assumption to help the reader understand my position as a researcher. The three assumptions are ontological, epistemological, and axiological.

Ontological Assumption

Creswell and Poth (2018) defined ontological assumptions as those that deal with understanding and beliefs about reality. My ontological assumptions come from my faith in God and my firm belief that His Word reveals absolute truth. However, my life experiences show me that people's interpretations of God's truth differ. Therefore, I understand that different understandings of any truth are possible. Understanding the participants' differing perspectives

was possible in this study because of my ontological beliefs.

Epistemological Assumption

Epistemological assumptions are about knowledge and what counts as knowledge (Creswell & Poth, 2018). Knowledge or understanding in a qualitative research study is derived from the participants' perceptions (Creswell & Poth, 2018). My epistemological assumptions yielded the understanding that knowledge in this study came from themes that emerged from the experiences described by the subjects. Time spent in interviews and observations provided the framework for obtaining knowledge from the participants.

Axiological Assumption

According to Creswell and Poth (2018), axiological assumptions come from values held by the researcher. I chose to do this study because of my interest and belief in using movement strategies in the classroom. I conducted professional development training that encouraged movement as a brain-based teaching strategy. Therefore, I value activity as a complement to the educational process. Knowing that was already a bias, I ensured that the participants' voices were clearly heard and accurately recorded during the data gathering process. Additionally, I committed to only using themes that the data revealed.

Researcher's Role

According to van Manen (2016), the researcher needs to examine the phenomenon by maintaining a thoughtful and conversational relationship. He calls for the researcher to be as intuitive, sensitive, and discriminating as possible while conducting a subjective phenomenological study (van Manen, 2016). I was committed to making sure the participants' views formed the basis of the entire study and that my interpretation of the data was grounded in the participants' perspectives.

One of the biases I had to address in the study was my prior knowledge and training in movement strategies. I am a school administrator with a strong background in teaching, so my bias favoring teachers' opinions had to be addressed. I did that by reporting all perspectives from all participants in a digital journal and consistently writing with truth and honesty (Creswell & Poth, 2018).

The site chosen for this study is where I am the head administrator. It was vital that none of the teachers felt compelled to participate. I provided a safe place for truth during interviews and focus groups. Since I knew all those who participated, their prior relationship with me could not affect their ability to communicate their perceptions and understandings during data collection.

I have been trained in targeted movement strategies to close the achievement gap in education. In addition, I teach others those strategies. Therefore, my attention to reflexivity and self-analysis was essential to the inquiry process (Patton, 2015). It was also necessary to bring "empathetic neutrality" to the inquiry (Patton, 2015, p. 59). Patton (2015) defined empathetic neutrality as "a stance of being nonjudgmental" while also showing "interest, caring, and understanding" to the participants (p. 59).

Procedures

Permissions

This study began with approval from the Institutional Review Board (IRB) (see Appendix A). I sought permission from the school once the IRB approval was secured (see Appendix C). Additionally, the necessary consent from the participants was obtained before the interviews started (see Appendix E).

Recruitment Plan

The chosen site for the study was already using movement strategies in classrooms. Additionally, all teachers had the training to support the use of movement. Therefore, all participants had experienced movement strategies in the school. The participants chosen were selected using purposeful criterion sampling.

Purposeful criterion sampling allowed me to select participants who contributed to the study because of their movement experience (Patton, 2015). The criterion for participating was previous training in and use of movement strategies with students (Patton, 2015). I established quality assurance through the participants' varying perceptions of movement and learning (Patton, 2016).

Potential participants meeting the criterion provided demographic information (see Appendix B). Using the data from the demographic survey, I chose participants from various age groups, ethnic backgrounds, and experience levels to get the broadest range of information and perspectives (Yin, 2016). Using demographically diverse participants with the same criterion increased confidence in this study's findings (Yin, 2016). Creswell and Poth (2018) suggested using ten to fifteen participants who experience the phenomenon. However, since there are no fundamental rules for sample size in qualitative research, the number of participants in this study was between ten and fifteen, following the principle of "selection to the point of redundancy" (Patton, 2015; Yin, 2016, p. 98). Once the saturation of themes was reached, with no new data emerging, I ceased interviewing new participants (Moustakas, 1994).

Data Collection Plan

This qualitative study was a hermeneutic phenomenology designed to describe teachers' perceptions of the connection between movement and learning. The data collection for this study

consisted of three types of data. They were in-depth interviews with teachers who had training in movement strategies, classroom observations of teachers who implemented movement strategies, and a focus group of teachers from the study. Those three data types are the three primary forms of data required for qualitative inquiry (Patton, 2015). All data gathered was recorded in a digital log to validate the study.

Individual Interviews

In-depth, one-on-one interviews were the first type of data collected. The questions were open-ended to elicit feelings, perceptions, opinions, and factual data from the participants (Patton, 2015). I recorded direct quotes and contextual information based on the participants' responses (Patton, 2015).

Individual Interview Questions

1. Please tell me your background and professional preparation for serving in your current position as a teacher. CRQ
2. Please describe your training in movement strategies. CRQ
3. How do you decide when and how to use movement in the classroom? SQ2
4. What is your understanding of the connection between movement and learning? SQ1
5. Describe your challenges when using movement strategies with your students. SQ2
6. Describe the movement strategies that work best for you. SQ2
7. Describe the movement strategies that have not worked well for you. SQ2
8. What types of support or resources do you need to incorporate movement in your classroom? CRQ
9. What would you say to a teacher who is hesitant to use movement as a learning strategy? CRQ

10. What else would you like to add to our discussion of your experiences with movement strategies that we haven't discussed? CRQ

The first two questions are knowledge questions aimed at getting factual information from the participants (Patton, 2015). The queries put the participant at ease by asking relatively straightforward questions as rapport was built. Beginning with non-controversial questions allowed the participant to answer something easy (Patton, 2015).

Questions five and nine are feeling questions that differ from an opinion in that they invoke emotions in the participants (Patton, 2015). Benes et al. (2016) reported that teachers have knowledge of the physical benefits of exercise and movement, but not many have much knowledge about how to use it in the classroom. Asking a feeling question at the beginning of the interview allowed me to know what the participant knew and how the participant felt about movement.

Questions three, four, seven, eight, and ten are opinion questions, allowing the participants to think about the issue (Patton, 2105). Gehris et al. (2014) showed that the abundance of research in movement in the classroom has not included how teachers feel about it. Benes et al. (2016) asserted that teachers are the essential piece to incorporating movement in learning, and therefore buy-in from teachers is necessary. Thus, asking teachers' opinions laid the groundwork for this entire study. In qualitative research, the assumption is that the perspectives of others were meaningful (Brayda & Boyce, 2014). In hermeneutic phenomenology, the participants' opinions and experiences form the essences and meanings of the study (Moustakas, 1994).

The theory of embodied cognition connects the idea of movement with increased understanding (Shapiro, 2019). Questions four, five, six, eight, and twelve allowed the

participants to combine movement and cognition as those connections are perceived to exist. According to Corcoran (2018), applying the theory of embodied cognition to movement in the classroom and studying the relationship between movement and learning is justifiable in a research study.

