UNIVERSITY OF OKLAHOMA

GRADUATE COLLEGE

MIDDLE AND HIGH SCHOOL PRINCIPALS' PERCEPTIONS OF MOVEMENT AS PART OF INSTRUCTION IN-LECTURE-STYLE CLASSROOMS

A DISSERTATION

SUBMITTED TO THE GRADUATE FACULTY

In partial fulfillment of the requirements for the

Degree of

DOCTOR OF PHILOSOPHY

BY

MISTY HENRY

Norman, Oklahoma

2023

Downloaded from SHAREOK. Persistent Handle URL: https://hdl.handle.net/11244/337438

MIDDLE AND HIGH SCHOOL PRINCIPALS' PERCEPTIONS OF

MOVEMENT AS PART OF INSTRUCTION IN-LECTURE-STYLE CLASSROOMS

A DISSERTATION APPROVED FOR THE

DEPARTMENT OF EDUCATIONAL LEADERSHIP AND POLICY STUDIES

BY

THE COMMITTEE CONSISTING OF

Dr. Jeffrey Maiden, Chair

Dr. Aiyana Henry

Dr. Beverly Edwards

Dr. Gregg Garn

© Copyright by MISTY HENRY 2023

All Rights Reserved.

DEDICATION

This dissertation project is dedicated to the youth that has experienced situations or feelings that have left them feeling inadequate to pursue an educational dream and to the teachers who strive to understand the whole child. From the start of my recollection of education, teachers publicly made fun of me, telling me I needed to drop out of school because I would not make it. In high school, I was dropped from my AP English course when at the time, I was working 80 hours a week to pay the rent for my mom and sister. It left me feeling all these teachers in my educational history were correct, so I dropped out of high school and finished with a GED.

Later, I enrolled in college, and I am thankful for higher education and the many professors who have touched my life and inspired my decision to facilitate this research. Enrolling in college transformed who I am, making me well-rounded, teaching me what I did not know, and, most importantly, filling my life with supportive individuals who believe in me. I owe who I am today and where I am professional to each of these professors and staff members who encouraged me when I felt like the next step was too heavy for me to try. I believe in the vital work of professors who build relationships and mentor students. I understand the value that universities contribute to our society, including providing the space for students to learn what interests them, explore what they are skilled at, and are supported to discover who they are beyond what society has defined them. I am committed to improving the lives of the youth educated in schools across America and the well-being of every teacher, principal, and professor who selflessly dedicates their time and love to supporting students and families.

To my mother, who, against all the odds, listened to her motherly instincts and told me I could achieve anything if I worked hard enough. I watched her work diligently every day of her life; the love she shares and the kindness that to this day still stops me in awe. To my children Jeffrey, Alissa, Jonathan, and Garret, who gave me unmeasurable motivation by their very breath of existence, because of each of you, I strive to be the best version of myself possible to model for you the characteristics of a quality human being, that failure is celebratory if you learn from it and keep going. The gift of time and love are a few of the best gifts you can give others, and education and self love is the best gift you give yourself. I love each of you!

Most importantly, I want to express my humble appreciation of God, who walked with me through this journey. There were many times I felt alone, and God would send someone to help and encourage me, which provided me the ability to continue the pursuit of my doctorate. 2 Timothy 1:7 “God did not give us a spirit that is timid but one that is powerful, loving, and self-controlled.”

ACKNOWLEDGMENTS

Completing this journey fulfills a childhood dream of earning a doctorate. The journey has encompassed time and help from the university, my professional, and my personal life. I would like to acknowledge and express my gratitude to a few of them, for their encouragement, advice, and time, to which I am forever grateful. To my committee members, Dr. Henry, Dr. Edwards, and Dr. Garn, your suggestions and high expectations allowed me to finish this dissertation. Each one of you offered encouragement and provided me with expertise that supported my efforts in being a researcher. This paper could not have been written without the support of Dr. Maiden. Dr. Maiden, I am eternally grateful for the communication, guidance, and the ample hours you invested in me. Thank you for your timely responses even on the weekends, phone calls, and zoom meetings that enabled me to reach this day. Also, other supportive staff who invested in me at the University of Oklahoma with allotted scholarships to help me when I was homeless while enrolled. Michael Jenkins and Kat Braswell who responded to numerous questions and helped with forms.

To my colleagues at Southern Nazarene University, Ron Titus and Pam Broyles I am reminded that God will put the right people in your life at the right time. I cannot count the amount of time and support each of you have provided me over the course of the semester. Pam you emailed, called, and guided me through my APA conflicts with immeasurable positivity. Ron, our competitive challenge, your support, and allowing me time to dedicate to this goal contributed greatly to the completion of this paper. To Dr. Jones who believed in me from day one, reminded me of my dreams, and guided me through multiple versions of this research, thank you!

TABLE OF CONTENTS

LIST OF TABLES xiii

ABSTRACT xiv

Chapter 1 1

INTRODUCTION 1

- Importance of Movement 2
- Differentiated Instruction 2
- Current Trends 3

Movement and Action Methods of Learning in the Classroom 3

Problem Statement 5

Purpose of the Study 6

Research Questions 7

Significance of the Study 7

- Limitations 8

Definition of Key Terms 8

Overview of Methodology 12

Theoretical Framework 13

Chapter Summary 14

Chapter 2 15

LITERATURE REVIEW 15

Issues Currently Shaping Education 16

- Time/English Language Learners 16
- Standardized Student Testing 18
- Student Behavior Management 19
- Technology Influence 20
- Physical Concerns 21

Instructional Benefits of Classroom Movement 22

- Cognitive Growth 22
- Impact of Physical Movement on the Body 24

Medical Research Support for Movement as Part of Learning 24

The Learning Process 24
MRI Research 25
PET Research 25
Incorporating Movement in Schools 26
Action-Based Learning Labs 27
Energizers 29
Crossing the Midline and Development 30
Flexible Sitting 31
Play 32
Movement Integration Case Studies 34
Case Study of Movement Integration into Instruction 34
Guided Movement as Part of Instruction Research Case Study 36
Movement and Cognitive Studies Case Study 39
Building Cultural Awareness and Classroom Movement 40
Movement in Lecture-Style Classes 43
Middle and High School Classrooms 43
University Classrooms 44
Chapter Summary 46
Chapter 3 47
Methodology 47
Purpose Statement 47
Research Questions 48
Significance of Study 48
Exploratory Sequential Method 49
Data Collection 50
Quantitative Methods 50
Survey Sampling Procedure 51
Informed Consent 51
Qualitative Methods 52
Interview Sampling and Procedures 54
Informed Consent 54

Data Analysis 55
Quantitative Survey 55
Descriptive Data 55
Qualitative Interview Questions 56
Memos and Coding 56
Selective Coding 58
Saturation 59
Taguette 59
Data Fidelity 60
Epistemological Position 61
Chapter Summary 62
Chapter 4 63
Results 63
Survey Results 64
Table 1 65
Demographic Characteristics of Principals 65
Research Question 1 Survey Results 65
Table 2 67
Survey Descriptive Statistics for Research Question 1 67
Research Question 2 Survey Results 68
Table 3 69
Survey Descriptive Statistics for Research Question 2 69
Interview Results 70
Table 4 71
Demographic Characteristics of Principals 71
Table 5 73
Middle School Principals 73
Table 6 74
High School Principals 74
Data Coding 76
Research Question Results based on the Interview Data 77

Research Question One Themes 78
Theme One: Opportunities/Obstacles of Implementing Movement as Part of Instruction. 79
Theme Three: Movement Supports Cognitive Growth and Retention. 80
Research Question Two Themes 80
Theme Four: Movement Is Essential to Whole-Body Learning. 80
Theme Five: Movement Promotes Student Engagement. 81
Theme Six: Enable Student Opportunities for Collaboration. 82
Research Question Three Themes 83
Theme Ten: Principal Support of Teachers is Critical. 83
Theme Seven: Movement Shifts Traditional Instructional Methods 84
Theme Eight: Movement Improves Classroom Management Practices 85
Theme Nine: Awareness of a Systematic Educational Concern 87
Summary 88
Chapter 5 90
CONCLUSIONS 90
Summary of Findings 91
Research Question 1 91
Research Question 2 92
Research Question 3 93
Research Subquestion 95
Conclusions of Study 96
Research Question 1 96
Research Question 2 99
Research Question 3 104
Research Subquestion 106
Discussion of Findings 109
Recommendations for Future Research 113
Implications for Policy and Practice 114
Chapter Summary 117
References 119
Appendix A 156
Appendix B 158

Appendix C 159
Informed Consent 159
Appendix D 161
Principal's Survey 161
Appendix E 164
Interview Protocol and Questions 164
Appendix F 171
Content Validation Table 171
Table 8 176
Codebook of Categories 176
Table 9 184
Codes to Theme One“ Opportunity/obstacles of implementing movement into lecture style courses” 184
Table 10 185
Codes to Theme Three“ Movement Supports Cognitive Growth and Retention” 185
Table 11 186
Codes to Theme Four“ Movement is Essential to Whole Body Learning” 186
Table 12 187
Codes to Theme Five“ Promotes Student Engagement” 187
Table 13 187
Codes to Theme Six“Enables Student Opportunities for Collaboration 187
Table 14 188
Codes to Theme Ten“ Teacher Support” 188
Table 15 189
Codes to Theme Seven “ Movement Shifts Traditional Instruction” 189
Table 16 190
Codes to Theme Eight “ Movement Improves Classroom Management” 190
Table 17 191
Codes to Theme Two“ Absences of Professional Development” 191
Table 18 192
Codes to Theme Nine“ Exposes a systemic Concern” 192

Table 19 193
Themes derived from categories for Research Questions. 193

LIST OF TABLES

Table 1 *Demographic Characteristics of Principals*

Table 2 *Survey Descriptive Statistics for Research Question 1*

Table 3 *Survey Descriptive Statistics for Research Question 2*

Table 4 *Demographic Characteristics of Principals*

Table 5 *Middle School Principals Interview Transcript Data*

Table 6 *High School Principals Interview Transcript Data*

Table 7 *Content Validation Table*

Table 8 *Codebook of Categories*

Table 9 *Codes to Theme One" Opportunity/obstacles of implementing movement"*

Table 10 *Codes to Theme Three" Movement Supports Cognitive Growth and Retention"*

Table 11 *Codes to Theme Four" Movement is Essential to Whole Body Learning"*

Table 12 *Codes to Theme Five" Promotes Student Engagement"*

Table 13 *Codes to Theme Six"Enables Student Opportunities for Collaboration*

Table 14 *Codes to Theme Ten" Teacher Support"*

Table 15 *Codes to Theme Seven " Movement Shifts Traditional Instruction"*

Table 16 *Codes to Theme Eight " Movement Improves Classroom Management"*

Table 17 *Codes to Theme Two" Absences of Professional Development"*

Table 18 *Codes to Theme Nine" Exposes a systemic Concern"*

Table 19 *Themes derived from categories for Research Questions.*

ABSTRACT

Research has reported multiple benefits when using movement in the classroom as part of the curriculum. These benefits have been shown to help students physically, emotionally, and mentally. Research on the benefits of movement on our bodies, specifically centered on brain growth and development in both medical and educational studies, supported that movement is beneficial for students' learning and retaining information, along with developing positive lifelong habits (Holzschneider et al., 2012; Lin et al., 2012; Lu et al., 2016; Mahar et al., 2006; Stevens-Smith, 2016).

A primary objective of this study was to determine principals' perceptions of best practices for adding movement into middle and high school courses that are routinely identified as traditional lecture courses. As part of the learning environment, movement in the classroom helps students learn the content without the teacher providing extra materials or taking time to focus on this piece of the instruction in planning or implementation. There is a potential need for principals to provide professional development on best practices for implementing movement in the classroom, specifically those classrooms centered on lecture-style instructional methods.

This exploratory sequential mixed methods study incorporated an understanding of action-based learning theory (Madigan, 2004; Medina, 2008; Ratey, 2008) as a framework for understanding principals' perspectives on movement in traditional lecture-style courses. A survey and interviews were designed to explore and discover patterns in principals' perspectives. One finding was principals understand the benefits of movement as part of learning, but do not have the resources to support teachers in this area. Second, testing demands, significant amounts of content, and time restrictions were barriers principals faced when trying to promote best instructional practices. Finally, the demand for students in both middle and high schools to be

prepared for lecture-style course in college prevented many principals from being able to convice teaches and districts that moveme tas part of instruction would be a purposeful school intiatiative.

Keywords: action-based learning, instructional best practices, classroom movement, lecture-style course

Chapter 1

INTRODUCTION

It is well-known that time for physical education and recess continues to decline steadily in schools across America. Concern regarding rigorous testing has often eliminated opportunities for students to enjoy physical activities such as recess, play, and hands-on learning that promote movement. Empirical peer-reviewed studies have described the implications of intentional movement in both early and elementary classroom settings (Ebert, 2012; Kaltman, 2010; Meyer et al., 1997; Pui-Wah, 2010; Thomas & Centeio, 2020). Conversely, there is scant research on the impact of instructional methods that incorporate intentional movement on middle school, high school, and university students. Also, there is a perception that certain courses cannot incorporate movement into the instruction because of the style of the course, particularly lecture-style courses.

The primary objective of this study was to understand the perceptions of intentional movement in middle and high school settings by seeking the view of principals because they are the instructional leaders of the school (Jones & Blake, 2017). It is critical to understand the demand, support, and expectations for incorporating movement as part of instruction into students' routine learning environments. There is an increasing expectation for schools to encourage students to live healthy and active lifestyles. Repeatedly, studies elaborate on students who are more active demonstrating sharpened focus, faster cognitive processing, and more successful memory retention than less active students (Fratiglioni et al., 2004; Markant et al., 2016).

For example, Biller (2002) demonstrated that when students exercise, the brain releases four key chemicals (serotonin, dopamine, endorphins, cortisone) that foster mental comprehensibility and improve learning, along with improving physical and neurological health.

Importance of Movement

Movement is vital to improving the physical, mental, and emotional state of all students in the classroom. Strong et al. (2005) found that daily physical activity for at least 30 to 60 minutes is associated with reduced behavior and mental health issues and improved attention, which creates more engaging, meaningful classes. Teachers spend a majority of instructional time on reading and mathematical concepts, causing limited time for, and often disregarding, critical areas such as social studies and science along with the arts and physical education (Graham et al., 2002; Jones et al., 2003).

Differentiated Instruction

Additionally, teachers are expected to differentiate their instruction for students who fall below the standard learning expectations or have learning challenges that must be addressed before learning (Murphy et al., 1982; Tomlinson, 2001). Similarly, the instructional demands put on teachers are coupled with a significant population of students identified with learning, behavioral, or attention issues (Alhamisi, 2011). In addition, many states have mandated blocks of minutes, or approximately three hours, specifically to address math and reading objectives, where often the students are expected to sit and practice being quiet. With these demands, it is critical that teachers utilize best educational practices and integrate subjects to increase opportunities for student learning. Thus, physical movement instruction should be incorporated into lessons in every classroom.

Current Trends

As the education system has recognized the importance of intentional movement as part of learning, a variety of techniques have been introduced to incorporate movement in the classroom, such as brain breaks, yoga, and action-based learning (Strean, 2011). The concept of movement is *action-based learning* (ABL), which is increasingly becoming a focus in education across the country. Action-based learning and movement in the classroom are founded on research that concludes students, especially in elementary grades, experience improved memory retention, prolonged focus, and attention because learning is broken into chunks. Students are engaged through enjoyable learning strategies. Also, other benefits to incorporating movement into learning are grade improvement over time and improvement in student behavior and engagement in their learning when movement and learning are linked.

Movement and Action Methods of Learning in the Classroom

There is a noticeable interest in intentional movement in the classroom through philosophies such as hands-on learning, project-based learning, brain breaks, and play in elementary schools (Ebert, 2012; Meyer et al., 1997; Pui-Wah, 2010; Thomas & Centeio, 2020). Even with generous amounts of research encouraging movement as part of a strong educational program with multiple benefits, including increased student learning, these philosophies have been integrated primarily into early and elementary classrooms (Johnson et al., 1987). Even more concerning is that these philosophies are often practices that become educational fads (Sarason, 1990). School districts looking for the "next big thing" often push these practices on teachers, do not offer appropriate ongoing training, and do not provide professional development, causing many educators to become frustrated (Koozer, 2019; Mis, 2008).

Often these practices are swiftly removed from the initiative of the district as another failed attempt to improve student test scores (Sowell, 2002). In addition, the push for state testing has placed limitations on play, hands-on practices, art, and physical education courses even in early and elementary education in recent years (Hall, 2007; Jones et al., 2003; Nicolopoulou, 2010). Currently, in middle and high schools, research on the impact of movement as part of instruction is lacking (Carlson, 2008). It is critical that movement as a part of instruction be addressed and researched for middle and high schools where the combination of the lack of movement and longer class periods are possibly hindering students from reaching their full academic potential (Coe et al., 2006).

A plethora of research supports an urgency to stop the trend of students being required to remain stationary for longer periods with their only movement switching between classes. A sedentary lifestyle at school minimizes and often limits students' opportunities for collaborative learning. Additionally, sitting for long periods of time prevents a student from significant cognitive growth and retention because the brain is not actively engaged in the learning (Chisholm & Spencer, 2017). Students are not reaching their full academic potential because the average attention span of adolescents is about 20 minutes; therefore, longer class periods that are not broken up by movement results in vast chunks of content not being retained by students (Beeks, 2006; Caldwell, 2007).

The education system promotes the idea of enabling students to become well-rounded individuals, with a focus on the whole child instead of the narrow perspective of focusing only on proficiency in academic content. One objective of the education system is to help students understand the importance of a healthy lifestyle because schools are an ideal setting to educate, provide services, and create opportunities for "social mobility, higher income, and employment

security, all of which have an impact on health status" (Egerter et al., 2009, p. 3). Studies have shown fitness opportunities in schools lead to short- and long-term benefits including better focus, retention, and less absenteeism due to better health, and prevention of long-term overall health issues including diabetes and obesity (D'Agostino et al., 2018; Demir & Karabeyoglu, 2015; Ogden et al., 2020; Shephard & Trudeau, 2000).

Furthermore, studies have concluded, "people with more education tend to report being in better health, compared to people with less education" (Raghupathi & Raghupathi, 2020, p. 5). Equally important, physical education and movement help to promote healthy lifestyles that lead to the benefit of an extended life expectancy. On average, "college graduates live at least five years longer than people who do not complete high school" (Rodondi et al., 2006, p. 3) due to the ability to pay for better health care, access, and quality of food, along with the ability to afford activities of interest such as sports and gyms (Egerter et al. 2009; McConnell, 2005; Vavken et al., 2012).

Problem Statement

The problem appears to be that there is insufficient empirical literature regarding principals' perspectives on intentional movement as part of instructional practices in middle and high schools. Additionally, there is a lack of implementation of movement in lecture-style courses in these environments. There are gaps in the empirical literature and educational trends that this study explores in a meaningful way. Therefore, this study is necessary to explore movement as part of instruction for traditional lecture-style courses in middle and high schools. There is ample research indicating the benefits to students when movement is included as part of the learning experience for early and elementary levels (Ebert, 2012; Kaltman, 2010; Meyer et al., 1997; Pui-Wah, 2010; Thomas & Centeio, 2020). There is notable research on the benefits of

movement on areas of the brain that are responsible for learning, retention, and healthy habits (Demir & Karabeyoglu, 2015; Shephard & Trudeau, 2000). It is common knowledge that expectations for schools to perform and exceed standards on standardized tests, along with budget cuts to education, have left few opportunities for students to engage in physical education, art, and music, along with significant limits on other activities such as recess (Conway, 2020; Graham et al., 2002; Jones et al., 2003).

More insights are being discovered about the impacts of lack of movement, play, and recess in elementary grades, yet limited to no research analyzes the impact of little to no movement in middle school, high school, and college learning environments (Jones et al., 2003). Additionally, the administrator's perspective of adding movement into the classroom, specifically lecture-style courses, is completely unknown. Therefore, based upon the knowledge of the benefits of movement as part of learning, it is vital to understand the administrator's perspective of movement in lecture-style courses because they help create the vision and support for success in classrooms.

Purpose of the Study

Exercise develops brain cells and facilitates cognitive growth long-term while improving the emotional and physical needs of the human body (Lengel & Kuczala, 2010; Winter et al., 2007). A major goal of the study was to understand principals' perspectives of intentional movement in lecture-style classrooms in middle and high schools and to identify what they would consider best practices of movement integration into instruction to support learning. This study proposed to uncover principals' beliefs regarding movement as part of instruction and to identify opportunities and methods that encourage learning in a primarily non-sedentary form. This study is needed to ascertain how intentional movements that are integrated into the content,

especially in predominantly sedentary lecture-style courses, will foster academic growth in middle and high school students. This study also included cultural receptivity by administrators to this proposed instructional change.

The purpose of this exploratory sequential mixed methods study included identifying perceptions of principals regarding planning for students to be physically active within the learning environment in middle and high schools. Additionally, this study intended to identify best practices for implementing movement into instruction through the lens of principals. Finally, the study explored the potential impact that practicing non-sedentary behaviors while learning has on factors such as classroom management, student engagement, and differentiated instruction.

Research Questions

The research questions guiding this study were:

1. What are the principals' perspectives on movement breaks in a lecture-style course?
2. What are the principals' perspectives on movement in middle and high school classes?
3. How do principals believe they could develop an an environment that promotes movement as part of instructional practices in middle and high schools?

Significance of the Study

The overarching goal of this project was to explore administrator perceptions of integrating movement as part of instruction in lecture-style courses, specifically in middle and high schools. The study wants to contribute to the literature by understanding principals' perceptions of incorporating movement into instruction, and to what extent they feel movement directly impacts students' learning. Movement as part of instructional practices in middle and high schools is vital as the increase in the requirements for teachers to show student growth with

less support to reach students' needs continuously puts a significant amount of pressure on teachers to implement strategies effectively that are purposeful for optimal student learning.

Limitations

The current study was limited by the number of principals willing to participate in something "extra" during the academic school year. The principal interview sample size was small, which is acceptable in a qualitative study; however, the quantitative component of the research (Principal's Survey) would benefit from a larger sample size. Therefore, the results may not be reflective of the general population of principals.

Likewise, it was noted that the administrator's perception of intentional movement in the classroom impacted how movement was discussed during the interview. The study was restricted to principals' perceptions of how movement is best implemented in the classroom. Additionally, the time needed to prepare and administer district and state testing infringed on time for implementing this study to the fullest by creating time limitations.

Definition of Key Terms

The following are definitions of many of the key terms incorporated throughout this research study. The definitions are provided to enable the reader to understand the research in-depth and to promote a collective background of the content.

Adequate Attendance: The student is present and able to participate in class and learning opportunities, with not more than 10% of the class missed. This can be especially challenging to recognize a student may be in school but not attending specific classes because of "pull-out" activities. If a student misses more than the first 10 minutes of class, they are considered absent,

and all assignments due that day are not counted toward their grade (Sheldon, & Epstein, 2004; Levinson et al., 2021).

Achievement: “The ability to demonstrate learning through pre-and post-testing is indicated by grade-point averages, scores on standardized tests, and grades in subject-specific courses” (Carlson, 2008, p. 2). Achievement is unique in education as there is no unified definition shared between policymakers, practice, and research or a unified definition even among the groups (Guskey, 2007).

Action-Based Learning Lab: An active learning station in a lab setting with different activities for students to move with specific physical movements to activate a brain and body connection while students work collaboratively on reviewing a learning concept (Blaydes & Hess, 2004).

Active Learning: "Active learning consists of short course-related individual or small-group activities that all students in a class are called upon to do, alternating with instructor-led intervals in which student responses are processed, and new information is presented” (Felder & Brent, 2009, p. 2).

*Circulatory Enhancing Movement*s: “Movements that increase heart rate, blood flow, and breathing tempo and increase heart health and movement” (Plowman & Smith, 2008, p. 213).

Cognitive Domain: “A learning area involving knowledge which includes the recall of facts, procedural patterns, and concepts related to the development of intellectual abilities” (Bloom, 1956, p. 7). In 2009, components of the cognitive domain were revised to include remembering, understanding, applying, analyzing, evaluating, and creating (Hess et al., 2009).

Cross-lateral Exercise: “Cross crawl refers to any intentional cross-lateral activity in which you cross the midline of the body, such as touching the opposite hand and knee or foot. The focus on building connections between the right and left hemispheres of the brain provides a healthy

environment for electrical impulses and information to pass freely between the two, which is essential for physical coordination and cerebral activities" (Krog, 2015, p. 33). Most importantly, these movements positively impact other areas in the brain, including learning language, reading, and hand-to-eye coordination (Krog, 2015).

Intentional Movement: For the purposes of this study, intentional movement is an instructional strategy that is integrated into course planning to promote learning, such as think-pair-share, and to encourage collaboration (Kaddoura, 2013).

Intrinsic Motivation: "Stimulus to learn about a topic strictly inherent to the individual and not induced or manipulated by external means," meaning an individual's motivation comes from stimulation of personal gratification and/or internal desire, not external rewards (Stipek, 2002, p. 21).

Language Experience Approach (LEA): An instructional framework for reading, writing, or class discussion where a teacher guides an activity or instruction focused on a shared activity that provides a collaborative experience for students. Following the collaboration, students may read, write, talk, or listen to their peers' ideas and opinions. Similar to think-pair-share in elementary (Tompkins, 2009).

Learner-centered Teaching: "A teaching perspective focused on the individual learner's background, experiences, talents, interests, and needs, as well as teaching practices that promote motivation, learning, and achievement" that encompasses all learners and their individual academic needs (McCombs & Whisler, 1997, p. 4).

Lecture-style: "A prepared disquisition, the formal treatment of a subject, delivered to a class that is designed to instruct; most often a passive way to present information to students with questions and answers exchanged between the lecture and students" (Horgan, 2003, p. 82).

Locomotor Skills: A movement that uses human skill to initiate the body into motion, engaging and moving the body from one place to another (Magill & Anderson, 2010). These motions include walking, running, skipping, etc. where the use of the individual's entire body is part of the movement (Kluka, 1999).

Non-locomotor Skills: Often called axial movements because they are specific movements of a body part without a lot of physical effort of the entire body. An example is making a windmill with your arms. "Classified by its purpose, a movement of the human body using spinal support to suspend, balance, move external objects or receive forced objects, thus movements performed in one location without moving through space" (Kluka, 1999, p. 34).

Psychomotor Domain: "A learning domain that includes physical movement, coordination, and motor skills" (Simpson, 1966, p. 15; Bloom, 1956).

School-aged Children. Students who are of chronological age to participate in school. The grades are elementary, middle, and high school: "elementary (Grades 4–6, 9–11 years old); middle school (Grades 7–9, 12–14 years old); and high school (Grades 10–12, 15–17 years old)" (Fan, & Cao, 2017, p. 3).

Teacher- or Content-centered Teaching: A teaching perspective with a "focus on classroom performance and the ability to transmit information related to the curriculum thinking it will be sufficient for student learning" (Ramsden et al., 2007, p. 53).

Think Pair Share: Opportunities where students are answering questions
and collaborating with other small groups of students to share ideas (Kaddoura, 2013).

Traditional Class Hours: The average duration of a block period where courses are typically 60 minutes in length for high school students (Hackmann, 2004).

Overview of Methodology

This exploratory sequential mixed methods study focused on perspectives (Leech et al., 2010) gleaned from middle and high school principals. Principals' perspectives are discussed to understand their conceptualization of movement as part of instructional practice, and to what degree they understand movement to be vital to learning. This study contributes to empirical literature indicating movement is vital to early and elementary students (Ali et al., 2011; Samuelsson & Pramling, 2014; Stagg Peterson, & Dwyer, 2016). The limited empirical research available regarding middle and high school students concludes these students experience more sedentary daily structured lives, are provided fewer opportunities for movement during classes, and experience more stress and pressure from exams (Pearson et al., 2017; Sallis et al., 2003). An interpretive constructivist epistemology guided this study to understand the social patterns of principals in an area where their views are unknown (Guetterman et al., 2019).

Constructivist theory was utilized to build upon prior studies to analyze and construct the meaning of administrative perspectives regarding movement as a key part of the instruction (Mills et al., 2006). With quantitative and qualitative data, the study cultivates themes from data regarding principals' perspectives of movement as part of instruction in lecture-style courses. Constructivist theory enabled the researcher to build upon participants' culture and history, to understand how their experiences shaped their perspectives on movement as part of instruction in middle and high school lecture-style courses (Mills et al., 2006; Ronkainen et al., 2018).

Implementing the exploratory design of the study enabled the researcher to give voice to principals' views on the value of movement as part of instruction through interviews. Interviews provided opportunities for principals to share their personal stories expressing their interest or lack of interest in integrating movement as part of instruction in this study (Mills et al., 2006)

The researcher's intent for this study was for 100 participants to complete the Principal's Survey and a total of 10 participants, including both middle and high school principals, to complete the interviews. The data for the study concluded with 45 principals who completed the Principal's Survey and five middle and five high school principals who participated in the interviews. Further explanation regarding the data and design of this study are elaborated in further detail in Chapter 3.

Theoretical Framework

The benefits of movement for cognitive and social growth, retention, and engagement have been explored in both the education and medical fields and applied in early and elementary classrooms (Committee on Sports Medicine and Fitness and Committee on School Health, 2000; Dooly, 2008; Rickard et al., 1995; Wayson, 1988). Younger students learn through play and movement, and this creates opportunities for them to grow socially (Fung & Cheng, 2012; Samsudin et al., 2019). Physical responses to movement demonstrate better retention and cognitive performance than sedentary learning (Tomporowski et al., 2008). Provided with the benefits of movement, studies were constructed to provide insights on how to integrate movement into learning.

A variety of the benefits of movement incorporated into learning theories are mentioned in this chapter and further explained in Chapter 2 to demonstrate the relationship of intentional movement as part of meaningful instruction to promote cognitive growth. Studies, including that of Miller and Lindt (2018), explored the benefits of movement and the relationship of movement as part of the day, and cognitive growth in young students (Apriyanto et al., 2021; Diamond, 2015; Martin & Murtagh, 2017). Adams-Blair and Oliver (2011) documented the perceptions of teachers who were provided guided movement as part of instruction with specific durations of

time each movement activity required. The study concluded that teachers preferred guided methods they could easily follow for incorporating movement in place of developing their own movement activities.

This study aims to build upon Miller and Lindt's (2018) study by seeking to understand principals' perceptions of the support teachers may require to effectively integrate movement as part of instruction and if guided methods would be more effective for implementation. Fredericks et al. (2006) explained the positive cognitive growth in students when using specific movements, including crossing the midline, over other methods of movement such as play, energizers, and random movements throughout the day. Additionally, embracing the whole child, including using movement as an opportunity for students to learn about themselves and their individual needs (King & Schielmann, 2004; Perso & Hayward, 2020), is explained in further detail in Chapter 2.

Chapter Summary

This study builds and contributes to the body of research exploring intentional movement as part of learning by understanding the perceptions of movement as part of instruction through the lens of principals. Principals are the instructional leaders of schools and are responsible for ensuring student achievement, which involves supporting teachers with the most effective instructional practices (Finkel, 2012). There are unprecedented demands for principals to be strategic thinkers that create a culture where both students and teachers are supported (Hallinger & McCary, 1990). This study focuses on administrative perspectives of movement as part of instruction in lecture-style classrooms. The research literature foundation for this study will be presented in Chapter 2.

Chapter 2

LITERATURE REVIEW

There is ample research in both the medical and educational fields about the short-and long-term benefits of movement as part of a regular and consistent daily routine (Diamond, 2015; Field et al., 2001; Mullins et al., 2019; Rasmussen & Laumann, 2013). In education, the studies focused on understanding movement in early and elementary schools have documented the positive relationship between movement and both cognitive and social growth through research (Hellison, 2010; Hyndman et al., 2012; Zavalishina et al., 2021). Additionally, there is emerging research on both teachers' and students' perspectives on how movement in the classroom has impacted the learning experience (Apriyanto et al., 2021; Benes et al., 2016; Martin, & Murtagh, 2017; McMullen et al., 2014; Routen et al., 2018; Webster et al., 2017). However, there is limited research on the impact of intentional movement in middle schools, high schools, and universities. Furthermore, there is a limited body of research on the perspectives of administration and what they consider effective methods for integrating movement as part of instructional practices.

This review intends to summarize and give context to current issues that are shaping education while providing background on the diverse benefits physical movement has on cognitive and social improvement and growth. This study will contribute to the idea that intentional movement is an imperative component of best instructional practices for enhancing the learning experience. First, this chapter describes current issues that are shaping education in the United States. Next, this review elaborates on themes constructed from previous peer-reviewed literature about the numerous benefits of movement on long-term cognitive growth. Also, this chapter includes a section on medical research literature to document the theory that

movement is necessary for maximizing cognitive growth. It briefly outlines the history and development of movement as part of the learning process and presents multiple methodologies for incorporating movement into classrooms. The final sections of the chapter include how classroom movement has been incorporated in a series of case studies, how classroom movement can enhance cultural awareness, and how limited movement impacts learning in lecture-style courses.

Issues Currently Shaping Education

Time/English Language Learners

Testing has created a need for 60 and 90 minutes of uninterrupted math and reading blocks. Many of the traditional expectations for students are to sit quietly and learn in place of movement as a key part of the instruction (Byun et al., 2013; Webster et al., 2015). English language learners (ELL), those with disabilities, and younger students learn and retain less in environments where there are expectations for them not to move and talk as part of the learning process (Adžić et al., 2021; Russell, 2012). Skoning (2010) indicates physical movement is beneficial to the most fragile children in our school systems, including ELLs and those with learning disabilities. Often these students are more sedentary and critically need schools to incorporate movement into their daily instruction to improve their health and development. Another concern for ELL students and those with special needs is that these students are pulled out for tutoring and WIDA testing during classes identified as specials (Slavin, 2013). Courses that are listed as specials include art, music, and physical education. Consequently, this policy eliminates more of the precious time these students have access to classes that promote movement/exercise.

Correspondingly, adding to the lack of play and movement in early and elementary grades is the lack of urgency for a student to be well-rounded in science, social studies, and electives. By dedicating blocks of time to math and reading, often these subject areas are alternatively taught bi-weekly or not at all (McMurrer, 2008). Therefore, it is important to recognize extensive research indicating the long-term positive effects of students being engaged in movement during the school day (Berry, 2006; Carlsonet al., 2017; Evans et al., 2015; Fulginiti, 2009).

English language learners grow academically when movement is integrated into learning activities. The areas of growth include emerging "decoding skills, fluency, vocabulary, syntactic knowledge, discourse knowledge, and metacognitive thinking" (Sun, 2003, p. 11; Apdy & Asrifan, 2019). Integrating drama and movement techniques into interactive instruction and authentic experiences can effectively improve language development for English language learners (Baecher, 2011; Baecher et al., 2012; O'Malley & Pierce, 1996). Teachers utilizing multiple ways of incorporating movement in their instruction supported ELL students in retaining content knowledge, expressing their learning, and discovering a psychological refuge (Rieg & Paquette, 2009). Students' learning increases when their brain is engaged in exploring, inquiring, and analyzing (Gardner et al., 1998). Instructional practices that use movement help activate parts of the brain needed to learn and retain information (Choi & Yi, 2016; Rieg, & Paquette, 2009).

With limited time to address every national and district standard, along with the demanding expectations of teachers, time must be maximized using best practices. Practices that promote optimal learning outcomes should be implemented, and practices like classroom movement should be an initiative and focus for the education field to pursue. Furthermore,

movement as an instructional practice enables teachers to better meet the variety of students' individual learning needs, including ELL and those with disabilities, which promotes differentiated instruction. For these reasons, action-based learning is a powerful method for educators to engage student interest and modify tasks to meet each student's ability.

Vygotsky (1978) theorized educators should create purposeful instruction by considering the differences among students' background knowledge and acknowledging students' strengths while modifying and differentiating instruction to address their needs through activities and experiences. When this occurs, students are reaching the zone of proximal development, which is valuable to learning (Sparrow et al., 2000). The zone of proximal development (ZPD) is achieved through continuous scaffolding as students consistently build their knowledge through movement in the classroom (Hmelo-Silver et al., 2007). Movement instruction creates an optimal learning environment through an effective pathway to reach every learner that is cost-effective and easy for any teacher to integrate into their practice.

Standardized Student Testing

For many years, the discourse of the value and cost of high stakes testing at the national, state, and district has led to research indicating the results are not worth the cost to students' loss of engagement in areas of social learning, play, and other subjects (Webster et al., 2015). Regardless of the research indicating the lack of ameliorating high stakes testing, little to no changes have been made to dismantle this demand on education (Sowell, 2002). Next, the concern for students to be prepared for the state exams has led classrooms to be test-centered (Sowell, 2002). State exams encourage an increase in district tests to monitor students' growth and to hold teachers accountable as districts use these tests to predict the state scores of students (Koretz, 1991). Current instructional trends require students to sit and listen for significant

durations of time without meaningful breaks to cover learning material for the tests (Bartlett, 2011). As a result, playtime in early elementary and recess time is shorter, and more sedentary instructional methods are practiced in the classroom (Coe et al., 2006).