Individual Interview Data Analysis Plan

According to van Manen (2016), the goal of hermeneutic phenomenology is to go beyond the participants' individual experiences to discover the essence of the phenomenon as a human experience. To find the meaning of teachers' perceptions of movement and learning, I extracted the themes of the shared experiences of the teachers from the interviews. Oerther (2020) suggested making an interpretive file for each participant. The interpretive file includes background information, excerpts from the interview, and interpretive comments about the interview (Oerther, 2020). As each interview concluded, I created the file and recorded preliminary themes and meanings in the interpretive statements.

Van Manen (2016) suggested three approaches for extracting themes from the data. All three techniques ensure that the data is thoroughly analyzed. The interviews' first round of data analysis uses the holistic approach (van Manen, 2016). I read the text from all of the interpretive files as a whole document, and one central idea formed and was put into writing (van Manen, 2016). The second round of data analysis is the selective reading approach (van Manen, 2016). I read the notes from each file several times, annotating the phrases that revealed the meaning of the phenomenon (van Manen, 2016). The final round of data analysis is the detailed reading approach (van Manen, 2016). I read each line of the text individually to search for what it revealed about the phenomenon (van Manen, 2016). I extracted themes from each analysis stage and organized and detailed them alphabetically.

Observations

Observations of movement strategies in classrooms were the second form of data collected. I observed the participants' classrooms to look for specific movement strategies in their daily lessons. Observation protocols are found in Appendix D. The data consisted of detailed descriptions of the observation in each classroom, including the context of each classroom and school setting (Patton, 2015).

Van Manen (2016) described observation as the way for the researcher to be a partaker and a spectator at the same time. The point of the observation is to record anecdotes while they are happening (van Manen, 2016). During the observation, I separated the necessary anecdotes from those that were interesting but not related to the study (van Manen, 2016). Van Manen (2016) cautioned that gathering anecdotes about the study is a thoughtful process that requires sensitivity and discernment. I observed the movement phenomenon as the students experienced it, which allowed me to share the phenomenon (Marshall & Rossman, 2010). The most important aspect of the observations is to pay attention to what was happening and record it accurately and anecdotally (Patton, 2015).

Observation Data Analysis Plan

The purpose of the observation was to see examples of the movement techniques discussed in the individual interview. It also allowed me to look for movement-related events in the classroom that were not revealed in the discussion (Patton, 2015). In addition, I was able to understand the teacher’s perceptions through my comprehensive view as an observer (Patton, 2015). I added to the interpretive file for each participant during the observation by describing the setting, activities, and the people involved (Patton, 2015). The descriptions from the observations were analyzed into themes using the detailed reading approach (van Manen, 2016).

Reading through the observation notes line by line revealed any new or different themes that emerged (van Manen, 2016). Any new themes from the observations were discussed with the focus group to determine their validity to the study.

Focus Groups

The third form of data collection was a focus group interview. Marshall and Rossman (2010) suggested using four to seven participants in a focus group, and the group was chosen from the participants already interviewed. The focus group data offered an opportunity to scrutinize the themes found from analyzing data from the interviews and observations by delving deeper into the initial themes generated by the first two forms of data collection. Another purpose of the focus group was to provide member checking to ensure the accuracy of the data previously collected. According to Gall et al. (2007), member checking uses research participants to examine findings in the study to check for correctness.

Focus Group Questions

1. Describe the last time you used a movement strategy.
2. What do you hope to accomplish by using movement as a teaching technique?
3. Based on your experience, do you accomplish what you desire when using movement? Explain.
4. If the goal is increasing student achievement, how would movement be a part of reaching that goal?
5. ECT claims that the body, mind, and environment work together to create understanding. How do you see that happening when you use movement strategies?
6. Can you describe specific ways that you perceive movement affecting learning?

7. Here are some themes that have already been evident from the interviews and observations. Explain how they do or do not align with your experiences.
8. Describe any less relevant themes to movement and its effect on learning.
9. Explain any themes that you find highly relevant to movement and its effect on learning.
10. What else would you like to add to the conversation?

Question one is intended to be an icebreaker that allows the participants to share their shared experiences in the study so far. Questions two and three allow the group members to share their thoughts about movement strategies, so each person understands the perspectives of the other group members (Yin, 2016). Questions three through ten are designed to spark discussion amongst the focus group members (Yin, 2016). During the questioning process, I served as the moderator and redirected the conversation to stay on topic (Yin, 2016). The goal as moderator was to ensure all members had the opportunity to express their ideas (Yin, 2016).

Focus Group Data Analysis Plan

To find the meaning of the focus group's perceptions of movement and learning, I recorded the shared experiences of the teachers from the interviews by adding to the interpretive file for each participant (Oerther, 2020). As the focus group concluded, I compared themes and meanings in the interpretive statements to what had already been found in the interviews and observations. Using the detailed reading approach, I read each line of the text individually to search for what it revealed about the phenomenon (van Manen, 2016). I extracted themes from each analysis stage and organized and detailed them alphabetically.

I also asked the focus group to analyze and discuss the themes from previous data. The goal was to differentiate between the incidental and essential themes (van Manen, 2016).

Essential themes are those necessary to the phenomenon and will change the experience if not included (van Manen, 2016). Incidental themes do not modify the fundamental qualities of the phenomenon (van Manen, 2016). Separating the themes was a crucial part of the analysis because the essential themes were the ones that described the true meaning of the phenomenon (van Manen, 2016).

Data Synthesis

Van Manen (2016) described phenomenological reduction as the process that ultimately leads to finding the meaning or essence of the phenomenon. Step one in phenomenological reduction is questioning the meaning of the experience (van Manen, 2016). That step started with the purpose of the study and continued through the data collection activities of interviews, observations, and a focus group. In step two of phenomenological reduction, I overcame my biases attached to the phenomenon (van Manen, 2016). Those are in the Researcher Positionality section. Additionally, I addressed my proclivities in the areas of Trustworthiness and Ethical Considerations.

The third step of phenomenological reduction is to separate theories and scientific knowledge from the participants' experiences (van Manen, 2016). After the interviews, observations, and focus group concluded, I continued the process of developing themes that described the meaning found in the data (Patterson & Williams, 2004). While I included three data collection methods in this study, I combined the themes from all three to make one data set. As I sorted the different units of meaning into themes, I provided textual evidence from the data to support the theme (Patterson & Williams, 2004). I ensured the themes were relevant to the study's goals and the central research questions (Patterson & Williams, 2004).

The final step is looking past the individual themes to see the essence of the entire experience (van Manen, 2016). According to van Manen (2016), hermeneutic phenomenological data is synthesized through writing that meshes the research and the data. Writing about the themes from the data solidifies what is learned by the study (van Manen, 2016). Written reflection helps deepen the understanding of the phenomenon (van Manen, 2016). The thinking required to put thoughts into words forced me to be sensitive to the research topic (van Manen, 2016). Synthesizing the data required writing and rewriting and rethinking on my part, and re-analyzing the themes and meanings (van Manen, 2016).

Van Manen (2016) cautioned the researcher to remain firmly rooted in the central research question during the writing process. While writing, I maintained a close relationship to the data and themes and did not stray from the findings. Another caution from van Manen (2016) is the importance of viewing the study as a whole and in parts. I kept the study in mind when synthesizing the themes in written form as I described the details. Patterson & Williams (2004) cautioned the researcher to avoid simply writing a list of themes. In hermeneutic synthesis, empirical evidence justifies the interpretation of the data (Patterson & Williams, 2004). I endeavored to write a synthesis rich in inference and supported by evidence, and I sought to articulate how the interpretation impacted the educational setting.

Trustworthiness

In a constructivist qualitative study, the researcher ensures that the analysis is rigorous, disciplined, and objective (Lincoln & Guba, 1985). Establishing trustworthiness comes from asking questions that verify the reliability of the study (Lincoln & Guba, 1985). The elements of trustworthiness include credibility, transferability, dependability, and confirmability (Patton, 2015).

Credibility

Credibility ascertains that the study's findings are true and accurate (Lincoln & Guba, 1985). Appropriate controls need to be in place to ensure that effort is made to provide credible results. I established credibility through prolonged engagement, triangulation, and peer debriefing (Lincoln & Guba, 1985).

Prolonged Engagement

Prolonged engagement means that the researcher takes the time to understand the culture and context of the site used for the study (Lincoln & Guba, 1985). Knowing the culture helps contextualize the data and the findings (van Manen, 2016). Additionally, prolonged engagement with the participants and the site allows the researcher to recognize any data that might be inaccurate or misinterpreted (Lincoln & Guba, 1985). Since the site of my research was my place of employment, I already understood the culture and context of the participants. Lincoln and Guba (1985) cautioned me to be aware of the challenges I faced as a stakeholder of the research site. I stayed mindful of the possible hidden influences that affected my ability to remain an objective researcher (Lincoln & Guba, 1985).

Triangulation

Lincoln and Guba (1985) proposed that triangulation involves using various sources, methods, and investigators to confirm the data and findings. In this study, I achieved triangulation of sources by comparing the data collected from each participant to look for commonality of themes and experiences (Lincoln & Guba, 1985). Using three different types of data collection, I provided triangulation of methods (Lincoln & Guba, 1985). The strengths and weaknesses of the interviews, observations, and focus group provided the balance I needed to achieve triangulation (Lincoln & Guba, 1985). Although I was the only researcher conducting

this study, the focus group helped provide investigators' triangulation. The focus group was asked to evaluate the data analysis from the interviews and observations, thus ensuring the integrity of those findings (Lincoln & Guba, 1985).

Member Checking

Member checking occurs when the data, analysis, and findings are tested by the participants who initially provided the data (Lincoln & Guba, 1985). In this study, member checks were conducted in two ways. The first type of member check was done informally during the interview process. Previous interviews were shared with participants to provide additional feedback (Lincoln & Gubs, 1985). The focus group provided the second type of member check in a more formal setting. The focus group was asked to scrutinize the analysis from the interviews and observations to confirm and criticize (Lincoln & Guba, 1985).

Transferability

Transferability provides the reader with sufficient information regarding how the results may or may not transfer to other situations (Patton, 2015). Transferability is facilitated through detailed descriptions that allow the reader to decide if the findings are transferable (Erlandson et al., 1993. Through the connection of details like participants and setting, the reader determines similarities that will open up possibilities for transferability (Creswell & Poth, 2018).

Dependability

Dependability is obtained by establishing specific and detailed procedures that are consistent and can be replicated by future researchers (Lincoln & Guba, 1985; Yin, 2018). This study ensured that the methods and procedures were detailed enough to be reproducible in future studies. I depended on my dissertation committee to confirm that my detailed descriptions were sufficient to provide dependability.

Confirmability

Confirmability is the degree of neutrality or the extent to which the respondents shape the findings of a study and not researcher bias, motivation, or interest (Lincoln & Guba, 1985). I used three procedures to assure confirmability. First, I established a detailed audit trail to record all procedures, data, analysis, and findings (Lincoln & Guba, 1985). Additionally, I justified the analysis with reasons for each decision (Creswell & Poth, 2018). Second, I provided triangulation of sources, methods, and investigators as discussed above. Third, I created a reflexive journal that described my experience as an investigator (Lincoln & Guba, 1985). The reflexive journal included (1) daily details of the study, (2) my reflections about the study, and (3) details about my methods and decisions (Lincoln & Guba, 1985).

Ethical Considerations

Ethical considerations for qualitative studies are considered at every study stage (Creswell, 2013). Before the investigation began, I sought approval from the Liberty Internal Review Board (see Appendix A) and sought consent from the school to be studied (see Appendix C). I gained permission from the participants (see Appendix E), dealt with any issues of proprietary ownership of the dissertation, and examined educational standards of ethical conduct (Creswell & Poth, 2018). Once the study began, I had an obligation to explain the purpose of the research and remove pressure from the participants to be a part of the study (Creswell & Poth, 2018). In addition, I was aware of cultural norms and at-risk populations as the investigation progressed (Creswell & Poth, 2018). I used pseudonyms for all participants and research sites to maintain confidentiality for all subjects.

I was committed to causing as little disruption as possible to the study site (Creswell & Poth, 2018). There was honesty in all aspects of the process, and there was no manipulation of

the participants (Creswell & Poth, 2018). As the data was analyzed, I respected the confidentiality of the participants by using pseudonyms (Creswell & Poth, 2018). Additionally, I ensured that information was accurately analyzed, without false positives or singular perspectives (Creswell & Poth, 2018). I stored all data on my personal, password-protected laptop. According to Creswell and Poth (2018), data must be securely stored for five years.

I based conclusions on the actual data without embellishments or inaccurate findings (Creswell, 2013). There was nothing that could cause hurt to the participants, nor was there anything confusing or ambiguous (Creswell & Poth, 2018). Once the study is published, I will share it with all participants and stakeholders (Creswell & Poth, 2018). There was proof of ethical compliance and evidence that the data was not duplicated in another study (Creswell & Poth, 2018).

Summary

The purpose of this hermeneutic phenomenological study was to explore the perceptions of teachers of movement and its connection to learning in the classroom. This chapter included a description of the hermeneutic phenomenological research design. In addition, I described the setting for the study and the sampling procedures for choosing participants. I discussed the role of the researcher, the researcher's positionality, and the data collection methods in detail. Also included in this chapter were details regarding data analysis, data synthesis, and establishing trustworthiness. The chapter ended with a discussion of ethical considerations.

CHAPTER FOUR: FINDINGS

Overview

The purpose of this hermeneutic phenomenological study was to understand teachers' perceptions of the effects movement strategies had on students' learning at Covenant Saints Academy. This chapter includes descriptions of the participants, data analysis in narrative themes, outlier data, and research question responses.