Student Behavior Management

Teachers in elementary and early elementary classes use recess as an opportunity to correct students by taking students' recess time as a punishment for disturbing the class (Turner et al., 2013). The method of behavior management that promotes extrinsic rewards and punishment has numerous negative lifelong consequences and does not solve the behavior concerns or improve the learning environment (Moberly et al., 2005). Best instructional practices would use intrinsic motivation methods and movement as part of learning to promote students being engaged in their learning experiences, thus limiting the need for redirecting (Ramstetter & Murray, 2017). A notable current trend is the dramatic increase of disruptive behaviors by students systemically (Emerson, 2022). As a result, there has been an increase in trauma-informed school initiatives, high teacher turnover, and demands for professional development centered on classroom management (Ayers, 2003; Benner, & Garcia, 2019; Rosenthal, 2019).

The increased stress on teachers because of student misbehavior corresponds with the slow elimination of recess and play from the school day, along with an increase in teachers restricting recess as a form of punishment (Fink & Ramstetter, 2018; McNally et al., 2005; Stoughton, 2007). Gottfried's (1985) research elaborates on intrinsic motivation and student engagement as part of instructional practices that prevent behavior issues in school. Morton's (2016) research builds on this theory by finding that students are more intrinsically motivated when they are engaged in the learning process through movement.

Technology Influence

Students spend most of their time in a traditional seated position, which has increased due to the use of technology such as iPads and computers in the classroom (Straker et al., 2022). The long-held tradition and the increasing push for students to remain continuously seated during lectures and school hours have a profound impact on students' emotional, mental, and physical state of well-being (Wojtys, 2017). Recent health concerns are that children are spending a prolonged amount of time engaged in technologies that contribute to childhood obesity in *screenagers*, which are students with large amounts of screen time at home or school (Griffiths, 2010). Intensifying the situation, technology has become an avenue to provide socialization and collaboration in homes and schools as students use Zoom and Google Drive to work collaboratively (Griffiths, 2010). The integration of technology into school systems often adds to a potential health issue by not educating students about limits on screen time, along with an understanding of the consequences of overuse of technology.

Technology influence is a national concern for education, the health field, and employers because often sedentary behavior is a lifestyle in school that continues after employment (Biswas et al., 2015). Schools should engage students in an active learning environment to encourage students to learn a healthy lifestyle, potentially addressing a public health concern (Webster et al., 2015). When schools focus on movement in the classroom, students receive a boost of energy and a sense of well-being and decrease their fatigue and bodily discomfort (Aguilar Morocho et al., 2022; Nerhood & Thompson, 1994).

Physical Concerns

Schools are the perfect setting to incorporate healthy lifestyles as part of learning by providing education and best practices for physically active practices and an understanding of healthy eating. Students learning about healthy lifestyle habits is an essential part of a child's physical and mental development, which is evident by a student's ability to focus on learning, concentrate, and retain information (Cole et al., 2006). Initiatives for integrating healthy lifestyles into education curriculums are promoted by the Centers for Disease Control (CDC). The CDC supports the Whole School, Whole Community, Whole Child (WSCC), which is the organization that explores, implements, and plans programs that promote the emotional health of students, health education, nutrition, and physical movement in schools (Wehling et al., 2002). The CDC advocates for the integration of movement as a vital component of academic growth and lifelong lifestyle health that needs to be a priority in instruction (Wehling et al., 2002).

There are extensive reasons for concerns about movement being an invaluable component of education instructional practices. The current trend of sedentary lifestyles being heavily promoted in traditional educational instructional practices has added to physical concerns for students (Wojtys, 2017). There are a variety of health concerns that arise from inactivity, including decreased circulation, poor self-esteem, higher risk of cardiovascular disease, type 2 diabetes, high blood pressure, obesity, and osteoporosis (HEALTHY Study Group, 2009; Ogden et al., 2020). Students need a healthy lifestyle that is vital for them to grow into healthy adults whose daily physical activities statistically decrease sickness, thus creating a better quality of life for the individual. Consequently, the physical inactivity of students is a public health priority (Bermejo-Cantarero et. al, 2017).

The systemic demand for sedentary practices in education from primary to college plagues students for a lifetime (Bailey, 2017). Principals must seek ways to motivate, guide, and support teachers to incorporate movement into their instruction effectively. Principals need to understand not only the need for movement in education, but also how to effectively integrate movement as a method to maximize learning and promote better health for students. Most individuals understand the reasons why physical activity can have a positive impact on a person's physical and mental abilities, including improved health and increased quality of life. Due to the knowledge and validity of movement in the classroom to increase learning, there is an urgency for the traditional method of sedentary instruction to change.

Instructional Benefits of Classroom Movement

Cognitive Growth

Repeated research exploring students' cognitive abilities in the areas of learning, memory, mathematics, reading, and spelling before and after exercise has led to positive results for students' cognitive growth (Medina et al., 2010; Summerford, 2001; Winter et al., 2007). Exercise promotes cognitive growth and student learning by increasing the levels of a variety of endorphins that "enhance the brain's capacity to acquire and retain new information" (Cassilhas et al., 2016, p. 6). The multiple ways that movement promotes mental development are complex but evident. One part of the process is "the central nervous system has an expandable capacity for new growth and reorganization of neuron connections via the hippocampus" (Cassilhas et al., 2016, p. 8). The hippocampus is critical for learning and memory and continues to develop even in adulthood (Ergorul, & Eichenbaum, 2004). "This ability to change neuron connections is

favored when we are placed in an environment with lots of stimulation, and one that is supportive of the act of learning itself" (Atlay et al., 2008, p. 5).

An abundance of research indicates both movement and exercise increase "peripheral levels of brain-derived neurotrophic factor (BDNF) and catecholamine (dopamine, epinephrine, norepinephrine)" (McMorris, 2017, p. 4). When these levels increase, there is a positive impact on learning (Crispim Nascimento et al., 2014; de Melo Coelho et al., 2013; Marston et al., 2017; McMorris, 2017). The positive impact on learning occurs during exercise because the "forebrain neurons are activated and use the neurotransmitters acetylcholine and gamma-aminobutyric acid (GABA)" to create signals for the brain (King, et. al., 2020, pp. 1-10). "These signals tell the memory-forming hippocampus to produce a protein called brain-derived neurotrophic factor (BDNF); this increase in neurotransmitter pools, itself, can directly enhance learning, memory, and thinking ability. This helps neurons grow and connect" (King et al., 2020, p. 1). Cognitive development and growth occur when the body responds to exercise by increasing BDNF in the body and creating and producing new neurons (King et al., 2020).

As a result, exercise significantly increases BDNF and catecholamine levels in the brain, promoting "better short-term learning success, whereas absolute dopamine and epinephrine levels were related to better intermediate (dopamine) and long-term (epinephrine) indicating physical exercise improves learning"(Winter et al., 2007, p. 5). Consistent activity, in comparison to occasional exercise, has a positive relationship with a person's cognitive development and abilities (Fraser-Thomas, & Côté, 2006). Additionally, another benefit of movement is "neurons in the prefrontal cortex" are better able to interconnect, "be stronger and more amenable to growth, and resistant to damage, particularly in older adults" (Buckwalter, & DiNubile, 1997, p. 135). Cognitive growth and development are heavily dependent on the body's

need for physical routine movement. Alberto et al.'s (2021) research supports Sheets-Johnstone's (2011) conclusion, "movement is the 'mother' of all cognition" (p. 22). Understanding the body's dependency on movement for cognitive growth is a key reason movement as part of instruction should be the focus of education leaders (Buckwalter & DiNubile, 1997; Winter et al., 2007).

Impact of Physical Movement on the Body

Movement stimulates learning by improving health through physical changes that occur when exercising. Learning is a multifaceted process with a series of physical changes that occur within the body. The first part of the process is elevating the heart rate and oxygen consumption; this stimulates the body and brain with oxygen and glucose, which improves overall both health and mental focus. Therefore, research provides evidence supporting adding movement into instructional activities and transitions as part of best practices to improve focus and retention in students' learning and, in turn, enhancing academic growth (Block & Zakay, 2008; Chisholm, & Spencer, 2017; Hall, 2007; Lin & Lombardi, 2012; Lu et al., 2016; Mahar et al., 2006).

Medical Research Support for Movement as Part of Learning

The Learning Process

To help students learn and to understand the importance of movement as part of best practices to create active learning, there needs to be an understanding of how the brain works in children and adolescents along with the process of learning. According to Sprenger (1999),

> During the later elementary years and early middle school years, the child's brain activity is mostly in the posterior regions where the areas for auditory, visual, and tactile functioning intersect. This intersection is called the association area of the brain and

> generally contains information that has been learned and is now stored. This is the information that is commonly measured on achievement tests and verbally-based ability tests. (p. 2)

Cognitive learning and physical activity correlate, resulting in a positive trend of significant support for each other (Winter et al., 2007). Additionally, a book titled, *Enhancing Children's Cognition with Physical Activity Games*, explains in detail how tactile experiences and movement in learning instructional practices "can help improve a child's concentration and learning capacity and increase self-confidence" (Tomporowski et al., 2015, p. 3).

MRI Research

Numerous studies illustrate the brain lights up the same when a student is engaged in academic performance tasks such as reading and mathematics or physical activities such as running, indicating the positive impact movement has on cognitive growth (Holzschneider et al., 2012; Stevens-Smith, 2016). Researchers have documented the body's response to exercise and learning using functional magnetic resonance imaging (fMRI) (Bell et al., 2006; Stevens-Smith, 2006). Multiple research studies have used fMRI to aid in understanding "motor and cognitive tasks; [often including] a word generation task, spatial attention, and a working memory task" [concluding there is a positive correlation to learning] (Bell et al., 2006, p. 3; Stevens-Smith, 2006). The physical and cognitive responses that occur during active learning provide students a way to maintain focus, learn complex concepts, and have better retention through movement.

PET Research

Medical research has used PET scans to effectively demonstrate cognitive learning before and after exercise. Ghilardi's (2000) research explains, "kinematically and dynamically

controlled motor tasks in which cognitive, mnemonic and executive features of performance were differentiated and characterized quantitatively" by using 15O-labeled water positron emission tomography (PET) scans to monitor learning in participants" (p. 127). The process included focusing on three motor tasks to understand what parts of the brain are activated during movement and the impact on memory. According to Ghilardi et al. (2000),

> Participants of the research practiced three motor tasks: 1) movements to a predictable sequence of targets; 2) learning of new visuomotor transformations in which screen cursor motion was rotated by 30°–60°; 3) learning new target sequences by trial and error, by using previously acquired routines in a task placing a heavy load on spatial working memory. (p. 128)

The results were conclusive, indicating the activation of the brain involves both primary motor and sensory regions, activating the area of the “cerebellum and basal ganglia which lead to a decrease in movement time and spatial error thus improving participants' learning gains and response time" (Ghilardi et al., 2000, p. 128). The benefits of active learning as a vital piece of instructional practices go beyond that of academic achievement to include other areas necessary for student success (Grissom, 2005). Active learning creates a productive learning environment to include longer duration of students being able to focus, increased positive student mindset, and on-task behavior (Ramli, 2019).

Incorporating Movement in Schools

Movement integrated into the classroom and as part of student learning has evolved from brain-based learning research. Brain-based research focuses on using the brain, movement, visual, and auditory senses as a part of the learning process that connects new ideas/content with

previous ideas/content to build upon prior knowledge, creating a term called *active learning* (Chisholm & Spencer 2017; Halasz & Kaufman, 2008; Lin & Lombardi, 2012). According to Chisholm and Spencer (2017), integrating movement into the classroom creates an environment that promotes active learning. Active learning leads to improved learning and psychological outcomes for the students. When integrating movement, it is necessary to make movement part of instruction and to understand the best methods for incorporating movement in instruction. It is vital to understand the importance of this integration of movement as part of the instruction to meet and exceed expectations for student learning.

For the remainder of this chapter, brain-based and action-based learning will be combined and called active learning, which is the core of this research. The focus of active learning is adding movements into the daily routine of the classroom in all areas including lessons, activities, and transitions (Chisholm & Spencer, 2017; Lombardi et al., 2021). Utilizing active learning, students will be engaged via kinesthetic, visual, and auditory strategies to maximize learning by stimulating the brain (Conway, 2020). Several methods for incorporating movement in schools are discussed in the subsections that follow.

Action-Based Learning Labs

One of the most significant initiatives to incorporate movement into learning has been attributed to action-based learning labs (ABL). Information available on the ABL website describes the ABL as kinesthetic and movement focused, not instruction focused. From the research of movement and learning, Dr. Jean Blaydes Moize created action-based learning labs, which is a lab full of various stations with equipment students use while engaged in a learning activity that results in active learning (Kuczala & Lengel, 2017). Currently, ABL is in all 50

states and 25 countries and typically costs an average of $20,000 to $30,000 (Kuczala & Lengel, 2017). There are several claims that student scores increase, and behavior issues decrease with the use of action-based learning labs (Blaydes & Hess, 2004).

Notably, the researcher searched for statistics to document student growth in learning and decreased behavior issues across districts that are utilizing ABL labs. There were news articles from various states expressing how teachers and principals witnessed positive changes in the news articles. However, there is limited empirical research providing data indicating the short- and long-term effects of an ABL lab. There are concerns regarding access to ABL labs due to funding and availability of space. Also, for successful implementation, teachers need to be thoroughly trained in brain development and the movement of each station as well as professional development needs to be ongoing (Koozer, 2019; Russell, 2012). Support needs to be provided to teachers that includes a variety of ways to modify each activity and use resources that are manageable for all students (Thousand et al., 2006). Teachers should be thoroughly educated on the movements and the correlation each movement has on learning.

One example of understanding the stations in the ABL by Mitchell (2012) states, "One station targets the body's vestibular system controls balance and spatial awareness which strengthens the student's ability to place words and letters on a page because when a student walks or crawls in specific patterns, the brain's ability to encode symbols is increased" (p. xiv). Empowered with this knowledge teachers can effectively use time and the lab by assigning students to specific stations based on their academic needs to help the child make or build connections that may have been underdeveloped. Overall, ABL labs have the potential to engage and promote learning while decreasing behavior issues, yet these results can be maximized if

slight changes are made to help teachers use stations specifically to address each student's needs and safety while in the lab.

Energizers

Another engaging and effective method to add movement to a classroom was designed by the Activity Promotion Laboratory at East Carolina University. *Brain breaks* or *energizers* are songs, activities, and dances that are on a screen for students to follow along. “Energizers are classroom-based physical activities that were designed to help teachers integrate physical activity with academic concepts” (Bailey & DiPerna, 2015, p. 3). The method of using energizers or brain breaks based on classroom research has proven to positively impact school climate and culture (Mahar et. al., 2006). An additional observation by the teachers is the way the energizers helped the students stay on task (Mahar et. al., 2006).

Energizers and brain breaks are utilized to either rest or refresh the student's activity and brain stimulation through calming breathing/light yoga to an energizer that has students hop as they count (Mahar, 2011). Overall, energizers and brain breaks are beneficial as teachers can use their flexibility in any daily schedule to include any lesson's start, middle, or conclusion, or to address a student's immediate needs. Mahar et al.’s (2006) research concluded energizers can improve attention to tasks when relaxation and energizer videos were played two to three times per week. More so, their research indicates that only a short amount of time is necessary to train teachers on effectively leading classroom energizer breaks (Bailey & DiPerna, 2015). Both energizers and brain breaks effectively increase physical activity and student learning.

Crossing the Midline and Development

Another form of movement that has been promoted in education is crossing the midline point. Stevens-Smith's (2004) research suggests the benefits of crossing the midline is important for a child's development. “Crossing the midline starts with crawling, this usually develops around age 7-11 months” (Jacobsohn et. al., 2014, p. 4; Lavenne-Collot et al., 2021). Crossing the midpoint is an interest in research because of changes in how children experience play and learning (Carlier et al., 2006). For example, it is more common now than in previous years for children to experience limited tummy time, which is developmentally necessary to help a child crawl (Lavenne-Collot et al., 2021). Many reasons for the limited tummy time are children sitting in car seats, boppy pillows, swings, and other safe items. These items are purchased to help ensure babies are safe from falling. Heil-Mealey (2014) elaborates,

> Crawling is important because it works on upper and lower body dissociation, trunk/core rotation, weight-bearing/weight shifting, reciprocal movement patterns, and dynamic movement transitions. With this in mind, tummy time is a precursor for crossing the midline which is necessary for the brain to communicate across the corpus callosum, the thick band of nerve fibers that connects the two brain hemispheres (para. 4).

Limiting and/or eliminating tummy time often leads to these children skipping the crawling stage altogether (Neaum, 2017, p.5). Researchers Vellutino et al. (2004) have found a correlation that many of these children who skip the crawling stage are most likely to develop autism, dyspraxia (motor incoordination), or dyslexia. Their research also suggests that often these students need additional help with reading and writing because of the need for the brain to transmit and correspond with a less-developed corpus callosum. Crossing the midline activities can engage students in these patterns. For example, when students must hold cards in one hand

and with the other hand, they have to share their cards with their partner, they are crossing the midline. However, many educators are not current with this research that involves how to implement these practices effectively in the classroom.

Flexible Sitting

Students will find ways to move throughout the day and most often this is perceived by teachers as fidgeting. It is important to note that students "fidget because their bodies are seeking sensory input and movement" (Strauss & Hanscom, 2014, p. 5), especially when sitting too long. One way to address fidget behavior and incorporate movement into the classroom is by changing the seating options. The use of flexible seating is a simple and effective way to inspire more students to be engaged in their learning and to grasp the importance of movement in their daily lives. Kafka and Limberg's (2013) research suggests the "use of stability balls and standing desks instead of chairs have been found to positively impact student behavior" (p. 3) and improve sitting posture. Likewise, research indicates significant positive "effects of stability balls on children's on-task behavior, academic achievement, and lowering discipline referrals" (Hulac et. al., 2020, p. 3). Fedewa et al.'s (2015) research demonstrated improvement in standardized math scores across the three classrooms when movement was implemented using stability balls.

In education there is a need to focus on the whole child; therefore, the emotional needs of students must also be taken into consideration and met. Gaston et al. (2016) researched the impact of a stability ball on "inattention, hyperactivity, oppositional defiant behaviors, and anxious/depressive symptomatology" (p. 2) lead them to see significant results. The results indicated when teachers used movement using stability balls it positively improved students' attention span, thus reducing disruptive behaviors.

Play

Children need to engage in forms of play from their infant years to discover trust and not emphasize the fear of abandonment (Hughes, 1999). As children continue with play, they discover their bodies, and as Erik Erikson's research verifies, sensory and motor skills are necessary for this to occur (McLeod, 2013). Piaget (1976) concluded children need the opportunity to play to explore the world around them and to make sense of it. As children play, they script stories and questions together creating a language that is a foundation for making conclusions about their world. There is necessary correspondence between a student's thoughts and their ability to form words in their mind to express those thoughts in a meaningful way. Thus, both language and thought are intertwined to influence the child's cognitive development by the "nature, context, and forms of language" (Tunnicliffe, 2015, p. 4) that the child hears and uses (Gauvain & Rogoff, 1989; Halliday, 1993).Play provides a foundation for children to become communicators and establish and maintain mental and emotional health as many researchers including Piaget's cognitive research explain (Babakr et al., 2019; Hughes, 1999; Paley, 1993). Play encompasses the child addressing each developmental stage and area needed to develop into a fluent and literate communicator and innovative problem solver (Paley, 1993).