Participants

Table 1

Teacher Participant

Teacher Participant	Years' Experience	Highest Degree	Movement Training	Grade Level
Heather	20	Masters'	Yes	9-12
Scarlett	10	Bachelors'	Yes	K-5
Sally	30	Masters'	Yes	6-8
Candace	15	Masters'	Yes	6-12
Holly	17	Bachelors'	Yes	9-12
Lacey	10	Bachelors'	Yes	6-12
Sue	20	Doctorate	Yes	6-12
Karen	17	Bachelors'	Yes	K-5
Gail	12	Bachelors'	Yes	6-8
Lizzie	7	Bachelors'	Yes	6-8
Rebecca	14	Bachelors'	Yes	9-12
Bobbi	6	Bachelors'	Yes	6-12

I contacted 35 teachers through email to begin the recruitment process for participants. After a week, I sent a follow-up email to 35 teachers and attached the demographic survey. At that time, I set a deadline of seven days to return the demographic survey. I asked the

participants to return their survey to the school's welcome desk, placed in a designated envelope. At the end of the seven days, I received four surveys. I reached out to ten teachers through a hand-written letter, asking them to consider participating in the study. Within 48 hours, I received eight additional surveys. My goal was to recruit twelve participants, so I used all the participants who returned the surveys. I scheduled an interview with each participant and provided them with the consent form (see Appendix E). The participants returned their consent forms at the individual interview.

Results

This section includes the analysis of the data collected from individual interviews, observations, and the focus group. The importance and frequency of movement strategies are discussed and the types that work. This section examines direct and indirect connections to student achievement as well.

Importance of Movement

Teachers agreed that movement is an important strategy to use in the classroom. Heather emphatically stated, "You are losing your kids if you do not use movement!" Robin agreed, adding, "Movement is significant, even with older kids."

Focus and Engagement

Teachers found that students are more focused and engaged when movement is a part of the lesson. Holly stated, "Students engage better with movement." According to Lizzie, "Students are more awake and engaged when we are moving." Rebecca reported, "I see better learning and focus in my students when we are doing an activity that requires movement."

Solidifies Memory

Teachers saw better content retention when including movement in the activities. Bobbi found, "Moving helps take the learning from short term to long term memory." When talking about memory, Candace said, "Kids may not remember words, but motion or action helps." Candace described using the body as a noun and appendages as adjectives. I observed them using that technique, and students remembered the difference between nouns and adjectives when using the motions. Gail used hand motions to help students memorize Bible verses. She said, “When we create a motion that matches the word, students remember the verse forever.” Holly remembered a conversation she had with a student who said, "I still remember that lesson where we moved around the room, and I got all of those questions right on the test." Lacey also said, "Retention is solidified when we have active lessons. I can see the difference."

Frequency of Movement

While all teachers agreed that movement was essential, they did not agree about the frequency of using movement in the classroom. Sue said, "Sometimes the content does not lend itself well to movement, and you have to be creative." Some teachers preferred to plan their movement activities, while others were more spontaneous with active lessons. Many teachers used movement every day, while others were more likely to use it weekly.

Planned

All teachers agreed that incorporating movement into their lesson plans is necessary. Gail said, "I plan for some type of movement every day in my classes." Rebecca said, "I always plan a movement activity on days that I have to lecture." Bobbi also planned for movement, saying, "My lesson plans always reflect several transitions. For example, I might lecture, then move the students to partner groups, then do a hands-on lab activity."

Spontaneous

The teachers all agreed there are times they use movement without planning. Lizzie said, "If they look like they are falling asleep, I know I have to get them moving." Sally said, "When I can tell they need a break, I figure out a quick way to get my students moving around." Candace said she rarely planned for movement because "it has become second nature to me, and I use it all the time."

Daily

Some teachers believed it is vital to use movement daily. Scarlett said, "I try to plan something that involves moving every day." Sue used movement every day, saying, "It does not have to be elaborate or complicated. I have students come to the board, and I use simple movement techniques." Karen recognized her own need to move and said, "If I need to move, I know the kids do too. We move around all day long."

Weekly

A few teachers used movement less frequently, citing typical once or twice per week. Holly taught older students and said, "I use movement, but it has to be meaningful to support learning. My students resist if they think we are moving without a specific purpose, so I do not use it every day." Lacey said, "I use movement when it works with the curriculum."

Types of Movement

Teachers agreed that movement is an essential aspect of learning, and they use a variety of movement types in their classrooms. Sue summed it up by saying, "The old school style of lecturing is long gone, and students learn better with active strategies." Teachers described using physically active strategies, connected directly to the learning, and hand motions. Teachers also

talked about the importance of student buy-in and mentioned movement activities that are not beneficial.

Physical Activity

Teachers saw an educational benefit to physically active movement strategies. Heather described how she used physical activity by saying, "When starting a new novel, we will read five pages out loud and then walk around the school for a few minutes. When we return to the classroom, the students are ready to answer comprehension questions. That walk works every time." When I observed Scarlett, her Kindergarten students were hopping the answer to math facts. She called out "two plus three," and the students hopped five times. In observation of Karen's class, her students were running on the playground and finding nouns. When they found a noun, they ran to her and shouted the name of the object they saw.

Lesson Connection

When movement strategies were connected directly to the lesson, the teachers saw good results from students. Sally talked about playing review games, saying, "Reviewing the lesson at the end of the class period by playing a game is fun and makes the content more fun." Rebecca and Lacey used hands-on activities that furthered the content of the day's lesson. Lacey said, "When the students get out of their seats and go to the board to work problems, they remember the process better." Bobbi also used hands-on activities to extend learning. She said, "My students get excited and stay engaged when doing an activity that is connected to the lesson."

Hand and Body Motions

Many teachers found that using hand or body motions helps students learn. Candace described using body movements by saying, "We diagram sentences using our body parts. The body is the noun, the arms are adjectives, and the legs are adverbs. It helps them remember."

Lacey agreed that older students do not want to move for no reason and said, "My students get riled up if there is no real point to the movement." I observed Lizzie using hand motions to help students memorize the content. She used flashcards to assess their knowledge, and they used hand motions to help recall the answers.

Student Buy-In

The teachers recognized that students have to be willing and excited to participate in the movement strategies to impact the learning. Holly, who taught advanced courses to high school students, said, "Unless they can see the point, older students do not want to move." Heather found that students do not want to do anything that makes them feel silly. She said, "They do not want to do anything that seems fake, forced, or weird." Scarlett said her students "do not like to do anything that seems childish."

Strategies to Avoid

The teachers found some movement strategies that do not add to the learning. Sally said, "Anything that gets the students too excited or distracted is counterproductive. I tried jumping jacks to help them wake up, and it took way too long to get their attention back." Lizzie said, "Poppets, which are a popular new fidget tool, are too loud and distract from the learning." Karen said, "Anything too messy backfires on me. The point of the activity gets lost dealing with the mess." Gail warned, "As a teacher, I know there are some students who do not get along well. It is a mistake to group them for a movement activity. They cannot focus on the learning when they are struggling with their partner."

Direct Connections

When asked about their understanding of the connection between movement and learning, teachers saw many direct connections between the two. Heather passionately asserted,

“I see direct connections every day that convince me that movement is a vital part of increasing student learning.” Teachers articulated several examples of movement strategies they use that yield better understanding for the students and therefore directly connect to learning.

Hands-On Activities

Teachers that used hand-on activities saw a direct connection between the activity and deeper learning. I observed a lab experience with Lacey's class, and the depth of learning achieved through the activity solidified their understanding of the content. Bobbi did a lab with her students to demonstrate giving injections to animals where they injected food coloring into a banana, and I observed that 100% were correct.

Hand/Body Motions

Many of the teachers used hand or body movements to help with the recollection of content, which they believed to work very well. Scarlett used body movements to help pair words. She said, "They never forget the movements, which means they never forget the words either." Candace said, "When we use hand motions to help us learn new things, the retention rate is always great."

Moving While Learning

Teachers agreed that moving while learning yields more significant success in learning. Heather pointed to her use of walking after reading book pages. She said, "My students made high A’s on the test I gave them using the walking strategy, and they did not do that well on previous tests." I observed Sally doing a scavenger hunt activity with her students. They had to figure out the answer to move to another station, and the students had to find the correct answer, which enhanced the overall learning. I observed a speed-dating activity she used for a reading

comprehension lesson in Holly's classroom. I listened to their conversations, and it was evident that the students fully understood their reading passages.

Indirect Connections

Teachers articulated several ways that movement indirectly affects learning. Heather spoke for all the teachers when she said, “Movement gets the blood flowing, which prevents them from zoning out.” They talked about focus, engagement, and increased fun that adds to learning indirectly.

Focus

The increased focus during movement strategies was one of the indirect connections teachers mentioned. Sally said, "Moving helps students when they have stopped listening, and it brings them back into focus on the lesson." Karen added, "When I lose their attention, I know it is time to incorporate movement." Rebecca said, "When my kids are active, they become re-energized and refocused."

Engagement

Movement strategies tended to keep students engaged, according to teachers. Holly said, "The novelty of moving keeps the kids engaged and breaks up the monotony." I observed Sally's class doing a scavenger hunt with math problems and saw total engagement on the parts of the students. Lizzie often worked one-on-one with students and said, "Moving keeps them more engaged in the content we are working on."

Fun

Teachers agreed that movement strategies add fun to any lesson. Candace said, "Every teacher should try movement in their classroom, and it will be fun!" Gail said, "Adding

movement activities gets students out of the rut and makes everything more fun." Lizzie added, "My students get very excited about the learning process when they are moving."

Teacher Support

Teachers agreed that support from the administration helps them incorporate movement strategies more often. Heather summed it up and said, "It would be helpful to have more ideas for moving." More training, time for collaboration, and classroom space are ways teachers need support.

Training

Several teachers expressed a desire for more training in the use of movement. Candace said, "I would like more training in how to use movement with my specific content area." Holly agreed and said, "I would like training that specifically addresses movement with older students." Karen said, "There is lots of professional development out there about movement. I want to attend more workshops." Gail stated, "I need new ideas."

Classroom Space

The teachers agreed that lack of classroom space hinders using movement. Heather said, "Last year, I was in a smaller room, so my ability to do certain movement strategies was less." Lacey said, "My classroom has an unusual layout, and movement can be challenging." Bobbi said, "My classroom is too small, so I move my students into a larger space to do movement activities."

Collaboration

Some teachers articulated a desire to collaborate with their peers regarding movement. Candace said, "I would like to see examples of what works well from other teachers." Lizzie

said, "I would love to hear about new ideas from my fellow teachers." Rebecca said, "I saw a fellow teacher using sidewalk chalk last week, and I am going to try that."

Outlier Data and Findings

One of the things I did not expect when I began data collection was differing views on what movement was. Most participants described movement as activities that get students out of their desks and moving around. However, a couple of participants had other ideas.

Typing/Writing as a Movement Strategy

Two teachers described the ways they use typical actions like writing and typing. Holly said, “Simple motions like pushing buttons on the computer keyboard or writing on a worksheet are movements that I believe enhance learning. Even doing a worksheet during a lesson counts as an active strategy." Holly admitted to doing more physically active strategies as well but believed "anything that adds to the involvement of students in the lesson can be considered active." Candace typically used physically active strategies but admitted, "We use expo markers on the desk to write answers, and because it is different from writing on paper, it works."

Research Question Responses

This section answers the central research question and the two sub-questions. The answers come from the perceptions of the participants. Quotes from individual interviews provide the rationale.

Central Research Question

What were the experiences of K-12 teachers who use brain-based movement strategies to affect student achievement? The participants' experiences with using movement strategies were varied. Heather used movement daily with her students and believed “movement ensures the students make long-term connections with the content.” Scarlett, who taught elementary-aged

students, used movement every day because “kids cannot sit still all day.” Sally, Candace, Karen, Gail. Lizzie and Bobbi used movement daily as well. Lizzie said, “Students are not excited about learning and therefore do not learn as well when sitting still.” Holly, Lacey, Sue, and Rebecca used movement strategies less frequently. Holly described her experiences, saying, “Movement has to be connected to the learning. Otherwise, I do not use movement as a strategy.” Rebecca said, “I try to ‘read the room’ and use movement when I can see the kids need it. That doesn’t happen every day.”

Sub Question One

What student cognitive gains did teachers perceive to be influenced by movement?

The participants' perspective was that movement enhanced learning, which led to cognitive gains. One cognitive gain the participants saw was increased memory and retention. Heather referred to her read and walk strategy and said, "I have proof from the better quiz and test grades that movement helps students learn." Heather believed memory and retention were positively affected by movement. Holly added, "I hear students regularly refer back to movement activities when they recall information learned, and it sticks in their memories." Another cognitive gain perceived by teachers was increased connections. Heather said, "Movement provides tangible connections for students. They often ask, 'Why do I have to learn this?' When they can see it, touch it, and feel it through movement, they learn it and understand it." Another cognitive gain the teachers mentioned was increased test and quiz scores. Lacey said, “I can see the difference in test scores when we have used movement strategies while learning.” Regardless of the type of movement, the participants perceived cognitive gains when using movement strategies. Sally stated, “Movement is necessary for students to learn.”

Sub Question Two

In what ways did embodied cognition theory (ECT) manifest in learning environments that employed movement techniques? ECT claims the body and the environment are essential to learning and cognitive development (Shapiro, 2019). The participants' perspective was that body, mind, and environment work together through movement to increase learning. Scarlett remembered when her students struggled with math facts and said, "Movement is so fun that it changes the classroom atmosphere. When the body gets moving, both sides of the brain engage, and the kids remember better." Heather said, “When I get my students moving around the school, their environment changes, and their body engages. The learning increases every time.” Karen talked about her experience at a previous school. She said, “They decreased recess time, and we saw a decline academically.” She claimed the lack of physical movement and the stagnant environment negatively affected learning.

Summary

The findings in this chapter indicated that teachers perceived movement was important, had both direct and indirect effects on student learning, and that the frequency of use of movement made a difference. Additionally, teachers articulated the support they needed with movement strategies, and outlier findings with movement were discussed. The central research question was answered with the understanding that teachers’ experiences were varied. The two sub-questions were also answered by articulating that the participants believed that movement positively affected learning and that ECT was a viable learning theory.

CHAPTER FIVE: CONCLUSION

Overview

The purpose of this hermeneutic phenomenology was to understand teachers' perceptions of the effects movement strategies had on students' learning at Covenant Saints Academy. This chapter begins with a summary of the thematic findings. The remainder of the chapter discusses the interpretation of findings, implications for policy and practice, theoretical and methodological implications, limitations and delimitations, and recommendations for future research.