In a research study by Anderson (2016), students were given specific sensory-based movement activities twice a day for five minutes with positive student motivation and engagement as a result. Significant results occurred in both math and the students' reading abilities in the classes with the intervention. Students and teachers alike expressed a positive attitude towards the use of sensory-based movements as a form of improved learning. Anderson's (2016) research promotes the idea that specific physical movements integrated as part of the education are beneficial to improving student learning.

It is critical that educators view students as "competent, capable of complex thinking, curious, and rich in potential" (Ontario Ministry of Education, 2014, p. 6), and socially and culturally is the lens through how meaning and knowledge are constructed (Fosnot & Perry, 1996; Vygotsky, 1978). [A theoretical presumption that research is confirming] "is that play is a culturally and contextually process and practice, where everything that children play at, or play with, is influenced by wider social, historical, and cultural factors" (Wood, 2013, p. 8) [For children inquiry is fostered in school environments that allow play which allows] "freedom and support to be creative, communicative, imaginative, participatory, and active" (Pramling et al., 2014, p. 177; Stagg et al., 2016). When students are creative in dramatic play, they develop an understanding of their world through experiences and through the process of learning from their knowledge and applying this to create new meaning (Hedges et al., 2011; Whitebread, 2010).

Play is important to note as part of physical movement that encourages student cognitive growth (Ali et al., 2011). Ali et al.'s (2011) research on teaching reading through play linked the positive impact of play on literacy. Recognizing play as part of movement, social skill development, and best instructional practices are a given in the education field. However, how do schools continue to have high expectations for student learning while eliminating more precious time students have for play (Jacobson, 2008).

All these options for integrating play during the day do not address movement as part of instruction. They are noticeable improvements, but not as intentional forms of instruction. To maximize student learning, cognitive growth, and lifelong benefits of exercise, the focus of movement should be equal to the standard being taught during the lesson (Kilbourne et al., 2017). The movements should be planned, effectively understood, and assessed as a critical piece of best instructional practices. Teachers need ongoing professional development to integrate

movement into their instruction and classroom management practice, and to understand the "why" and focus of movement as a key part of instructional learning.

Movement Integration Case Studies

Case Study of Movement Integration into Instruction

Miller and Lindt (2018) alluded to many benefits of movement in the classroom. Their study was conducted in a public school in Texas with students from kindergarten to sixth grade. The school demographics were slightly less than 50% low socioeconomic, slightly less than 4% English language learners, and approximately 12% special education. Seventy-six students in both the second- and third-grade were selected for the study.

The students' classwork assessments, sex, and culture were reviewed as part of the data collected. All four teacher participants were female and varied in age and years of experience teaching. The program ended at the end of the school year; however, the entirety of the study was only two weeks. Information was provided again before the start of the study to all participants including the researchers, preservice teachers, and elementary classroom teachers to ensure an understanding of all the intervention procedures (Miller & Lindt, 2018).

A crossover design was used to determine possible differences between participation in traditional lessons versus movement-integrated lessons with students "acting" as their control. The procedure included two control classes for the first two weeks, after which the classes flipped with the students attending reading and math movement integrated into the lesson that was associated with the academic content. The design of the weeks was as follows:

> During Week 1, Classrooms A and C received instruction in a movement integration format while Classrooms B and D received instruction in a standard classroom format.

> During Week 2, Classrooms B and D received instruction in a movement integration format while Classrooms A and C received instruction in a standard classroom format. (p. 35)

As a substitute and for the entirety of the research, the preservice and mentor teachers created activities that demonstrated movement and all of it focused on academic content. These were used instead of worksheets and assessments. The study provides an example of one mathematics class learning about lines, points, and planes where the teachers put a variety of shape patterns of lines on the floor. As part of the learning experience, students moved throughout the room to identify different points, lines, and planes. To engage students in specific movements students were instructed to identify these various math terms by jumping, walking, and hopping on the patterns. However, in the control course,

> Students were given worksheets with patterns of lines and were asked to draw pictures of points, lines, and planes. In one of the English language arts classes, students were learning about the emotions of different characters. In the experiment class, [teachers created the opportunity for students to] act out emotions by playing the game of charades [while in the control] students' understanding of emotions was assessed through students' identification of faces with different emotions on a worksheet. [Every lesson plan was developed] by the teachers and by the faculty researchers [and to maintain consistency the] preservice teachers led all of the lessons in both control and intervention. (p. 35)

Measurements of qualitative data were made available through teacher observations along with responses to research questions. The questions focused on the teachers' perceived understanding of students' interests and student retention of the material. To keep data consistent

each teacher was asked to take time after each class to note those students on and off tasks and to add any notes they felt would be helpful. The document included:

> (a) tally student off-task behaviors, which included but were not limited to daydreaming, head-on-desk sleeping, talking to students when not part of the assignment, and disrupting others; (b) comment on recognizable differences in student on-task and off-task behaviors; (c) summarize the instructional environment following the lesson; and (d) discuss the engagement of the students following the lesson. (pp. 35-36)

Afterward, teachers made video reflections after each lesson to respond to specific questions asked by the researchers that focused on the engagement and/or off-task behaviors of the students along with content retention. Content retention was assessed through pre- and post-test and scales were created to monitor student interest. Each concept retention pre- and post-test was 10 questions with an assessment score of 100 and was given at the beginning and end of each week. The scores of both exams were compared to glean understanding of student retention of concepts and possible engagement with the content. The results of the study suggested students were engaged in academic concepts when physical movements and activities were part of the lesson, which enabled students to retain the information in the treatment groups more than in the control (Miller & Lindt, 2018).

Guided Movement as Part of Instruction Research Case Study

Adams-Blair and Oliver (2011) utilized a pilot intervention program over a duration of five months that incorporated a movement and nutrition education program into students' daily schedules. Six elementary schools and 11 classrooms with students from kindergarten to fifth grade over a 22-county region of Eastern Kentucky were selected for this program. Every teacher was trained to ensure standardized implementation and data results.

PE and classroom teachers collaborated to instruct students on best nutritional and physical activities practices during regular instructional classroom time through a series of 10-minute breaks. This program specifically focused on professional development for all participating educators to ensure that each teacher understood the "why" of teaching this material and how to effectively implement the program in their classrooms. "The physical education instructor in each school took on a leadership role and offered support to the classroom teachers when necessary" (Adams-Blair & Oliver, 2011, p. 149). The physical education teacher was responsible for communicating to researchers the pre-test and post-test materials each week.

The model used a multitude of resources including "videos, physical activity stations, jump rope activities, cardiovascular, strength, and flexibility activities to engage students" (Adams-Blair & Oliver, 2011, p. 149). After training classroom teachers effectively in this approach, teachers implemented these varied activities in classrooms that were usually in 10-minute segments for at least 30 minutes every day. Journals, charts, and logs were used to record activities and equipment used. Additionally, every participant used a "Walk 4 Life (Model LS 2505) two-function pedometer to measure the number of steps taken each day while at school" (Adams-Blair & Oliver, 2011, p. 149).

The Take Ten program was grade-centered with 10 minutes of activities throughout the day for no less than 30 minutes. In addition, students received education on other health-related topics such as nutrition (Adams-Blair & Oliver, 2011). A kit was provided to help teachers start the program:

> The program is a pre-assembled kit with the following materials: (1) 30 activity cards with the academic content area noted on each card; (2) more than 50 paper-and-pencil worksheets designed to reinforce objectives addressed by the activity cards; (3) three

> tracking posters with adhesive stickers used to track activities and reward students; (4) a variety of teacher resources; (5) student knowledge assessments and a teacher program evaluation; and (6) a brief (9-minute) teacher training video to provide an overview of the program, implementation tips, and advice. (p.149)

The routine was structured with daily routine physical activities for each week of the research study with students being pre-tested and post-tested. Students' BMI, pre- and post-scores on exams, and steps were monitored from the start of the research.

Pedometers were used to measure the student's daily step count, which provided an objective measure of both unintentional daily physical activity and the structured physical activity of each student. Pedometers were purposeful to the study because they delivered immediate feedback to the researchers and sent a reminder to the student to be physically active. “Each pedometer was assigned to a specific student and that student used the same pedometer throughout the pilot for reliability reasons” (Adams-Blair & Oliver, 2011, p.150).

The program made it extremely easy for teachers to implement as they just needed to choose a content area or lesson that matched their daily academic focus, use pre-made cards with listed activities and/or student worksheets, and complete the exercise. It allowed the teacher ownership of their teaching practice by having a choice in the correct timing to use the activities based upon instructional and students’ needs. Through the research, teachers’ comments on their choice of activity cards and when to add the activity were purposeful as they enabled the teachers to feel comfortable with the activity implementation. It was noted at the end of the study that most of the teachers continued using the program and activities at various scheduled times to cover more academic content (Adams-Blair & Oliver, 2011).

Movement and Cognitive Studies Case Study

Fredericks et al. (2006) evaluated the "effects of movement on academic performance and cognitive development" (p.1) when movement is integrated. The study consisted of:

> Four first-grade classes were divided into experimental, control, free-play, and educational toy groups. The students were randomly assigned with nearly 50 students calculated into the findings. The program lasted for 10 weeks with specific activities assigned for 20 minutes a day, but was eventually shortened to 8 weeks. (p. 5)

In this case study, exercises focused on the following: developmental sequence of movements through infancy, midline crossing, balance, proprioception, laterality, interhemispheric integration, vestibular work, convergence, divergence, visual accommodation, integrating reflexes, listening ability, muscle tone, and tactility (p. 5).

One part of this study that is vital to explain is the amount of time and dedication taken to ensure teachers were knowledgeable about the movements and the purpose of each movement of each activity. Pre- and post-test exams were given to measure students' cognitive growth, which indicated a positive impact on their spatial development, reading, and mathematical skills (Fredericks et al., 2006). The experimental group had the most gains in spatial, reading, and mathematical skills, which are remarkable for the short amount of time necessary to see results when movement is incorporated into a program. Also, movements that focused on spatial awareness had the most growth for students in reading and mathematics and had gains in their response times (Fredericks et al., 2006).

These case studies provided support for guided and meaningful planned movement as part of instruction as a key factor to improve student engagement, learning, and retention of information. The case studies also demonstrated the need for teachers to be provided adequate

and ongoing professional development in the movement process. Additionally, the research highlighted the importance of administration being part of the process for the successful long-term implementation of movement integration as part of instruction.

In summary, students, teachers, and leadership share a vital and active responsibility in the successful implementation of active learning. A plethora of research indicates students, teachers, and principals along with other stakeholders enjoy the benefits of active learning through students being engaged, fewer discipline referrals, and higher academic gains (Spielmann et al., 2012). It is beneficial for all teachers to understand the importance of effective movement activities and how to manage the integration into their classroom comfortably.

Building Cultural Awareness and Classroom Movement

Education may be considered a cultural puzzle and each student comes with a unique background, history, experiences, and traditions. When viewing the child as a "whole," it is a perspective that embraces the entire child instead of picking and choosing which pieces education wants to address. Paradise's (1994) research concludes that children are regulated by a day-to-day life rhythm between school, sports, and activities that control a child. At the same time children's lives have become regulated to that of an adult as if they are preparing for factory or office work; therefore, eliminating and controlling a child's opportunity for creativity and free expression.

Children engaged in sports, dance, and organized activities are exposed to a world that focuses on timing, goals, performance, rules, and controlled behavior through these experiences. Paradise (1994) explains how this is a "hidden training curriculum" (p. 13) focused on the behavioral styles to obtain goals and the communicative piece that controls even the creativity of

a child. Additionally, in this school environment, students are taught by lectures that passively instruct instead of meaningful inquiry-based learning by doing that embraces the whole child and cultural history of children (Geltner & Clark, 2005; Stagg et al., 2016).

Likewise, many children in the school setting are being under-supported in embracing who they are, such as Indigenous people who are denied their right to education and are most affected and disadvantaged by a lack of an educational system that values, respects, and understands their diverse cultures and languages (King & Schielmann, 2004). Viewing from this lens, it is critical to provide students ample opportunities to explore their independence, creativity, imagination, and autonomy (Stagg et al., 2016). For educators, it comes with the responsibility to help students make the cognitive connection by using realistic, challenging, goals and strategies that foster a student's desire to learn. The stronger the correlation between a want or need to know and one's willingness to learn, the stronger the possibility the student will take the risk, attempts will be made, and learning will occur (Riggs & Gholar, 2008). Inquiry based and culturally responsive instructional strategies promote student autonomy and engage students in the learning process leading to improved academic achievement (Perso & Hayward, 2020).

Promoting student autonomy in the classroom includes student choice in regard to when they participate in active, sitting, or standing learning opportunities. Students can be provided opportunities to discover their own learning style when given choice in the classroom, which is critical for them to become successful learners. Educators understand that student choice is important to learning, including classroom seating preference, because it positively influences student engagement by giving students voice and space to discover their own learning needs (McDowell et al., 2019).

In classrooms where students are encouraged to stand, walk, or move when they feel they need to, and instructional practices that embrace the whole child, there is an opportunity for students to develop autonomy. Students have the opportunity to develop autonomy while improving their cognitive learning when able to integrate movement into their day. Jenson (2005) stated, "Physical movement such as standing, stretching, walking, or marching can increase brain activity levels, which can help improve attentional focus" (p. 51).

Students acquiring autonomy occurs when the teacher moves into a facilitator position. Teachers as facilitators should be a goal while providing students with a safe environment to learn about their own needs. An environment in school that promotes this mindset is especially important for Indigenous and ELL students (Perso & Hayward, 2020). For example, Mazahua children in school are accustomed to taking the initiative in their learning activities with little teacher guidance (Paradise, 1994). These students are taught to think and behave in ways that reflect they are responsible, competent, and worthy of adults' corresponding respect. Indigenous methods of teaching see children as young adults, which yields more understanding, compromise, and empathy (Paradise, 1994).

In schools where Indigenous ideas and the whole child are not embraced, there are countless times children have had “bad” days where they are punished for not participating, not dealing with their emotions properly, or being disruptive. In these same environments, when an adult is having a bad day, empathy is shown. In these schools shifting the mindset to students who are young adults and worthy of autonomy may yield positive learning outcomes and build a supportive climate (Paradise, 1994).

More research is embracing the ideas and awareness of the importance of culture and traditions to developing a well-rounded child. Such research, including that of Kawagley et al.

(1998), focused on learning the impact of teaching students with a focus on their cultural perspective. They evaluated the positive benefits of studying science from the Alaskan Yupiaq culture by encouraging instructional growth and epistemology from a different perspective than Western science. By exploring content from Yupiaq "culture, knowledge, and epistemology [students are exposed to a] culturally relevant frame of reference and [valuable context for understanding] science concepts" (Kawagley et al., 1998, p. 133).

Movement in Lecture-Style Classes

Middle and High School Classrooms

There is limited research on the benefits of movement in lecture-style classes and the importance of movement for middle school students. Furthermore, there is limited research on the benefits of movement for high school students. One study exploring this topic is Hohepa, et al. (2009) who highlighted the problem that many teenagers' only movement is transitioning between classes, commuting to school by walking, and lunch. Consequently, there is no research on the benefits or practice of movement integration as part of instruction in high schools. This is an alarming problem because movement is beneficial to cognitive growth and retention. Equally important is students having time to engage in movement because they require additional exercise than adults (Mittal et al., 2020). Abril (2011) indicated little research has been conducted to examine the impact of movement on middle and high school students, and this is an area that needs to be explored.

The lack of movement in middle and high school is a critical concern in education, especially when research demonstrates the continued benefits of movement as part of the school day. Middle and high school students who engaged in movement activities linked to their subject

content increased their learning and retention (Lengel & Kuczala, 2010). “Kinesthetic learning style is found to be more prevalent than visual and auditory learning styles" (Vaishnav, & Chirayu, 2013, p. 2) for academic achievement of students in middle school (Grissom, 2005; Vaishnav & Chirayu, 2013). Rini et al.’s (2020) research evaluated the impact on students’ critical thinking through various instructional methods, including project-based learning, motivation, and visual, auditory, and kinesthetic learning. In the study, students who were engaged in kinesthetic learning displayed similar positive results such as improvement and growth in attendance and confidence in ability (Rini et al., 2020). According to Richards’ (2019) research, students who were engaged in kinesthetic instruction experienced a positive culture of interaction in the classroom, encouraging student participation and collaboration, especially for students labeled at-risk. Students reported they felt the kinesthetic instruction made the learning process exciting, memorable, and enthusiastic.

However, there is a literature and research gap in understanding how movement impacts lecture-style instruction. Incorporating physical activity into the curriculum, especially in sedentary lecture-style courses, can be a robust method to improve student learning. “Nobody has yet directly tested the relative effectiveness of just breaking the lecture up against interspersing it with activities" (Young et al., 2009, p. 43; Patterson, 2011), identifying the need for movement activities and lecture breaks to be examined.

University Classrooms

To provide evidence that sedentary instructional practices are a systemic concern, it is important to elucidate instructional practices at the university level. Universities are the ultimate part of a student's educational journey where they learn to be effective teachers, principals, and school leaders. Universities are where new ideas are generated, and innovation is the cynosure of

every instructor's lesson. Yet, on every campus, there are more lecture-style classes with an occasional activity than kinesthetic learning as an everyday pedagogical tool (Gray & Madson 2007; Horgan, 2003). Research findings explain that “more than 80 % of higher education classes are devoted to lectures” (Lammers, & Murphy, 2002, p. 3). A simple reason is because lectures are requisite for information sharing, providing background information to generate new ideas, foundational concepts, and methods needed. Research findings explain that “more than 80 % of higher education classes are devoted to lectures” (Lammers, & Murphy, 2002, p. 3). (Gray & Madson, 2007; Horgan, 2003).

Mobley & Fisher (2014) focused on exploring learning outcomes when college students ditched their desks and instructors embraced kinesthetic learning with positive results on student learning. Nursing programs have explored best instructional practices for encouraging student retention and academic success with a significant positive response from kinesthetic learning (Ibrahim, & Hussein, 2016).

There are a small number of research studies evaluating the effectiveness of kinesthetic learning at the university level, yet there is awareness of the lack of research in this area. In the educational field both liberal and progressive researchers agree that movement is a strategic method to provide students opportunities to apply skills and engage in critical thinking and not be passive learners (Coertjens et al., 2016). The concern is that students are not provided the opportunity to engage in deep processing and uncover the deeper meaning within the content because of the overload of facts and information present during the passive experiences (Beckman, 1990; Stößlein & Changchun, 2009; Young et al., 2009).