Discussion

This section discusses the themes described in Chapter Four. The discussion begins with a summary of themes, my interpretation of the findings, and the implications for policy and practice. I explore both the theoretical and empirical implications of the findings. I conclude with the study's limitations and delimitations and my recommendations for future research in movement and its effect on learning.

Interpretation of Findings

In this section, I deliver a brief overview of the themes offered in Chapter Four. The themes of movement, frequency of movement, direct and indirect connections to learning, and teacher support are summarized. I also include my interpretation of their significance.

Summary of Thematic Findings

The themes for this study were the importance of movement, frequency of movement, types of movement, direct and indirect connections to learning, and teacher support. The participants had varying perspectives on movement, and their diverse experiences helped clarify

the themes and their interpretations. The participants' experiences led to the interpretations explained in this section.

Movement Adds Value. The participants agreed that movement is a teaching strategy that adds value to the classroom experience. The literature supports the idea that movement improves the students' experiences. Active strategies stimulate the parts of the brain that are responsible for learning and memory, like the cerebellum and dentate nucleus (Kim et al., 1994; Desmond et al., 1997; Thomas et al., 2019; Russ, 2017). Movement also releases chemicals in the brain that contribute to motivation and well-being (Blackmer, 2018; Sugahara et al., 2016). The participants were trained in brain-based movement strategies, so they were aware of the research in brain stimulation. Heather spoke about "increased blood flow and dopamine." Scarlett said, "Movement activates both sides of the brain, allowing crossover between the right and left sides." In previous studies, students reported more satisfaction and engagement when movement is used as a strategy (Zhang & Zhang, 2017; Wang, 2018; Vazou et al., 2017; Fedewa et al., 2018). This study revealed the same positive effects. Heather insisted, "You [teachers] will lose your students" if movement is not incorporated. Holly and Lizzie agreed that "students are awake and engaged when moving." Rebecca added, "Kids are energized and focused when they are interactive and moving." Research shows that teachers are motivated to use active strategies because the students enjoy them immensely (Kreider, 2019; McMullen et al., 2019; Michael et al., 2019). Sally's experiences showed, "Movement makes the content more fun!" Bobbi found, "Movement adds excitement to any lesson." The participants' experiences with movement strategies yielded affirmative effects that confirm previous studies and brain research. Their overall perception was that movement is a viable classroom strategy that positively affects the classroom.

Connect Movement to Learning. Regardless of the types or frequency of the use of movement, the participants expressed the assurance that movement positively affects learning. The literature and the participants' experiences reinforce that claim. Previous studies found that learning increases when the brain is activated by physical movement (Courchesne & Allen, 1997; Kim et al., 1994; Wu & Xi, 2018). Heather said, "When the blood gets flowing, and oxygen is increased through movement, my students comprehend better."

Holly added, "Students' brains engage better with movement." Research shows student-centered learning activities based on active strategies increase cognition (Sesmiarni, 2015; Makranski et al., 2015; Tenison et al., 2016). Lacey found, "Learning sticks and is solidified when both sides of the brain are engaged." Sue described, "Students get drawn into the lesson when they actively engage through movement." Several earlier studies indicated that scores on assessments increase when movement is used in teaching (Skoning et al., 2017; Vazou et al., 2020; Turner & Chaloupka, 2016).

Heather and Bobbi both provided proof of higher scores on assessments after an active lesson. After I observed Heather's class doing active note-taking, she sent me the scores on that day's formative assessment. The grades were higher than scores on days with no movement incorporation. I observed Bobbi's class doing a hands-on activity that reinforced previous instruction. The students showed mastery of the content during the activity. The gap in the literature, which was the basis for the study, found that teachers' perceptions of the effects of movement strategies could not be easily articulated (Benes et al., 2016; Routen et al., 2017). The participants in this study were able to express their positive perceptions. Holly said, "I know that students' cognition increases when learning is active because I see it happening." Scarlett said, "I see it every day. I get them involved in an active lesson if they struggle with math facts. Their

recall and understanding always increase." All of the participants were doubtless influenced by previous training in movement strategies, and all of them felt with certainty that movement increased student learning.

Atmosphere Is a Piece of the Puzzle. The participants were not familiar with ECT, but they agreed that body, mind, and atmosphere contributed to student learning once explored. The literature supports ECT as a viable learning theory. Previous studies concluded that motion in students is conducive to better learning outcomes (Shapiro & Stolz, 2019; Duijzer et al., 2019). Sally said, "Moving stimulates the brain and helps with memory."

Under ECT theory, movements like hand gestures and touchscreens solidify learning (Van Boening & Riggs, 2020; Duijzer et al., 2017). Candace used hand motions frequently and said, "Kids remember better when they make hand motions." Lizzie said, "I use sky-writing as a movement technique. When they spell a word in the sky, they remember it better." Sue used a touchscreen during review games and said, "Just pushing the button helps to solidify learning." Sally said, " I pair words with body movements to help reinforce learning." Earlier research showed that the interplay between humans and the environment leads to a better understanding of content (Wang & Zheng, 2018; Hardcastle, 2017; Sadoski, 2018). Scarlett said, "Using movement changes the atmosphere of my classroom significantly. The students are more unified when moving." Gail said, "We get out of our rut and have more fun when we move." Sally said, "We stand up and change what we are doing, which positively impacts the learning environment." In general, the participants agreed that the theory of embodied cognition explains why students achieve more when movement is used in the classroom.

Teachers Desire Collaboration. Teachers needed support and resources to make the most of the positive connections associated with the movement. Previous studies (Webster et al.,

2020; Michael et al., 2019; Goh et al., 2018) support that assertion. Teachers need to collaborate with colleagues to find the strategies that work best for them (Kelleher & Whitman, 2013; Sharma & Pandher, 2018; Van Atteveldt et al., 2019). Sue said, "I would like to go to other teachers' classrooms to see what they are doing with movement that is successful."

Lizzie said, "I love hearing from my colleagues about what works for them." Rebecca said, "I get ideas from others who have used active strategies." Research showed that teachers also want training in movement strategies to ensure best classroom practices (Campbell, 2017; Sancar et al., 2021). Candance said, "I would like movement training in my subject area. I want to hear about what works." Holly asked for "training in ways to use movement with older students." Gail said, "I am constantly learning and growing in movement strategies." Literature also pointed to available resources as a need when planning movement strategies (Webster et al., 2020; Costa, 2018). Heather said, "I was in a smaller room last year and did not have room to do much with movement." Sally praised the budget available to her and said, "I just purchased some movement games and am excited to use them." Gail said, "I am always looking for new tools to add to what I already have." Depending on the subject or the age group, the participants had different needs, but they agreed that support, collaboration, and resources are essential to successfully implementing movement strategies.

Implications for Policy or Practice

Using the interpretations of the findings, the implications for policy and practice based on teachers' experiences with movement and learning are discussed in this section. Those recommendations include collaboration and training, as well as added accountability and peer activities.