Chapter Summary

There is ample research from the education and medical fields that explains the vital role and purpose of intentional movement in the classroom.. While research has provided beneficial methods for incorporating movement into the classroom, there has been little consistency or demand for all educators to practice these methods. The barriers to incorporating movement as part of instruction are discussed by lack of teacher support, professional development, and leadership support.

Researchers have largely focused on practices for integrating movement as part of the learning day, but not necessarily part of instruction. The topics covered in the literature review addressed the multitude of benefits of incorporating movement into the learning experience. However, no known research has examined movement as part of instruction for lecture-style courses in middle and high school along with administrative perspectives on movement as part of instruction. This study is an opportunity to connect the previous research exploring the benefits of movement as part of learning in early and elementary schools to students in middle and high schools as well. The methodology for this study will be outlined in Chapter 3.

Chapter 3

Methodology

This study exploratory sequential mixed method study aimed to acquire and analyze middle and high school principals' perspectives about integrating intentional movement into instruction. The study data were cultivated from a Principal's Survey of 45 respondents supplemented by interviews with 10 principals. The quantitative analysis used descriptive statistics to explain the Principal's Survey results. A thematic approach was used to analyze data from the interviews through memos, coding, and generation of themes. This chapter discusses the epistemological position of constructivism that is embedded in the study. The research plan, including the methodology, study participants, procedures, analysis method, and ethical considerations, is thoroughly explained in this chapter.

Purpose Statement

The purpose of this study was to understand principals' perspectives on intentional movement in lecture-style classrooms in middle and high schools and to learn how intermediate (middle school) and preparatory (high school) principals believe they could develop an environment that promotes movement as part of instruction. Additionally, this study proposed to uncover the principals' unconscious beliefs regarding movement as part of instruction. To answer the research questions, the study examined other factors, including the principal's motivation and pedagogy, and if these factors influenced their perception of the topic.

Research Questions

Principals are the leading agent to improve achievement through implementing purposeful strategies for optimal student learning within the school. Therefore, an overarching goal of this study was to find the best instructional practices for incorporating movement into instruction and to explain to what degree principals feel movement in the classroom directly impacts students' learning. The research questions guiding this study were:

1. What are the principals' perspectives on movement breaks in a lecture-style course?
2. What are the principals' perspectives on movement in middle and high school classes?
3. How do principals believe they could develop an environment that promotes movement as part of instructional practices in middle and high schools?

Significance of Study

This study was intended to contribute to the relevant empirical body of literature by providing data that can be replicated and expanded upon, giving voice to middle and high school administrators regarding movement as part of instruction (Tolmie et al., 2011). The goal was to use quantitative and quantitative data to generate knowledge about an instructional issue impacting students, teachers, and administrators in a meaningful way (Singh, 2007). Because research regarding principals' perception of movement as part of instruction is unknown, the purpose of the qualitative phase was to learn and understand their perspectives and discover influences and factors that might influence these perceptions. This study aimed to contribute to the literature on movement in the classroom by delving into middle and high school principals' perceptions of movement as part of instruction, particularly lecture-style classes.

Exploratory Sequential Method

This study builds upon other studies that explored movement as indispensable to early and elementary students in education (Ali et al., 2011; Samuelsson & Pramling, 2014; Stagg Peterson, & Dwyer, 2016). It employed qualitative interviews with five middle and five high school principals to expand on their personal stories about integrating movement as part of instruction (Mills et al., 2006; Riley, 1996). This study utilized an interpretivist constructivist approach because the researcher depends on the "participants' views of the situation being studied" (Creswell, 2003, p. 8). The researcher analyzed the phenomenon of each principal's expression of experiences to create clarity by coding the data from the interviews. Participants' experiences and interpretations of their collective views were documented in memos and coded line by line (Burns et al., 2022).

As part of this study's process, information was accumulated from the Principal's Survey that guided and shaped the open-ended interview questions to create an opportunity for a deeper understanding of the responses and data, allowing for collectively robust emerging themes (Powell & Guadagno, 2008). The quantitative survey provided data that were used to answer research questions one and two. The qualitative interviews allowed for data to primarily address research question three, but also informed and provided insights into the first two research questions. The researcher used coding to generate themes that emerged from core categories within the data. The coding process allowed the researcher to see details within the data with a fresh perspective, which created the opportunity for themes to emerge from the data without researcher biases (Charmaz, 2006).

Data Collection

Quantitative Methods

A Principal's Survey was constructed to assess their perspectives on intentional movement in lecture-style classrooms (see Appendix D). The survey was administered through an online social media platform available to various administrative support groups. Survey respondents included principals across the United States and a few individuals from other countries. Each respondent agreed to participate with no compensation.

The researcher developed the Principal's Survey based on a similar instrument developed and used by Benes et al. (2016). Their survey, which is explained in more detail later in this chapter, was used to assess teachers' perceptions of movement in the classroom as an instructional strategy. The survey used in the current study consisted of 25 questions, with the first few focusing on demographic information such as age, areas served as principal, and current school setting (urban, suburban, rural). The second part of the survey was developed using a 4-point Likert scale, with choices ranging from 1 = *minimally* to 4 = *not at all* (Nemoto & Beglar, 2014), that asked the participants to rank their perceptions about movement as part of learning. Respondents rated intentional movement as part of learning based on their professional judgment and experience, evaluating factors such as effectiveness, impact on student learning, and classroom management.

Instrument Validity and Reliability

The study instrument includes items using a 4-point Likert scale, including the options *not at all* (coded as 1), *minimally* (coded as 2), *somewhat* (coded as 3), and *mostly* (coded as 4). The instrument was content validated by ensuring the survey collected the significant factors of principals' perceptions on the topic (Graham et al., 2001). This study adapted questions for

principals from the Benes et al. (2016) survey that focused on teacher beliefs about intentional movement in the classroom.

Reliability was assessed on the entire sample, resulting in a Cronbach's Alpha of .61 which is acceptable given the use of the instrument in the current study. Content validation included cross referencing individual items with guiding elements of the theory with specific citations of the theoretical and empirical literature (see Table F in Appendix).

Survey Sampling Procedure

A non-probability convenience sample was used with the goal of reaching a broad population of principals in early, elementary, middle, and high schools. The researcher-created survey was sent to principals nationwide through social media platforms. Online forums were used to explain to respondents the importance of participating in the survey, and ensuring anonymity of the responses. The survey was collected through the University of Oklahoma survey system and stored through the university's online system.

Informed Consent

The researcher fully utilized ethical processes that ensured the validity and reliability of the study. Following requirements set by the national Institutional Review Boards (IRBs) The University of Oklahoma Norman Campus IRB (see Appendix A) evaluated the risk to participants, explained procedures, and disclosed that this study provided no compensation and that the participant could withdraw from the research during any part of the study (Hamilton, 2002; Martin & Marker, 2007). Additionally, the informed consent indicated that the survey was voluntary with no potential risk, along with establishing that the participant was old enough with the proper credentials to participate (see Appendix C).

After agreeing to participate in the survey, the respondents were requested to complete a brief demographic questionnaire. Each respondent was 18 or older and demonstrated the mental awareness to participate through their degree and current employment. One hundred principals from elementary, middle, or high school levels initially engaged in the survey, but a total of 45 completed most of the survey questions and were used in the analysis. The online survey data were collected over a period of two months, from August to September 2022. Friendly reminders to participate were sent periodically through the social media sites. Data collected will be destroyed after five years, minimizing any future risks related to anonymity.

Qualitative Methods

The sequential mixed methods approach allowed for the development of interview questions based on the survey findings. This study explored the research questions Benes et al. (2016) developed in their study on teachers' perceptions of using movement in the classroom and interpretations from the data collected by the survey to create questions for the interviews. The current study was intended to build upon that research by exploring principals' perspectives on movement in lecture-style classrooms. Therefore, using both the survey findings and the questions on teachers' perceptions from the research by Benes et al. (2016), interview questions were developed for this study. The interview protocol is included in Appendix E.

Interviews with five middle and five high school principals were recorded electronically using a Zoom app on the researcher's phone without video. In addition, the researcher used memos, not to summarize the data, but as part of learning about the development of ideas generated through the responses as the researcher continuously attempted to dig deeper and discover categories. As part of this process, memos were an "exploratory, checking, and developing ideas component" of research (Charmaz, 2008, p.166). The interviews began with a

two-minute casual conversation for the respondent to get comfortable. Next, respondents elaborated on who they are as an administrator and their experiences as an administrator. The next phase of the interview included open-ended questions about the respondents' views on movement as part of the learning process and its impact on school culture. Following, questions were more specific to gather specific information on the respondent's concerns and reasons for integrating movement as part of instruction (Charmaz, 2006). Every interview wrapped up with more open-ended and probing questions that unfolded during the interview, prompting the respondents to elaborate with possible reasons explaining how their perceptions of movement in the classroom.

Data fidelity of the interview questions was addressed by working with professors at the University of Oklahoma to acquire feedback that was utilized to ameliorate the wording of interview questions to ensure responses lead to a clear understanding of the respondent's thoughts. This input resulted in several simplified questions and more open-ended questions, which are standardized in qualitative research because it enables the researcher to create validity in the study because of structure (Butina, 2015). These refined questions became the interview questions used to gather a more robust understanding of principals' perspectives on the topic (Fontanella, Campos & Turato, 2006).

Nevertheless, open-ended questions can lead to complexity when determining emerging themes, as respondents can provide extensive details (Rapley, 2001). Open-ended questions are imperative in this study to enhance understanding of this topic by prompting principals to provide as much or as little detail about their perceptions. Additionally, open-ended questions enabled the researcher to ask follow-up questions to ensure clarity and assimilate responses (Weller, Vickers, Bernard, Blackburn, Borgatti, Gravlee & Johnson, 2018).

Interview Sampling and Procedures

Principals were selected as the focus of this research because they are the instructional leaders of the school and create the school's vision and culture. Convenience sampling allowed the researcher to focus on a specific participant to gather purposeful data and bring awareness to the topic (Palinkas, Horwitz, Green, Wisdom, Duan & Hoagwood, 2015). The participant sampling for the interview was limited to those who knew the researcher and lived close, allowing for ease of scheduling (Palinkas, Horwitz, Green, Wisdom, Duan & Hoagwood, 2015). Each participant was a principal of a middle or high school, The principals were primarily White males, one female, and one African American male. Five middle and five high school principals were selected for interviews to glean a deeper breath of knowledge on the middle and high school principals' perception of movement as part of instruction. All participants were 35 and older. The education level of all participants was a master's degree with principal certification, except for the female who was obtaining her master's and certification with zero years of experience.

Informed Consent

The researcher provided a modified consent form (see Appendix C) provided by the University of Oklahoma IRB to guarantee that the form aligned with the research to all respondents. Before the interview, each respondent rendered written and verbal consent to participate and confirmed their knowledge that the researcher would take memos and transcribe the interview.

Data Analysis

Quantitative Survey

The study used a survey to explore principals' interest in and knowledge of movement as part of learning in middle and high school. Participants were asked questions about their knowledge and attitudes regarding intentional movement in the classroom with response options of *minimally*, *somewhat*, *mostly*, and *not all*. The study analyzed the quantitative data to answer research questions one and two and to develop more robust interview questions (Ivankova, Creswell, and Stick 2006).

Descriptive Data

The study integrated a quantitative approach, the Principal's Survey, to understand how principals' perceptions of movement as part of instruction affected teachers, students, and cognitive growth in schools with statistical data (Teo, 2014). Specifically, the study collected information on contextual factors and demographics, including culture, perceptions, and beliefs; therefore, a mixed methods approach was purposeful in establishing quantitative measures (Creswell & Clark, 2017; Kroll & Neri, 2009). A quantitative approach allowed the study to use a survey to gather data through a larger sample size while attempting to have accurate data by removing unknown biases from the researcher (Gorard, 2001).

The descriptive analysis allowed for characterizing and describing the participants based on their demographic responses (Lawson et al., 2011). Also, the Likert scale items about movement in the classroom were analyzed descriptively, using mean, standard deviation, and frequency and percentage of responses.

Qualitative Interview Questions

The researcher intended to ascertain emerging phenomena during the interview process (Charmaz, 2006), given the results of the survey data analysis. Interview questions were focused on the principal's position regarding the support of intentional movement. Interview questions were converted from zoom audio recordings to transcripts using Taguette to convert the audio to a Google document to ensure the privacy and security of the responses. The researcher sent each respondent the transcribed interview for the following reasons: to determine if there was information they would like to add to their responses and confirm their responses, and to evaluate if there was anything they wanted to omit from the interview. Afterward, the researcher examined their responses to determine if there were edits to the transcriptions. Codes were used to analyze the data to examine the collective perspectives of respondents (Pandit, 1996). The researcher analyzed and interpreted the completed transcripts for emerging themes. Analytical coding includes three methods: open coding, axial coding, and selective coding (Khan, 2014).

Memos and Coding

Coding categories and themes were developed by pursuing repeat patterns of words in the memos and transcription. Memo writing is vital to "remaining open to varied explanations or understandings of the data and focusing data analysis on constructing middle-range theories" (Charmaz, 2008, p.166). The researcher used this process to analyze and develop emerging categories through coding and comparative analysis (Charmaz, 2008; Glaser, 1965; Glaser & Strauss, 1967). Additionally, memos are necessary for the researcher to apply abductive reasoning to explain emerging categories and theories for which the researcher did not account (Charmaz, 2008). Furthermore, the strategies of using this process of memo writing and

consistent comparative analysis are purposeful for minimizing researcher bias (Glaser, 1965; Glaser & Strauss, 1967).

First, coding the transcriptions occurred through open coding, where the researcher utilized line by line coding by dividing and labeling the data into distinct ideas, events, or objects, labeling all essential important information in the process (Khandkar, 2009; Urquhart, 2013). Purposefully breaking up and labeling the transcribed interview data into codes helped minimize the researchers' biases about the data. Furthermore, constant comparative methods produce many codes as theory emerges from the data (Creswell, 2002; Urquhart, 2013). Tesch (1990) embraced constant comparative methods when she stated:

> Comparing and contrasting is used for practically all intellectual tasks during analysis: forming categories, establishing the boundaries of the categories, assigning the segments to categories, summarizing the content of each category, and finding negative evidence. The goal is to discern conceptual similarities, refine categories' discriminative power, and discover patterns. (p .96)

The study used comparisons within the same interview, followed by comparisons between the different interviews in sequence to discover categories. In each step, the data were anatomized and compared with the new data to develop interpretations. The survey results and the interview data were compared as part of this process. The strategy of constant comparison enabled the research questions to be answered efficiently (Boeije, 2002).

Additionally, open coding line by line allowed the researcher to glean as much as possible from each interview to subsequently guide the research (Birks & Mills, 2011; Charmaz, 2006). Next, this study integrated data analysis using axial coding to make connections and correlations between the codes (Corbin & Strauss, 1999). Scott & Meddaugh (2017) stated,

"Axial coding represents a coding paradigm grounded in pragmatist and interactionist traditions of social theory, which emphasize human action and social interaction" (p.1). Axial coding focused the interview analysis on the respondents' experience in a meaningful and organized study. Deterding & Waters (2021) elaborated that using axial coding minimizes the "overemphasizing the importance of any one aspect early in the study and helps ensure a thorough analysis of the entire interview" (Deterding & Waters, 2021, p.730).

The researcher started this process by organizing the codes after thoroughly analyzing how to group them into abstract categories. "A category could be created based on an existing code, or new; the more abstract category can be developed that encompasses several different codes" to produce categories (Kelle, 2007, p. 8). The categories are "the central phenomenon around which all the other categories are related" (Strauss & Corbin, 1990, p. 116). Sigauke & Swansi (2020) explained, "The categories are labeled as "axes" which their supporting codes revolve" (p. 12). Additionally, codes that mimic each other may be renamed and merged to effectively organize the data (Kelle, 2007). Deterding & Waters (2021) encouraged applying only a few analytical codes at a time to increase the reliability and fidelity of the coding process and purposefully use index coding to highlight important aspects of the transcripts.

Selective Coding

The last step, selective coding, occurs when codes only correlate to the core categories that begin to emerge (Holton, 2007). Strauss and Corbin (1990) provide a succinct explanation of selective coding as "the process of selecting the central or core category, systemically relating it to other categories, validating those relationships, and filling in categories that need further refinement and development" (p. 116). As categories emerge, the researcher desires to have open

codes and to examine if the names of the codes adequately represent what the selective codes aim to identify (Douglas, 2003).

The researcher needed to continuously examine the code attributes and potential relationships to evaluate between the open, selective, and theoretical codes. The desire was to have more selective and limited open codes in this part of the research. Through selective coding, the researcher will select one essential category as an emerging concept to focus on in the summary of the study (Strauss & Corbin, 1998). As part of saturation theory, there may be more categories where more data is needed for the theoretical component of the research (Cronholm, 2002).

Saturation

Fofana et al. (2020) inquired into the effectiveness of using a mixed methods design approach to determine saturation “when the data collected from interviews developed no additional information” (p. 1). Glaser and Strauss (1967) defined *saturation* as where no additional categories emerge from the code and, thus, no other emerging theories. Aldiabat & Le Navenec (2018) explained that the "homogeneity of sample and level of experience of participants in the research topic" would enable the researcher to need a smaller population of interviews (p. 260). Moura et al. (2021) explained that saturation occurs as "the researcher must identify concepts, develop them, and relate them," allowing the theory to be grounded in the data (p. 10).

Taguette

A computer-assisted qualitative data analysis software, Taguette, was used to assist with the data and analysis process. Taguette is an open-source computer-assisted qualitative data

analysis software to help researchers "organize, annotate, collaborate on, analyze, and visualize their work" (Rampin & Rampin, 2021, p. 1). Once the interview was uploaded into Taguette, the researcher could highlight text to create tags that were eventually merged. Taguette was used by the researcher in this study to store data in a SQL database.

Data Fidelity

This study is based on a constructivist epistemology that "differentiates between the truth and the real but focuses on human realities and assumes the existence of real worlds" (Charmaz, 2000, p. 523). Merriam (1998) provided a comprehensive perspective on constructivist epistemology in research when stating, “The qualitative study provides the reader with a depiction in enough detail to show that the author’s conclusion ‘makes sense’” (p. 199), contributing to the fidelity of the interpretations.

Stahl and King (2020) elaborated on the components of trustworthiness: credibility, transferability, dependability, and confirmability. As mentioned in this chapter, the researcher demonstrated credibility and transferability by selecting only middle and high school principals for interviews with the experience to collectively contribute to this research topic (Levy, 2006). Credibility was established through robust theories that emerged from a consistent comparative analysis of codes and categories (Charmaz & Bryant, 2011). Saturation was another part of the study that established credibility by targeting an appropriate audience with the experience to contribute to the topic (Morse, 2007).

Next, consistency was established in the interview process by conducting each in the Zoom audio recording format (White, Oelke & Friesen, 2012). Also contributing to the research's consistency was the data collection and interpretation process, the procedures, and other researchers checking the questions and respondents verifying their responses (Birt et al.,

2016). In addition, contributing to the data validity of this research, interview questions were adapted from questions that Benes et al. (2016) asked teachers regarding their perceptions of using movement in the classroom. Benes et al.'s questionnaire has been validated and used to understand teachers' perspectives on movement in the classroom. Also, transferability is plausible by connecting principals' perceptions to teachers' perceptions on the same topic.

Furthermore, this chapter broadens upon the various methods the researcher applied to establish confirmability and prevent researcher bias. Memos were used to prompt the researcher to interpret the data without bias (Urquhart, 2013). Also, interviews were conducted to develop critical theories, which are a supportive component of the research (Charmaz & Thornberg, 2021). Following the transcription of interviews, line by line coding, and memo reviews, consistent comparative analysis provided evidence to support the accuracy of the data. Another approach to providing data validity was systemic comparisons between the researchers' analysis and supporting theories (Bowen, 2009; Charmaz & Thornberg, 2021). Subsequently, credibility was established through robust theories that emerged from a consistent comparative analysis of codes and categories (Charmaz & Bryant, 2011). Finally, saturation was part of the study that established credibility by targeting an appropriate audience with the experience to contribute to the topic (Morse, 2007).

Epistemological Position

Applefield, Huber, and Moallem (2000) describe constructivism as part of an active process where individuals create an internal understanding of knowledge through their schema of individual experiences and their representation of the world. Subsequently, as disclosed by Applefield, Huber, and Moallem (2000), the constructivist philosophical position is developed from each experience a person has in combination with their ability to interpret these experiences

through their understanding and beliefs founded in their known society and culture. This study used exploratory sequential theory to understand the social patterns of principals in areas where their views and experiences are unknown, and their voices are unheard (Guetterman et al., 2019).

This study focused on generating themes from principals' perspectives of movement as part of instruction in lecture-style courses. The view of constructivism was utilized to build upon prior studies to understand administrative perspectives regarding movement as a critical component of instruction (Annansingh & Howell, 2016). In this study, the researcher included middle and high school principals to explore their shared experiences and phenomenons that occur systematically in the education system (Munhall, 2012). The participants are believed to share similar professional experiences as principals, nevertheless, interpretations may still yield variations of responses because of differences in both the personal and professional experiences of each principal. The researcher seeks to understand how the collected experiences provided meaning to their opinions and thoughts on intentional movement as part of instruction in middle and high school lecture-style courses (Mills et al., 2006).

Chapter Summary

An exploratory sequential mixed methods approach was used to investigate principals' perspectives of movement as part of middle and high school instruction. The chapter outlined the qualitative and quantitative research designs used to answer the research questions (Groleau et al., 2007) The study participants, quantitative survey, qualitative interview, data collection, and data analysis methods were described in-depth. The chapter concluded by addressing the data fidelity and describing the epistemological position. The findings of the study will be presented in Chapter 4.

Chapter 4

Results

Chapter 4 includes a reintroduction of the guiding research questions and study design coupled with a discussion of the results of the analysis of the data. Three research questions guided the study:

1: What are the principal perspectives on movement breaks in a lecture-style course?

2: What are the principal perspectives on movement in middle and high school classes?

3: How do principals believe they could develop an environment that promotes movement?

The first research question intended to describe how middle and high school principals perceived the both benefits and limitations of using movement in lecture-style classrooms, addressing a gap in the empirical research because their voices on this topic have yet to be fully studied. The second question aimed to understand if middle and high school principals perceive movement as critical to learning and cognitive growth in classes that are typically delivered by lecture, including A.P. courses. Based on the results of these two questions, research question three (the primary question of the study) explored principals' thoughts about how movement might effectively be incorporated into the middle and high school learning environment.

Because the third research question was addressed based on the results of the first two questions, a mixed exploratory methods approach was used. A national survey of principals was utilized to establish a foundation of principals' perspectives regarding movement. The quantitative data provided the groundwork for guiding the qualitative interview questions. These subsequent interviews of a select sample of principals addressed research question 3 and shed additional light on research questions 1 and 2.

Survey Results

The survey was validated using a content validity process that linked each survey question to one or more elements of the guiding theory. A content validation table is included in the Appendix. Reliability was estimated based on the entire sample, using Cronbach's Alpha. The resulting Alpha level of .61 is considered sufficient for the purposes of the use of the survey results for the current study.

Descriptive statistical analysis of the survey results was used to address the first two research questions. The results of the survey are included in the next three tables, with additional details included in the Appendix. Table 1 includes demographic descriptions of the survey sample. The survey was administered to 100 principals, and 45 responded for a response rate of 45 percent. The responses encompassed a variety of principals' perceptions, including those in early, elementary, middle, and high schools. The information includes when they earned their degree as a principal, length of time in practice, age, ethnic history, and the poverty rate of the school they serve.

Table 1

Demographic Characteristics of Principals

Current Position	%	Current Position Setting	%	Past Position Setting	%	School free/reduced	Age Group	%
Elementary	56%	Urban	36%	Urban	30%	31%	40-40	17%
Middle	11%	Suburban	43%	Suburban	43%	22%	41-50	50%
High	33%	Rural	27%	Rural	27%	47%	Over 50	33%

The majority (56%) of the participants identified as elementary principals, while one third identified as high school and 11% as middle school. Overall, the respondents were remarkably similar in the percentage servicing urban with (36%) and suburban (38%) areas, while nearly half (43%) have at some time in their careers served schools in suburban areas. Nearly one third of the participants served schools with less than 30 percent of the student body qualifying for free or reduced lunches, while nearly one half (47%) served in schools with relatively high levels of poverty as determined by student eligibility for free or reduced lunches (47%).

Research Question 1 Survey Results

Respondents rated the movement as part of learning based on their professional judgment and experience and provided their understanding of the impact on student learning and classroom

management. Table 2 includes descriptive statistics related to research question 1. Additional graphic results are included in the Appendix.

Table 2

Survey Descriptive Statistics for Research Question 1

			Not at all		*minimally*		*somewhat*		*mostly*	
Item	Mean	SD	N	%	N	%	N	%	N	%
Do you think student movement in the classroom would improve student engagement?	2.82	0.45	0	0%	2	5%	5	13%	32	86%
Do you think student movement in the classroom would benefit classroom management?	2.78	0.41	0	0%	0	0%	8	22%	29	78%
Do you feel student movement in the classroom would help with student focus?	2.79	0.41	0	0%	0	0%	8	21%	30	79%
Do you believe student movement in the classroom would help with learning retention?	2.71	0.51	0	0%	1	3%	9	24%	28	76%
Do you think teachers would need support in the classroom to offer movement practices?	2.71	0.51	1	2%	2	5%	10	24%	29	74%
Do you feel kinesthetic learners are often removed from the classroom for behavior issues?	1.84	0.84	1	3%	16	34%	13	42%	8	21%

Note: This table describes respondents of the survey reflecting principals' perception of movement at all academic levels in response to research question one.

A large majority of respondents agreed that movement in the classroom is beneficial to elements that might affect student learning. Nearly all respondents believed that student engagement would be enhanced through use of movement (86% mostly agree, 13 % somewhat agree), while 90 percent mostly or somewhat agreed that movement would also benefit classroom management. Likewise, most of the respondents thought that movement would help learning retention (76% mostly, 24% somewhat) and focus (79% and 21%, respectively). Nearly all of the respondents thought that teachers would need support in offering movement practices (74%, 24%). These results indicate that principals support movement practices in traditional lecture based classes, and that they believe teachers should receive support in implementing these practices.

Research Question 2 Survey Results

The descriptive statistics used to address research question 2 are included in Table 3, with additional graphic data included in the Appendix.

Table 3

Survey Descriptive Statistics for Research Question 2

			Not at all		*minimally*		*somewhat*		*mostly*	
Item	Mean	SD	N	%	N	%	N	%	N	%
Students who learn through kinesthetic methods … all grade levels...?	2.84	0.36	0	0%	0	0%	6	16%	32	84%
Do you feel students who need kinesthetic ... best practices for their needs?	1.58	0.84	0	0%	17	45%	20	53%	1	3%
Do you feel learning outcomes are documented .. besides testing for example profiles?	1.75	0.86	3	8%	16	44%	16	44%	1	3%
Do you feel teachers will need professional development ...?	2.82	0.39	0	0%	0	0%	7	18%	31	82%
Do you feel movement in the classroom is beneficial to...ELL and special needs?	2.74	0.44	0	0%	0	0%	10	26%	28	74%

Note: This table describes respondents of the survey reflecting principals' perception of movement at all academic levels in response to research question two.

These data indicated that all principals in the sample agreed that kinesthetic methods may be used across grade levels (84% mostly agree, 16% somewhat agree). The principals were also unanimous in agreeing that movement may be of particular benefit to students with special needs and ELL students (74% mostly agree, 26% somewhat agree), and that professional development is an important facet of using movement (82% mostly agree, 18% somewhat agree). Interestingly, the results for manifestations of outcomes are documented in areas other than testing, the results were mixed. Principals believed that students who are in need of kinesthetic methods may not necessarily be receiving the appropriate opportunities. Overall, however, the principals in the sample agreed that movement across grade levels is desirable, that opportunities may be limited, and that professional development is needed for movement to be effective.

Interview Results

The sequential mixed methods approach allowed for the development of robust interview questions based on the survey results, which indicated that principals understood the importance of movement in the classroom to across grade levels. The intent of the interviews was to answer the third research question, 'How do principals believe they could develop an environment that promotes movement?' Additionally, through the interview process, a Sub-Research Question emerged: 'What do principles express as obstacles to creating an environment that promotes movement as part of learning?' The qualitative data were derived from interviews with middle and high school principals from Oklahoma, with each session guided by open-ended questions.

Interview participant demographic information is included in the Appendix. The interviews were conducted over three weeks, and each was approximately an hour in length. Interview participant demographic information is included in Table 4 below. On average, participants were 39 to 60 years in age with a range of experience as a principal from 1 to 18 years. The participants included five females and five males, all with master's degrees in education. All participants served as classroom teachers before becoming administrators.

Table 4

Demographic Characteristics of Principals

Age	Gender	Years as Principal	School Level	Education	Principal Certification	Years Taught
51	F	10	Middle	Master's	1999	15
50	F	8	Middle	Master's	2008	7
42	M	11	Middle	Master's	2010	8
47	M	8	Middle	Master's	2012	21
48	F	1	Middle	Master's	2023	22
39	M	12	High	Master's	2009	4
45	F	5	High	Master's	2010	7
43	M	7	High	Master's	2013	10
55	M	18	High	Master's	2000	3
60	F	6	High	Master's	2001	5

Note: Participants were on average 48 years old (*SD* = 5.98333101), Variance S 35.8.

This study explored the research questions Benes, Finn, Sullivan, and Yan (2016) developed in their study "Teachers' Perceptions of Using Movement in the Classroom." Interestingly, as developed later in this chapter, the results of current study appear to substantiate those of Benes, Finn, Sullivan, and Yan's (2016), in that as with teachers, principals appear to understand the importance of movement as being beneficial to learning. The current study contributed to the research indicating that principals at all levels of education from pre-k through twelve grades understand the value of movement as part of learning.

The researcher ensured that each participant reviewed the consent form and understood the purpose of the study as well as potential risks and benefits. The participant signed the IRB form emailed or provided in person (See Appendix A). The IRB form is provided for further elucidation in the Appendix. A recruitment email was sent to each participant (See Appendix B), and an interview protocol was followed (See Appendix E). Each participant was asked open-ended questions that, as the sequences of interviews continued, would evolve based upon the previous interviews developing more robust questioning (Bitsch, 2005; Charmaz, 2006) (See Appendix E). The specific interview questions are included in the Appendix.

Interviews were recorded electronically using a zoom app on the researcher's computer and lasted a minimum of an hour. Every interview included follow up questions that unfolded during the interview. The additional questions prompted the respondents to elaborate with possible reasons explaining beliefs about movement in the classroom and its implementation. The interviews were recorded through zoom to contribute to the fidelity of the responses through Zoom's feature allowing transcribing the recorded audio. The recordings were saved in a password-protected Google drive, allowing the researcher to review the sessions when necessary for clarity or to reexamine before coding. The audio recording of each participant was

transcribed following the Cockatoo and Trint transcribing process. In addition, the researcher reviewed the audio recordings and line by line compared them to notes taken during the interview to ensure clarity of the words.

Subsequently, the researcher sent each respondent the transcribed interview for the following reasons: First, to determine if there was information they would like to add to their responses and confirm their responses; and second, to evaluate if there is anything they wanted to omit from the interview. After their review, they signed and sent the document back, confirming that it accurately expressed their viewpoints. Afterward, the researcher examined their responses to determine if there were edits to the transcriptions. In addition, the researcher used memos to dig deeper and discover codes more consistently.

Table 5

Middle School Principals

Participants	Length of Interview	Number of Transcript Pages
95459851723	47:05:00	15
944 6246 3267	31:43:00	12
969 9401 1955	40:14:00	20
956 5794 8851	42:30:00	13
924 2721 0671	55:49:00	15

Note: This table describes middle school principals' interview length and transcript pages.

Table 6

High School Principals

Participants	Length of Interview	Number of Transcript Pages
93161769678	52:30:00	16
965 7371 2818	56:02:00	15
979 9807 7286	43:07:00	11
977 4337 4206	53:02:00	16
868 3619 8193	55:10:00	8

Note: This table describes high school principals' interview length and transcript pages.

The interview data were collected for over fifty minutes, with transcription pages ranging from eight to twenty pages with an average of twenty-five pieces of data per person. Table five and six summarizes the data transcription for each participant's interview.

Responses from the ten participants provided valuable data and insights on their perceptions of movement on students' cognitive growth and retention, as well as their beliefs about the relationship between movement and the learning environment and how they might help implement movement as building leaders. Data analysis was an ongoing process during the

interviews, which allowed the researcher the opportunity to edit the questions after reflection on the memos (McGrath, Palmgren, & Liljedahl, 2019).

Analytical coding used to analyze the data for examining the collective perspectives of respondents (Pandit, 1996). Based on the coding results, the thematic analysis procedure included Merriam and Tisdell's (2016) six-step process research describing how to design and implement qualitative data. First, the researcher became familiar with the data through line-by-line coding from memos. Second, coding the transcriptions occurred through open coding. The researcher built upon the line-by-line coding by dividing and labeling the data into distinct ideas, events, or objects, labeling all essential important information in the process (Khandkar, 2009; Urquhart, 2013). Purposefully breaking up and labeling the transcribed interview data into codes helped minimize the researchers' biases about the data. The researcher used Taguetta to establish codes from the data to maintain consistency and accuracy.

After each interview, the data were anatomized and compared with the new data to develop interpretations. Next, open coding line by line was practiced ensuring the researcher gleaned as much as possible from each interview to subsequently guide the research (Birks & Mills, 2011; Charmaz, 2006). Following categorizing and selective coding were utilized, discovering an essential category as an emerging concept (Strauss & Corbin, 1998). Next, consistent comparative methods produced many codes as theory emerged from the data, resulting in a review of themes after data saturation (Creswell, 2002; Urquhart, 2013). Once themes were defined, the themes were written with an explanation as described in the remainder of this chapter.

Data Coding

Coding into categories and themes in this study commenced with memo writing to "remain open to varied explanations or understandings of the data and focusing data analysis on construction middle range theories" (Charmaz, 2008, p.166). The researcher utilized memos to apply abductive reasoning to explain emerging categories and theories for which the researcher did not account (Charmaz, 2008). Focusing on the codes for analytical influences instead of seeking common themes and topics was essential for this study (Charmaz, 2008).

For part of this study, analytical coding was used, which included three methods: open coding, axial coding, and selective coding (Khan, 2014). The inductive approach of coding words and phrases in the qualitative data allowed codes to emerge. In the Taguette program, the interviews were uploaded, and tags were created to discover codes to create and merge phases and words relating to each research question. As stated by Williams and Moser (2019) research in the study "The art of coding and thematic exploration in qualitative research," the researcher needs to sift through the informant's responses and organize similar words and phrases, concept-indicators in the broad initial thematic domain" (p. 48). The researcher practiced open coding and went through each transcription line-by-line dividing and labeling the data into distinct ideas, events, and text, highlighting the critical concepts in the information (Khandkar, 2009). Open coding allowed the researcher to glean as much as possible from each interview while minimizing the researcher's biases about the data (Birks & Mills, 2011; Charmaz, 2006). Each tag in the study represented phrases related to the research questions from the transcript.

Likewise, axial coding was utilized. The process involved merging and renaming codes that mimic one another, and this allows for data to be organized more effectively (Kelle, 2007). "Axial coding identifies relationships between open codes to develop core codes. Major (core)

codes emerge as aggregates of the most closely interrelated (or overlapping) open codes for which supporting evidence is strong" (Strauss, 1998, p. 109). Tags were established into abstract categories. As this process continued, tags were merged from correlated responses to create specific codes to establish merging categories. Some categories represent "student engagement," "student motivation," "traditional instruction," "movement with the purpose for learning," and "testing."

Finally, selective coding began when codes only correlated to the core categories emerged (Holton, 2007). There was a need to continuously examine the code attributes and potential relationships to evaluate between open, selective, and theoretical codes. After the initial coding of one hundred and ninety-three codes, interviews were examined in a consecutive sequence of two at a time. The process permitted the researcher to organize the phrases to develop ninety-three code categories for themes (See Table 8). Table 8 is available in the Appendix for further review.

Consequently, the ninety-code categories were pivotal in establishing the ten themes constructed from this interview data. Ten resultant themes developed by the researcher from the Tagette program are described below and in greater depth in the Appendix.

Research Question Results based on the Interview Data

Ten total themes emerged from the interview data, some of which shed light on research questions 1 and 2 and others answered research question 3. Additionally, a Research Question 3 sub question emerged from the interviews. The themes were as follows, sequenced according to their emergence from the interviews rather than by specific research question:

1. The opportunities and obstacles of implementing movement as part of learning in middle and high schools (research question one).

2. The absence of sufficient professional development (research question three, sub question).

3. Movement as a brain break or as part of instruction supports cognitive growth and Retention (research question one).

4. Movement is essential to whole-body learning (research question two).

5. Movement as part of instruction promotes student engagement (research question two).

6. Movement as part of a learning culture encourages social learning (research question two).

7. Movement as part of instruction enables ample opportunities for student collaboration (research question three).

8. Movement as part of instruction shifts traditional instructional methods (research question three).

9. Movement as part of instruction improves classroom management practices (research question 3, sub question)

10. Movement as part of instruction exposes a systematic concern for best learning practices (research question three).

Research Question One Themes

The first research question asked, 'What are the principal's perspectives on movement breaks in lecture-style courses?' Interviewees indicated that in middle and high school, movement breaks are seen more as a transition or a short downtime from academic focus (See

Table 11). Simultaneously, themes were established expressing obstacles principals would encounter implementing movement as a site-wide initiative (See Table 12). Attributes of the concerns and possible solutions were expressed during the interviews. Tables 11 and 12 are available for additional review in the Appendix.