Implications for Policy

The primary emphasis in education is increasing student achievement (McNeill & Berland, 2016; Lee & Ready, 2009; Anderson-Levitt, 2021). Schools delegate large portions of their budgets towards ensuring students are learning. Movement in the classroom is recognized as a positive strategy for classroom use (Blackmer, 2018; Fedewa et al., 2018; Skoning et al.,2017). However, most teachers are only interested in using strategies they believe are useful (Cohen & Mehta, 2017). This study aimed to understand teachers' perceptions of the effects movement had on achievement. Based on the participants' positive understanding of movement as a learning strategy, budgeting for training and collaboration in the use of movement would be a wise policy decision. Devoting time to professional learning communities (PLCs) for collaboration and observation of movement in peer classrooms might be considered. Another policy option could be to make movement a standard practice for classroom use, perhaps including it as an expectation from teachers during formative and summative evaluations.

Implications for Practice

As indicated by the participants ' comments, the implications for practice at the study site include training and collaboration. It is recommended that the site consider further training in movement as it relates to specific subjects and grade levels. The study site might also consider instituting PLCs to provide peer-to-peer time for collaboration and observation. An accountability structure for teachers at the site who are hesitant to use movement could be contemplated in light of the positive benefits found by the participants. PLCs and accountability for teachers who use movement infrequently could add to their understanding of movement and its benefits. Additionally, collaboration and observations might help teachers who are uncertain of which types of movement are effective for learning.

Theoretical and Empirical Implications

The theoretical framework for this study is embodied cognition theory (ECT). The basic structure of the theory is articulated by Shapiro (2019), who believed that learning processes that interact with the body and the environment enhance cognition (Shapiro, 2019). Previous studies found teachers have positive feelings about movement but are uncertain of the possible connection between movement and increased achievement (Benes et al., 2016; Routen et al., 2017). Previous studies of ECT concluded motion in students is conducive to increased cognition (Shapiro & Stolz, 2019; Duijzer et al., 2019). Studies that explored the impact of ECT in education concluded that motion in students leads to positive learning outcomes (Shapiro & Stolz, 2019; Duijzer et al., 2019). My study contributed to ECT by examining teachers' understandings of the connection between movement and student learning. The participants' understanding of the effects of movement on learning confirmed previous research that asserts teachers see the benefit of movement as a learning strategy. This study extended the research by confirming that teachers see a positive connection between movement and learning.

The empirical implications of this study come from the participants' experience in this study. The participants articulated their belief that movement increases learning. However, that belief was based on experience rather than verifiable data. Their confidence in the positive effects of movement on increased achievement was undeniable, but there were few test scores to back that up. Therefore, this study emphasized the importance of teachers' experiences related to student success. Since teachers believe movement works to increase student learning, they are more likely to use movement as a strategy. Teachers know what student development looks like. They knew what is helping or hindering their students in the learning process. Their positive

experiences with movement should encourage other teachers to consider movement as a viable learning tool.

Limitations and Delimitations

The limitations of this study included the participant sample, the site chosen, and the assumption that movement was an accepted teaching strategy. The site for the study was the school at which I am the head administrator. The participants were all under my supervision during the time of the study. I worked very hard to ensure no incentives or penalties for participation. The participant sample was all-women because only women responded to the recruitment emails. That was not the original intent, which made the participant sample a limitation of the study. The participants were trained in movement strategies, which was a requirement for the study. However, that created a limitation in that we did not consider other factors besides movement that could contribute to student learning. The delimitations of this study were the site chosen and the credentials of the participants selected. I decided to make this a single-site study at my place of employment because all of the teachers had been trained in movement strategies. I also chose my place of work because I knew COVID-19 restrictions would not be a factor in my ability to complete data collection. I also decided to use teachers who were familiar with movement strategies because I assumed that would make the study more robust.

Recommendations for Future Research

Considering the findings, limitations, and delimitations placed on this study, my recommendations for future research are as follows. This study was conducted at a private school with women who were very familiar with brain research and movement strategies. To accurately reflect the experiences and diversity of all teachers and students, future studies could mirror this

one in data collection and procedures while expanding the participant pool and site for the research to confirm the transferability of findings. A similar study using several larger schools with ethnically diverse teacher populations could extend previous research and add to the literature. This study was conducted assuming that movement strategies were already universally accepted. I recommend that future studies examine questions about cognitive gains and movement strategies to determine if other factors contribute to those gains. This study illuminated teachers' perceptions of movement connecting to positive learning outcomes but did not eliminate other reasons for students' achievements. I would also suggest that future studies formally assess students before and after movement activities to add confirmability to the results.

Conclusion

The purpose of this hermeneutic phenomenological study was to understand teachers' perceptions of the effects movement strategies had on students' learning at Covenant Saints Academy. The theoretical framework undergirding the study was Shapiro's (2019) theory of embodied cognition. Participants were selected using purposeful criterion sampling to ensure they were familiar with movement as a teaching strategy. Data collection included individual interviews, observations, and a focus group. Using phenomenological reduction, the data was analyzed and separated into themes using van Manen's (2016) detailed reading approach. Trustworthiness was achieved through member checking and triangulation. Analysis of the data yielded the themes of the importance of movement, frequency of movement, types of movement, direct and indirect connections to learning, and teacher support. This study implied that movement added value to learning and teachers' experiences suggested movement increased student achievement. Further research was suggested using various sites and participants to confirm the transferability of findings.

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Appendix A

IRB Approval

October 16, 2021

Mary Strickland
David Vacchi

Re: IRB Exemption - IRB-FY21-22-124 A HERMENEUTIC PHENOMENOLOGICAL STUDY OF TEACHER PERCEPTIONS OF THE CONNECTION BETWEEN MOVEMENT STRATEGIES AND STUDENT LEARNING

Dear Mary Strickland, David Vacchi,

The Liberty University Institutional Review Board (IRB) has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study to be exempt from further IRB review. This means you may begin your research with the data safeguarding methods mentioned in your approved application, and no further IRB oversight is required.

Your study falls under the following exemption category, which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46:104(d):

Category 2.(ii). Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording).
Any disclosure of the human subjects' responses outside the research would not reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, educational advancement, or reputation.

Your stamped consent form(s) and final versions of your study documents can be found under the Attachments tab within the Submission Details section of your study on Cayuse IRB. Your stamped consent form(s) should be copied and used to gain the consent of your research participants. If you plan to provide your consent information electronically, the contents of the attached consent document(s) should be made available without alteration.

Please note that this exemption only applies to your current research application, and any modifications to your protocol must be reported to the Liberty University IRB for verification of continued exemption status. You may say these changes by completing a modification submission through your Cayuse IRB account.

If you have any questions about this exemption or need assistance in determining whether possible modifications to your protocol would change your exemption status, please email us at irb@liberty.edu.

Sincerely,
G. Michele Baker, MA, CIP
Administrative Chair of Institutional Research
Research Ethics Office

Appendix B

Demographic Survey for Potential Participants

This survey will only provide maximum variation sampling for the research study. Forms will be destroyed as soon as participants are chosen.

1. Age: What is your age?

- Under 12 years old
- 12-17 years old
- 18-24 years old
- 25-34 years old
- 35-44 years old
- 45-54 years old
- 55-64 years old
- 65-74 years old
- 75 years or older
- Prefer not to answer

2. **Ethnic origin:** Please specify your ethnicity.

- White
- Hispanic or Latino
- Black or African American
- Native American or American Indian
- Asian / Pacific Islander
- Other
- Prefer not to answer

3. **Gender:** Please specify your gender.

- Male
- Female
- Prefer not to answer

4. **Current grade teaching:** What grade are you teaching now?

- Kindergarten - 5
- 6 - 8
- 9 - 12

Appendix C

Administration's Approval to Use Covenant Saints Academy as the Research Site

October 19, 2021

Tom Reeves
Superintendent
Covenant Saints Academy

Dear Mr. Reeves,

As a graduate student in the School of Education at Liberty University, I conduct research for a doctoral degree requirement. The title of my research project is A Hermeneutic Phenomenological Study of the Connection Between Movement Strategies and Student Learning. My research aims to understand teachers' perceptions of the effects movement strategies have on students' learning.

I am writing to request your permission to conduct my research at Covenant Saints Academy. I would also like to contact your staff members to invite them to participate in my research study. Participants will be individually interviewed, observed during a class period, and asked to be in a focus group as part of the study.

Participants will be asked to complete the attached survey as part of the selection process. I will contact selected participants to set up the individual interviews and observations. I will also ask them to consider participating in the focus group, meeting after the interviews and observations. Participants will be presented with informed consent information before participating. Taking part in this study is entirely voluntary, and participants are welcome to discontinue participation at any time.

Thank you for considering my request. Please provide a signed statement on official letterhead indicating your approval if you choose to grant permission.

Sincerely,
Mary Strickland
Graduate Student, Liberty University

Appendix D

Demographic Survey for Potential Participants

Name _____

This survey will only be used to provide maximum variation sampling for the research study. Forms will be destroyed as soon as participants are chosen.

1. Age: What is your age?

- Under 12 years old
- 12-17 years old
- 18-24 years old
- 25-34 years old
- 35-44 years old
- 45-54 years old
- 55-64 years old
- 65-74 years old
- 75 years or older
- Prefer not to answer

2. **Ethnic origin:** Please specify your ethnicity.

- White
- Hispanic or Latino
- Black or African American
- Native American or American Indian
- Asian / Pacific Islander
- Other
- Prefer not to answer

3. **Gender:** Please specify your gender.

- Male
- Female
- Prefer not to answer

4. **Current grade teaching:** What grade are you teaching now?

- Kindergarten - 5
- 6 - 8
- 9 - 12

Appendix E

Consent

Title of the Project: A Hermeneutic Phenomenological Study of Teachers' Perceptions of the Connection Between Movement Strategies and Students' Learning
Principal Investigator: Mary Strickland, Graduate Student, Liberty University

Invitation to be part of a Research Study

You are invited to participate in a research study. To participate, you must be a faculty member at Faith West Academy who has been trained in and uses movement strategies. Taking part in this research project is voluntary.

Please take time to read this entire form and ask questions before deciding whether to participate in this research.

What is the study about, and why is it being done?

The study aims to understand teachers' perceptions of the effects movement strategies have on students' learning.

What will happen if you take part in this study?

If you agree to be in this study, I will ask you to do the following things:

1. Individual Interview (45 minutes) – I will meet with each participant, and the interview will be audio and video recorded. I will handwrite notes as well.
2. Observation (30 minutes) – I will observe each participant incorporating movement in their classroom. The word will be documented using hand-written notes.
3. Focus Group (120 minutes) – The focus group will consist of 4 to 7 of those interviewed and observed. The focus group will be chosen using purposeful sampling to ensure group variation. Member checking will be accomplished by the focus group reviewing their previous interview transcripts. The focus group will be audio and video recorded.

How could you or others benefit from this study?

Participants should not expect to receive a direct benefit from this study.

Benefits to society include adding to the research regarding classroom movement and the study regarding embodied cognition theory.

What risks might you experience from being in this study?

The risks involved in this study are minimal, which means they are equal to the risks you would encounter in everyday life.

How will personal information be protected?

The records of this study will be kept private. Published reports will not include any information that will make it possible to identify a subject. Research records will be stored securely, and only the researcher will have access to the documents. Data collected from you may be shared for use

in future research studies or with other researchers. If data collected from you is shared, any information that could identify you, if applicable, will be removed before the data is shared.

- Participant responses will be kept confidential by using pseudonyms. Interviews will be conducted where others will not easily overhear the conversation.
- Data will be stored on a password-locked computer and used in future presentations. After three years, all electronic records will be deleted.
- Interviews and focus groups will be recorded and transcribed. Observations will be documented using hand-written notes. Recordings will be stored on a password-locked computer for three years and then erased. Only the researcher will have access to these recordings.
- Confidentiality cannot be guaranteed in focus group settings. While discouraged, other focus group members may share what was discussed with persons outside of the group.

Does the researcher have any conflicts of interest?

The researcher serves as principal at Faith West Academy. There will be no incentive to limit potential or perceived conflicts, nor will there be a penalty for participating in the study. Performance evaluations, pay grades, etc., will not be affected by participation or non-participation in the study. This disclosure is made so that you can decide if this relationship will affect your willingness to participate in this study. No action will be taken against an individual based on their decision to participate or not participate in this study.

Is study participation voluntary?

Participation in this study is voluntary. Your decision to participate will not affect your current or future relations with Liberty University or Faith West Academy. If you decide to participate, you are free not to answer any question or withdraw at any time without affecting those relationships.

What should you do if you decide to withdraw from the study?

If you choose to withdraw from the study, please contact the researcher at the email address/phone number included in the next paragraph. Should you choose to remove, data collected from you, apart from focus group data, will be destroyed immediately and not included in this study. Focus group data will not be destroyed, but your contributions to the focus group will not be included in the investigation if you choose to withdraw.

Whom do you contact if you have questions or concerns about the study?

The researcher conducting this study is Mary Strickland. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact her. You may also contact the researcher's faculty sponsor, Dr. David Vacchi.

Whom do you contact if you have questions about your rights as a research participant?

Suppose you have any questions or concerns regarding this study and would like to talk to someone other than the researcher. In that case, you are encouraged to contact the Institutional Review Board, 1971 University Blvd., Green Hall Ste. 2845, Lynchburg, VA 24515, or email at irb@liberty.edu.

Disclaimer: The Institutional Review Board (IRB) ensures that human subjects research will be conducted ethically as defined and required by federal regulations. The topics covered and

viewpoints expressed or alluded to by student and faculty researchers are those of the researchers and do not necessarily reflect the official policies or positions of Liberty University.

Your Consent

By signing this document, you agree to be in this study. Make sure you understand what the study is about before you sign. You will be given a copy of this document for your records. The researcher will keep a copy of the study records. If you have any questions about the study after you sign this document, you can contact the study team using the information provided above.

I have read and understood the above information. I have asked questions and have received answers. I consent to participate in the study.

The researcher has my permission to audio-record/video-record me as part of my participation in this study.

_____

Printed Subject Name

_____

Signature & Date