Theme One: Opportunities/Obstacles of Implementing Movement as Part of Instruction.

Principals expressed the belief that movement breaks are necessary for student cognitive growth and social development. Each principal believes there is a connection between movement and long-term retention of learning. Participant four indicated during the interview, "I think just the connection between movement in the classroom is where we are going to increase our scores." However, each principal mentioned obstacles to implementing movement as part of instruction, including classroom space, transition time, student willingness, and concerns regarding teachers. Data collection from the survey and the ten interviews elicited related concerns for movement implementation. Principals expressed that with the vast amounts of content teachers are expected to cover, it is increasingly challenging to reach levels of depth of knowledge.

Principals are keenly cognizant of the scant time teachers must teach all content areas during the day. Participant eight, a high school principal, explained that time was a, "classic challenge and barrier is, well, one easy one would be just space in a classroom." A significant obstacle expressed by principals in both the survey and interviews are well summarized by participant one when he stated, "I think there is going to be a decent number of teachers who say, if you are inviting me to incorporate learning into my class, I am not going to be teaching them to do well on the test. Well, what is an answer to that?"

Theme Three: Movement Supports Cognitive Growth and Retention.

Principals unanimously acknowledged that movement is necessary for students to learn and retain information longer. Each participant opined that if a student is learning while doing, the student will never forget. This point was elaborated upon by participant eight, a high school principal, who indicated:

> I think that to make the neurons have permanent connections. You need to tie it to [movement] I mean because I taught anatomy for 20 years, too. And, you know, all the things that we never forget how to do are things like ride a bike, drive a car, things that are connected to movement." Contributing to the principal perceptions of movement on retention, participant four observed, "we try to put it into the depth of knowledge as well. You know, if you're going to get a higher depth of knowledge by having the kids present to you, by walking and talking, and their communication is going to be more effective than listening to you speak it and then write it down.

Each participant responded they encourage movement as part of a brain break or an activity such as think-pair-share to help students have some form of movement during the day, which participants four and eight noticed were critical due to the impact of covid on students' sedentary and social behaviors.

Collectively, the three Research Question One themes appear to corroborate the relevant results of the survey. Principals support movement practices in traditional lecture-based classes, and that they believe teachers should receive support in implementing these practices.

Research Question Two Themes

Three themes emerged that were relevant to research question 2. The principals unanimously believed that there are a variety of maximized benefits of movement for social, physical, and mental health. Tables are provided in the Appendix for further illustration.

Theme Four: Movement Is Essential to Whole-Body Learning.

Three of the middle and high school principals discussed the value of

whole-body learning that encompasses the whole child and their needs into the learning environment. Participant one asserted, "if the goal is shaping and fully flourishing human beings who can put their innovation, creativity, wonder, curiosity, excitement, passion, etc., to work on really pressing issues, then I think it takes a fully embodied person to do that." Additionally, participant four contributed to the value of whole-body learning by expressing, "your connecting kinesthetic along with visually. I mean, I'll just point out the senses. And again, the more senses you can pull together, and into learning, and the more connections you're going to make, and more recall you're going to have that built-in."

Theme Five: Movement Promotes Student Engagement.

Repeatedly, participants mentioned the length of classes in secondary schools, which are over forty minutes long on average. Interviewees indicated that class periods over forty minutes with minimal movement would be challenging for anyone, regardless of age, for maintaining focus and engagement. For students to obtain the most from their experience at school, they need to be engaged in their learning environment and the content they are learning. All interview participants (as well as most of the respondents in the survey) noted the value of student engagement as part of the learning process. All interviewees believed both are equally important regardless of whether the movement was planned as part of instruction or incorporated as a brain break allowing students to process content or pause their learning. Participants noted that behavior would result from implementation of movement at regular intervals to break up the class period. All participants agreed that student referrals and disruptive behavior could be reduced, including excessive outbursts from students with ADHD who could use movement in an effective way for their personal needs.

As a result, students who needed to get their energy out could do so, and those who needed to take a short walk to reach a space where they would have their needs met could do so as well. Participant 4 added, "ADHD, sometimes they're hyper-stimulated when they come back from P.E., and they can't sit down, and we're going to rest for a minute by allowing the student to take a walk and lay down." Also, participant ten stated, "I think it [movement] would impact significantly and I think classroom management could be in the sense of disciplinary issues, they should be exceptionally low because you have students who are engaged in learning who also can physically be active."

Theme Six: Enable Student Opportunities for Collaboration.

The principals believed that students who engage in many compelling collaborative learning opportunities experience critical thinking that produces better learning outcomes. Three participants noted that movement in middle and high schools as part of the instruction differs significantly from movement experiences in elementary school. In middle and high schools, movement as part of the instruction is collaboratively focused on activities of think-pair-share, hands-on, and project-based learning opportunities. A participant noted that methods to provide more opportunities for students to experience social growth, including collaborative opportunities is critical, especially since COVID. She indicated, "students had issues with communication before. You know, then we come back after a whole year of masks." implying that social media impacted students' social skills. Since COVID, students, social skills have declined at a faster rate. Therefore, students must experience enhanced collaborative opportunities. According to the principals, these activities might include walk and talk, think-pair-share, students as teachers, collaborative learning, hands-on activities, and project-based learning.

Collectively, the three Research Question Two themes appear to corroborate the relevant results of the survey. Principals in agreement that movement across grade levels is desirable.

Research Question Three Themes

Three themes (seven, eight, and ten) emerged from research question three as originally stated. Given the emergent design element of inductive studies such as the current one, a meaningful sub-research question arose during data collection: 'What do principals believe are personal obstacles to creating an environment that promotes movement as part of instructional practices?' Separating the question allowed the researcher to understand the phenomenon more clearly. Two additional themes (two and nine) addressing the sub question were identified.

Theme Ten: Principal Support of Teachers is Critical.

Principals influence instructional norms in their schools by communicating the expectation that teachers can learn from one another. Collectively, teachers are expected to learn during professional development. Teachers working together in Professional Learning Communities (PLCs) and during faculty meetings create learning communities. Conferences are exceptional opportunities for lead teachers to gleam an understanding of current topics and return to the site to facilitate and guide other teachers in learning that content. Each participant in the interview confirmed the importance of supporting their teachers with these effective strategies.

Regarding movement, however, each participant expressed concern about being able to support their teachers effectively. Participant four explained, "I think my number one job is to support my teachers." Also, "we go to research other times, and then we don't have time to research it, so we just move with whatever we can. I think we need more tools in the tool kit." Expanding on the importance of supporting teachers' participant four articulated, "I think teachers feeling supported is such a huge issue, especially coming out of COVID and if

[teachers] are supported with [movement], then they feel like they have ownership."

Additionally, principals must demonstrate knowledge of current research and data-driven practices and guide teachers in understanding how to construct and interpret data to maximize student learning. Participant four expressed, "We try to show them the data on how it increases our testing scores and how we increase the knowledge and help retention." Most importantly, principals must take the time to establish RTI and build relationships that allow for trust to be established, which promotes the principal's ability to influence their teachers (Jones & Henry, 2022).

Theme Seven: Movement Shifts Traditional Instructional Methods

Current instructional trends often emphasize a teacher-centered approach to instruction with an emphasis on memorization and asking students questions to express their independent thoughts without opportunities for collaboration. Participant six stressed, "traditional learning is driven only by testing; again, intellectual inquiry or inquiry may not even be the right word to describe learning because this type of learning only focuses on intellectual regurgitation." Movement shifts instruction from these traditional methods to more engaging and interactive methods, encouraging student collaboration, project-based, and meeting students where they are to build their understanding through questioning, explaining, and collaborative practices.

One participant opined that including a transition from traditional instructional methods is crossing the midline, which could result in improved student participation, culture, and learning outcomes when this practice was encouraged at her site. The participant declared, "where you are crossing the midline and not even realizing that they're doing it. [Movement] is an effective way to do it. So, you could easily do it without actually having lots of time moving, and they don't have to get up out of their desk and move and disrupt everything." This statement

implies that crossing the midline is an effective instructional practice that takes a limited amount of time, does not cause a significant distraction, and provides students with movement opportunities that engage them in learning for better educational and social outcomes.

Principals know that teachers need to shift their understanding of traditional instructional methods and be supported and equipped with skills and resources to guide instructional change in their schools. Therefore, principals need to be educated on movement practices with data, opportunities to be self-reflective of their views on movement as part of instruction, and support enabling them to holistically shift their views of movement as an instructional practice they want to transition from encouragement to an initiative for student learning.

Theme Eight: Movement Improves Classroom Management Practices

Five participants indicated that as teachers were learning effective instructional and procedure strategies for implementing movement as part of instructional practices, student disruptions would increase. Participant four noted, "I've got some regular classes that have such a group of students the teachers say, I don't want the discipline issues with that many students. So, teachers feel there are students who are hard to do some of the more higher-level thinking activities with." Principals are aware of their teachers' relevant concerns and indicated they 'must meet teachers where they are' with support so that when implementing movement as part of learning, teachers experience more success than failure.

Another concern expressed by many participants is that if teachers were not supported well as they incorporate movement and subsequently experience failure, some teachers may be hesitant to attempt to use movement instructional strategies again. All participants alluded to the importance of necessary procedures and policies for implementing movements. Participant seven indicated, "if you have the correct culture, policies, and procedures in your classroom, the

students know how to do both of those effectively and quickly without taking away from time and in fact, making your instruction time more valid or more effective."

Addressing Theme Two: Limited professional development on movement practices in middle and high schools. A sub research question emerged from the data collection, 'What Do Principals Express as Obstacles to Creating an Environment that Promotes Movement Site-Wide?' The absence of effective professional development exposes a systematic educational concern, beyond movement in the classroom. Ample research indicates that professional development is essential for principals and teachers to stay current on education changes and pursue lifelong learning (Bowman, Vongkulluksn, Jiang, & Xie, 2022; Lessing & De Witt, 2007; Martin, Mccaughtry, Hodges-Kulinna, & Cothran, 2008).

Each interview participant in the interviews, coupled with the respondents from the survey, indicated they were in favor of relevant professional development for both themselves and teachers, yet needed to be more knowledgeable of available opportunities. Participant seven stated, "I did some research before meeting you and learned movement is mostly geared for elementary." Adding to this concern, participant one indicated, "I don't have a great answer to how movement might be incorporated into that [instruction]. I don't know."

Participant eight disclosed, "I don't know specific types of professional development." The three participants with science backgrounds as teachers indicated they needed more strategies for implementing movement into instruction based upon practices they utilized as educators. Two participants explained how they developed a committee to create movement activities for teachers to practice based on their research. Participants indicated there is value when skilled teachers model for other teachers during faculty meetings. Every participant expressed the need for professional development for themselves and their teachers, and it would

be a priority for them to attend routinely.

Theme Nine: Awareness of a Systematic Educational Concern

Theme nine also addressed the sub research question. There is robust research on methods and value of movement in early and elementary schools, yet the research on best instructional practices for movement in middle and high schools is missing from the research literature (Bresler, 2004; Ferguson, 2005; Martínez-Bello, Bernabé-Villodre, Lahuerta-Contell, Vega-Perona & Giménez-Calvo, 2021; Gehris, Gooze & Whitaker, 2015). Theme nine indicated the awareness of a systematic educational concern where teachers are encouraged to practice best instructional strategies and are provided professional development. Nevertheless, as students progress through their educational program, movement must be present in middle, high school, and college years. Participants mentioned the focus is more on learning in primary grades, while middle and high schools focus on test preparation and memorization. Also, there is a shared responsibility between middle and high schools to prepare students for college. Universities overwhelmingly focus on lectures and testing, so students are expected to sit, listen, and retain information.

All the principals interviewed acknowledged and understood the value of movement for student cognitive learning and social growth. Most principals expressed a shortage of professional development for themselves and teachers in learning instructional strategies outside the scope of lecture-based instruction that is also outside of "Think, Pair, Share" and "Project Based Learning " for incorporating movement into the learning environment. The emphasis on state testing significantly impacts the focus on student learning from "learning" to "memorization." Also, the pressure to prepare students for college minimizes the flexibility of principals to explore movement as part of instructional practices as a school initiative unless they

are provided professional development and support for teachers. Participant seven asserted:

> There is a disconnect between high school and college. Like, you go to college and all of a sudden, you're expected to take three tests and write 14-page papers, and if you didn't do that and so, as educators, yes, we want them to be moving. We want them to be connected to things. But if we don't prepare them for college, we're failing them as well. And so, what where is you know, we're riding the fence on we need to do some of this, but we also need to do some of this because we can't send them off to college, not ready for that. So, if we've done a lot of movement-based stuff, which is not what happens in college.

Additionally, all participants concluded that middle and high schools (and two participants added universities) share a role in incorporating movement as part of student's learning process and culture. All participants indicated there needed to be more courses offered to students to engage in movement and expectations for movement should be incorporated into general and A.P. courses. Each participant expressed concern for students' emotional and mental health and the long-life consequences of not being educated on the importance of movement in their daily routines.

Summary

Movement in the classroom was explored using both quantitative and qualitative data. Data were analyzed utilizing descriptive statistics for the survey data and subsequent theming for the qualitative interview data. The results of both survey and interviews data indicated principals believe movement in the classroom enhances the learning environment, across grade levels. The principals did express some concern about classroom management and believed movement as brain breaks or part of instruction had equal importance in learning. The lack of knowledge and strategies for helping teachers implement movement and professional development for integrating movement into instruction was a converging concern of principals in the survey and interviews. Chapter five will provide explanations and implications of the these results, including sections that describe findings, conclusions, implications, and

recommendations.

Chapter 5

CONCLUSIONS

Chapter 5 captures the overarching implications of this study about the implementation of movement in classrooms. The chapter begins with an overview of the problem and the purpose of the study. Next, a discussion of the findings and conclusions for each research question is provided. Finally, the chapter concludes with implications and recommendations for future research.

It is well-known that the time for physical education and recess continues to decline steadily in schools across America. Concern regarding rigorous testing has decreased and often eliminated opportunities for students to enjoy physical activities such as recess, play, and hands-on learning that promote movement. Also, there is a perception that specific courses cannot incorporate movement into the instruction because of the style of the course, particularly lecture-style courses. Empirical peer-reviewed studies have described the benefits of classroom movement in both early and elementary education settings (Ebert, 2012; Kaltman, 2010; Meyer et al., 1997; Pui-Wah, 2010; Thomas & Centeio, 2020). Consequently, more research is needed on the impact of instructional methods in classrooms with limited movement on middle, high, and university-age students.

This exploratory sequential mixed methods study investigated perceptions from principals regarding planning for students to be physically active within the learning environment in middle and high schools. The study explored their viewpoints in an effort to better understand the extent to which they believed movement is essential for student cognitive and social health, given there is little to no emphasis on movement throughout the school day as teachers mainly utilize sedentary learning practices. Therefore, the purpose and intent of this

study were to understand the principal perspectives of movement in lecture-style classrooms in middle and high schools and to learn how intermediate (middle) and preparatory (high) principals believe they could develop an environment that promotes movement as part of instruction. Additionally, the study identified best practices for implementing movement into instruction through the lens of principals. Finally, the study explored principals' perceptions of the potential impact that is practicing non-sedentary behaviors while learning has on factors such as classroom management, student engagement, and differentiated instruction.

Summary of Findings

Research Question 1

The first research question explored principals' perspectives on movement breaks in lecture-style courses. This question intended to understand how middle and high school principals perceived the various benefits and limitations of using movement in lecture-style classrooms. A Principal's Survey was conducted to learn principals' perspectives on movement breaks regardless of content type or grade level. The survey demonstrated that 86% of the respondents think movement would be purposeful in improving student engagement. Additionally, most principals (74%) believe movement would help ELL and students with learning disabilities. A large majority (78%) think classroom management would improve with additional movement, while 76 percent believe movement would help students retain what they learn.

Following the survey, interviews were conducted, and the responses supported the survey results. All ten of the middle and high school principals interviewed agreed that movement would benefit classroom management. All of the principals also believed that movement as part

of learning would help students be more engaged in the learning process. In the interviews, participants shared their thoughts that in middle and high school, movement breaks are seen more as a transition or a short downtime from academic focus. Principals are concerned with teachers' willingness to use movement strategies and their ability to transition students from movement back to the content. Additionally, they recognize that learning while engaging in movement is critical and that cognitive growth is maximized.

The positive relationship between the survey and interview results indicates that principals believe movement benefits students' engagement, cognitive development, and retention. Sullivan (2018) elaborates on improving cognitive growth when movement is part of the learning experience in math, science, and language. Both the principals in this study and empirical studies support the integration of movement to improve student learning outcomes. Kilbourne et al. 's (2017) study explains the value of movement as an initiative to improve student engagement aligning with principals' perception that movement improves student engagement. Kuo et al.'s (2014) study explained the importance of movement in instruction to improve student retention. The study aligns with principals who participated in this study's perception that movement improves student retention. The survey and interview results indicated that the majority of the principals were in agreement regarding the benefits of incorporating movement into lecture-style courses. However, principals acknowledge that they are still uncertain whether movement opportunities are worth the obstacles of implementing movement into lecture-style courses.

Research Question 2

The second research question explored principal perspectives on movement in middle and high school classes. The question aimed to understand if middle and high school principals

perceive and understand movement as crucial to learning and cognitive growth in classes that are typically delivered lecture-style, including AP courses. The Principal's Survey results indicated that 84 percent of principal respondents believe some students learn more with kinesthetic instruction than with traditional instructional methods. A slight majority of the respondents (52%) agreed that these students are not having their learning needs met with traditional instructional methods. Notably, 82 percent of principals surveyed believe that teachers need consistent and ongoing professional development to implement movement in instructional practices effectively.

Nearly all survey respondents indicated that role-playing is purposeful in all grade levels The data indicate that principals believe movement is purposeful in providing students at all grade levels experiences that get them up and moving (Chesler & Fox, 1966). When asked if kinesthetic learners express their learning better in specific grade levels (early/elementary, middle, or high school), 75% agreed elementary, 18% agreed middle school, and only 7% agreed high school, indicating there may not be opportunities for these students to experience their learning outside of traditional methods.

In the interviews, principals indicated that movement would enable students to experience collaborative learning, promoting student engagement, and that movement is essential to whole-body learning. Principals indicated that whole-body learning especially benefits the school system after the pandemic, where students have learned sedentary practices and experienced three years of limited social interaction outside of screen time.

Research Question 3

The third research question explored how principals believe they could develop an environment that promotes movement as part of instructional practices in middle and high

schools. The question was based on the rationale that because middle and high school principals find movement valuable to student cognitive growth, then how could they promote its effective use. The interviews revealed that 90 percent of the principals were motivated, supportive, and encouraging of teachers implementing movement as part of their instructional methods.

The survey indicated a significant focus would be professional development for themselves and teachers. The follow-up interviews supported the survey results, with principals expressing their concern that implementing movement effectively is dependent on the following variables: (a) traditional instructional practices, (b) classroom management, and (C) teacher buy-in. However, interviews indicated that with the awareness of the concerns for implementing movement as a school initiative; principals are keenly aware of what they could do to establish an environment that promotes movement as part of instructional practices in middle and high schools. Principals agreed that modeling best instructional practices and supporting teachers with a movement initiative is critical to movement integration. Table 16 highlights the perceived importance of modeling best instructional practices to support instructional processes (mentioned 80 times), and that a culture of learning must be an initiative based upon data-driven instructional practices (Table 16 is available in the Appendix).

Planned classroom movement shifts traditional instruction, which is a sit-and-learn approach with the use of lecture to transfer knowledge. Principals expressed concern that traditional learning is ineffective for many students, who often fall behind. Overall, principals agreed that the majority of movement students experience as part of their daily routine is transitions between courses or after lunch to maintain state legal requirements. Principals indicated movement as part of instruction would be essential to developing a positive learning environment with equal importance as a brain break or as part of an instructional component.

Participants agreed that movement breaks were necessary to implement every 25 minutes to break up the class period. Principals indicated that the break would promote a positive school culture limiting student referrals, disruptive behavior, and excessive outbursts from students with ADHD.

Research Subquestion

The subquestion that emerged from research question 3 explored what principal's expressed as obstacles to creating an environment that promotes movement as part of learning. Each participant in the interview elaborated on the importance of supporting their teachers with practical strategies through professional development and data-supported research. All interviewees expressed concern about being able to support their teachers because of the lack of professional development opportunities for principals to learn about movement as part of instruction. Additionally, this study exposed the lack of empirical research available to principals regarding movement as part of instructional strategies for middle and high school students.

All ten principals indicated instructional strategies outside the scope of lecture-based instruction were limited to think-pair-share and project-based learning for incorporating movement into the learning environment. Also, the demands of covering vast amounts of content currently only permit teachers to remain surface level and not be able to reach a depth of knowledge; adding one more thing for teachers to do is unrealistic. Next, all interview participants discussed the emphasis on state testing that significantly impacts the focus on student learning from "learning" to "memorization."

Additionally, the pressure to prepare students for college minimizes the flexibility of principals to explore movement as part of instructional practices as a school initiative unless they are provided professional development and support for teachers. Students are expected to be

prepared for traditional lecture-style courses they will attend while enrolled at universities. Therefore, all interviewees concluded that middle and high schools, and two participants indicated universities, share a role in incorporating movement as part of students' learning process and culture. If the system changed and best instructional practices were a focus in place of memorization for test preparation, all participants indicated the desire for more courses offered to students to engage in movement. A general expectation for instructional practices that encourage movement should be incorporated into general and AP courses. Each participant expressed concern for students' emotional and mental health and the lifelong consequences of not being educated on the importance of movement in their daily routines.

Conclusions of Study

Research Question 1

The first research question asked what are principal perspectives on movement breaks in lecture-style courses. This question was addressed with a survey and interviews, and two themes emerged. Theme One is the opportunities and obstacles of implementing movement in instruction. First, principals in the survey and the interviews expressed concern regarding teachers' willingness to use movement strategies. Adding to the severity of the concern is the necessity for principals to be more comfortable with inexperienced and emergency certified teachers attempting to implement movement strategies. Principals indicated that they feared teachers losing control of the class if they attempted to integrate intentional movement. With the increased number of novice and emergency certified teachers, classroom management is a major concern for principals. Current concerns in education include high teacher turnover rates, which

negatively impacts classroom management (Ayers, 2003). Integration of intentional movement as part of learning is not just a focus of novice and emergency certified teachers; principals expressed concern with the buy-in of veteran teachers as well. In support of this concern, high school principal 6 stated,

> [Movement can be effective] It can be, but again if you do not have teacher buy-in and if they decide they are not going to do it. I have some [teachers] that absolutely are not going to do it because they do not think that kids will be amenable to it, and that is a mindset that is not possible. It is from a created mindset that indicates that, no, these students cannot do that. Unless we make it just part of our overall ongoing classroom climate, they are never going to do it. Now would I want that to be part of our climate? Absolutely but it will take us a while to get there.

Principals collectively agreed that the transition time from movement back to instruction is another concern. This mindset highlights how principals feel movement integration is an isolated learning component, not an intentional part of instruction. Principal's elaborated on how movement, if done effectively, would benefit classroom management long-term by indicating that, initially, classroom management may be compromised as teachers and students learn new procedures and strategies for movement integration; the long-term benefits for both teachers and students would be worth the effort.

Additionally, principals interviewed agreed there is a concern regarding student motivation to engage in movement. As students progress through school and are more self-conscious around their peers, their willingness to engage in movement may be minimized. Student willingness to participate in movement strategies may be further complicated due to traditional instructional methods promoting sit and listen learning expectations. To engage

students in intentional movement practices, crossing the midline strategies may be purposeful to motivate students to participate slowly. Fredericks et al. (2006) explained the positive impact on students when using specific movements, including crossing the midline in the learning environment. High school principal interview 8 said,

> I think [movement] would be beneficial. There are crossing the midline activities that the students don't necessarily have to take more than 10 seconds or get up out of their desk. There are things that you can do effectively that barely take any time at all, or you can tie it into the lesson itself. I mean, you can have an activity with a concept map or something where you're crossing the midline and [students] do not even realize that they are doing it. But it's an effective way to do it. So you could easily do it without students actually getting up out of their desks, moving and disrupting everything.

Principals unanimously agreed that Covid impacted students' social and cognitive growth. As a result, many strategies teachers use for their grade level will be ineffective because students are years behind in their learning. Therefore, in the interviews some principals indicated teachers need to learn instructional strategies of teachers grade levels below their expertise to promote student cognitive growth, including movement integration into the learning.

The second theme from the surveys and interviews is that intentional movement supports cognitive growth and retention. This study revealed that principals perceive movement breaks as opportunities for increasing cognitive growth and retention, especially for at-risk students, including ELL, ADHD, and those with disabilities. Kuo et al.'s (2014) study explained the importance of movement in instruction to improve student retention. The survey and interview data suggest that principals understand a positive relationship between movement and the learning process.

Interview data indicated that principals are knowledgeable about the impact movement has on learning. Middle school principal four elaborated,

> I think strategies like four squares, I think is a great example of a strategy that's effective even for honor students. I think it benefits all students. You know, we talk about students on both ends of the spectrum. You have students who maybe struggle academically, who have different needs, whether they be special ed or ELL. You have students who are very gifted on the other end of the spectrum. And so, I think that's a great example of a [movement] strategy that's effective even for honor students, students that struggle academically, and those who have different needs, whether they [students] are special ed or ELL. I think they all have a similar need to be up and moving and to be actively engaged in the learning process, and movement just supports that.

Middle school principal five provided a supportive statement regarding cognitive growth, stating, "I think [incorporating movement strategies] in your cognitive growth, you would grow exponentially." The data from the survey and interviews are further supported by Sullivan's (2018) research stating there is increased cognitive growth when movement is part of the learning experience in math, science, and language. Therefore, instructional practices that encourage intentional movement meet students where they are and promote an environment where they can be successful.

Research Question 2

The survey and interviews resulted in three themes emerging in response to this question. The study found theme three, movement is essential to whole-body learning, expressed 100 times during the interviews. In chapter 2 of the current study, medical research was explored to understand how areas within the brain are activated when movement occurs (Bell et al., 2006).

An explanation of how movement integration activates a whole-body experience promoting meaningful learning, was described with detail in the literature review, emphasizing the need to focus on whole-body learning. Supporting the purposefulness of movement for learning is the process "forebrain neurons are activated and use the neurotransmitters acetylcholine and gamma-aminobutyric acid (GABA)" to create signals for the brain which improve learning (King et al., 2020, pp. 1-10). During the interview, high school principal 8 described how her science background taught her an understanding of neuron activation through movement. In the interview, she expressed,

> I think that in order to make the neurons have permanent connections. I taught anatomy for 20 years, too. You know, all the things that we never forget how to do are things like ride a bike, drive a car, things that are connected to movement and activated with neurons. I think if you really thought about it, if you would connect everything to movement or some kind of brain trick, like a rhyme or a song or music or chunking the information into little sections that you can easily remember, then I think your brain has a better chance of remembering it.

Though principals collectively agree that intentional movement is necessary for learning activities, the study found that principals are aware that few to no teachers consistently incorporate movement into the learning environment and found that most movement occurs as transitions of 5-10 minutes daily. The literature mirrors the interview results in this study that movement integrated into the daily routine of the learning environment in all areas including lessons, activities, and transitions are positively correlated to student success (Chisholm & Spencer, 2017). Middle school principal five provided insight on principals' perspectives regarding movement as essential to whole-body learning when he expressed,

> So I think the ability to invite the whole person into the learning is critical. We are just not [currently] inviting the whole person in and we're not inviting them to be their full selves when we're just saying sit down and learn. The only movement that's happening is the hands as [students are] taking notes or the fingers, I guess, typing on the laptop keys. I just think we are not inviting the full person into the learning [and] if the goal is shaping fully flourishing human beings who are able to put their innovation, creativity, wonder, curiosity, excitement, passion to work on really pressing issues, then I think it takes a fully embodied person to do that.

This study indicated that principals invite and encourage intentional movement integration into the learning environment, but may need help understanding how to implement effective strategies.

In the context of this study, theme four, promoting student engagement, emerged from the data of the survey and interviews. The interview data revealed that principals mentioned intentional movement significantly increases student engagement 77 times. In the interviews, middle school principal four explained, "I think kids have a limited attention span, and so I think being able to break up instruction into chunks and being able to allow students some [intentional] movement between those chunks, I think is really important and keeps them [students] engaged." Kapitula's (2017) study explains the value of movement as an initiative to improve student engagement, aligning with principals' perception that movement improves student engagement. Principal ten stated, "I think understanding the project-based learning and how that can be incorporated into any content area." Principals expressed student engagement as students being on task and participating in the learning, which promotes an increase in student attendance, and was addressed 21 times in the interviews. Middle school principal two highlighted the

importance of movement to improve student engagement when she said, “Attendance is important because if they are not here, we do not even have a chance. That is what we have done to try to combat that."

Also, students engaged with the content through project-based learning opportunities was expressed 11 times in the interviews. High school principal nine vocalized, "I am a huge advocate for active learning environments and hands-on learning, project-based learning." Furthermore, principals expressed multiple times other content areas that are drastically lacking as part of the learning environment, including music and PE, are naturally integrated into learning with intentional movement. Art and music integration with movement allows students to express themselves and their emotions, collaborate with peers and connect learning to a broader scope of the content. The study findings in the survey and interview support Rini et al.’s (2020) research of students’ critical thinking through various instructional methods, including project-based learning as valuable to the learning environment.

Principals repeated how brain breaks as part of learning break up instruction promote student attention, which is critical for the more extended class periods in middle and high schools. Movement breaks are short breaks from the learning activity to give students time to process information. Principals in the interviews expressed how the majority of brain breaks that routinely occur are transitions between classes and after lunch. Each principal interviewed explained that the importance of brain breaks was equivalent to intentional movement integration. High school principal seven elaborated on the importance of brain breaks during the interview, stating, "I understand students who are sedentary have a loss of energy, and students would benefit from movement because it can increase student motivation." The factors expressed in this study have demonstrated the need for intentional movement while highlighting the

difficulty principals experiences in promoting the recommended amount of physical movement required to promote a healthy school environment.

The data collected regarding research question two resulted in the findings of theme five that intentional movement enables opportunities for collaboration. Student collaboration can occur with intentional movement integration through the use of integrating other content areas including music and art, project-based learning, and think-pair-share. Collaborative learning with intentional movement focuses on critical skills that are enforced through communication (Russell, 2012). Middle school principal four provided insight to theme five when saying, "movement activities also include a talk component as well. So as they are [students] moving they are talking. They are discussing ideas using key vocabulary as they are doing those [movement] strategies."

This study revealed that students engaged in the learning environment experience motivation and achievement when provided space for socialization. Such socialization through movement was described by principals as brain breaks and movement collaboration activities. Intentional movement allows students to connect to learning through relationships with peers and teachers. Students perceive their efforts to be relevant when they are provided space to think critically and experience positive social interactions (Russell, 2012). High school principal nine disclosed support of intentional movement benefits on social interactions during the interview by saying,

> Mental health is a contributing factor to students not being successful in school right now. So I think it is all part of the big picture, though, because students are being healthy human beings and up and moving and doing all of those things. I mean, really, you could

include that as part of positive mental health is getting up and moving, you know so. I do not know why it could not be part of all of that.

Research Question 3

Two themes emerged from the interviews. Theme six indicates movement shifts from traditional instructional methods. Traditional instructional methods were mentioned 67 times as sit-and-learn lectures centered on AP courses. High school principal nine reported,

> I think the perception is that kids learn more if they just come in, sit down, and we talk at them for 50 minutes. I do not think we are measuring the quality of that interaction as much as we are the time and the efficiency for a teacher just to present materials.

Middle school principal five expressed frustration with traditional methods by saying,

> I do think middle school becomes harder because it becomes more content that you are responsible for, and so I think, in fear of covering all the content, it shifts towards more of a lecture style. So I do think that there is a need for the timeframe to change. There is a need for a big shift educationally of how we roll out information.

These traditional instructional practices were mentioned 36 times during the interviews as ineffective, resulting in students failing behind, which is supported by Byun et al.'s 2013 research. During the interview, high school principal 8 stated, "We have to realize that the children of today were born with cell phones in their hands. They were born basically multitasking all the time. That is what they do. And so if we cannot embrace that and use it to our advantage, then we are failing."

As a result of traditional instructional practices, principals reiterated that memorization and worksheets often are the focus of learning, which is not promoting critical thinking opportunities for students. Expressing an understanding of this in more depth, high school

principal eight contributed, "As educators, we need to adjust our education to their lifestyle. We cannot expect them to be stuck, you know, back in 1985 when I was in school; we learned differently and life was different. But that is not the way life is anymore. So we as educators have to change with the times." Principals expressed motivation to shift from traditional instructional practices to practices centered on students' needs. For example, middle school principal five stated, "I also think another key importance of that is movement. You are able to cross the mid-section, and therefore you are going into both sides of the brain, and you are engaging all parts of that for meaning and memory and purpose, and all of that goes together." Principals want to implement instructional practices focusing on students' cognitive and social needs.

This study indicated in the literature review that the demand for classroom management is critical in creating a safe and student-centered learning environment (Benner & Garcia, 2019). The current study included theme seven, that movement improves classroom management practices. Data from the interviews support the idea that movement as part of instruction would be essential to developing a positive learning environment, which was mentioned 46 times by principals. Principal six offered a valuable perspective, "[Movement] could devolve into chaos, but that may happen if it is a lecture class anyway." Principals elaborated that classroom management is critical and will improve with planned movement integration, which would help with positive outcomes for student learning. High school principal eight explained, "If you have the correct culture and policies and procedures in your classroom, the students know how to do both of those effectively and quickly without taking away from time and making your instruction time more valid or more effective."

Research Subquestion

Theme eight emerged from the interview data, exposing a systemic educational concern and lack of professional development. First, novice teachers are a systemic concern that contributes to the challenges of movement integration sitewide. Every interviewed principal divulged the concern that increasing numbers of their teachers are novice or emergency certified with less than a year of experience. During the interview, middle school principal three highlighted this concern: “Ninety percent of my teachers are emergency certified." Expanding on this statement, principal two declared, "[The majority of my] teachers are brand spanking new. They do not know anything and have not been through education [programs]. They have only come through emergency certification.”

Furthermore, other factors, including testing, policies, and content overload, were referred to 26 times in the interview data. High school principal seven disclosed, "We try to cover so many things, and we do not go deep enough.” Middle school principal three added, "We are so far behind [with learning content] we do not have the luxury of taking a break." The literature in this study describes how students need to reach their full academic potential because the average attention span of adolescents is about 20 minutes; therefore, longer sedentary class periods result in content overload (Beeks, 2006; Caldwell, 2007).

Additionally, principals expressed 24 times during interviews that the demands of testing outweigh the focus on instructional methods that encourage critical learning. Principal five explained, "Yes, I think [testing] it is very much a problem because I think it goes back to teachers feeling overloaded with giving content that they replace good teaching practices with information regurgitation." Continuing with this theme, interview data described how preparation for lecture style integration at the university level means that intentional movement

cannot be a primary focus when preparing students for their future academic needs. High school principal eight shared,

> There is a disconnect between high school and college. Like, you go to college, and suddenly you are expected to take three tests and write 14-page papers. And if you did not do that, and so as educators, yes, we want them to be moving. We want them to be connecting to things. But if we do not prepare them for college, we are failing them as well. So we are riding the fence. We need to do some of this, but we also need to do some of this because we cannot send them off to college; not ready for that. So if we have done a lot of movement-based stuff, that is not what happens in college.

Another critical concern revealed in the study is that movement integration supports cognitive benefits; however, intentional movement is not expected in middle and high schools. High school principal six stated, "engaged learning, especially if you want those cognitive neurons firing,[is positive]." Elaborating on this idea, middle school principal two observed, "I think just the connection between movement and in the classroom is we are going to increase our scores." Every principal interviewed provided statements similar to high school principal seven, "I do feel movement is important and I think it would work, but I am not sure how it would work, but I know it would help, but I am not sure how to wrap my mind around how everything would work effectively." High school principal seven continued, "There is enough research that I cannot tell you but I know that there is enough research." Middle school principal one mirrored, "I do not know if this answers it exactly, but I do believe movement increases engagement."

Twenty times the interviewees expressed the idea that movement integration in the learning environment is a school responsibility. As principal eight admitted, “yes, we are responsible for that [movement] because that is a state requirement and student needs are not

being met.” Principals repeated the need for data-driven instructional strategies for middle and high school students. Middle school principal two articulated, "We go to research other times, and then we do not have time to research it, so we just move with whatever we can. I think we need more tools in the tool kit."

To continue with the final theme of the study, a lack of professional development was indicated by all the principals during the interviews. They reflected that movement as part of instruction is mainly geared to elementary levels; therefore, middle and high school principals do not know movement instructional strategies, expressing a need for more tools. High school principal ten declared, "quick and practical examples of this are how you can incorporate movement, and this is why it is beneficial" would be necessary for intentional movement integration at his site. Middle school principal two suggested, "show them [teachers] the data and make it meaningful for them, too. Give them the pieces they need to do it so they do not have to go out and try to find it themselves."

Successful implementation of movement requires that principals and teachers be thoroughly trained in intentional movement strategies, and the professional development needs to be ongoing (Koozer, 2019; Russell, 2012). Expanding on the importance of professional development for principals' movement implementation cannot be effective unless classroom management resources are available for novice and emergency certified teachers. Adams-Blair and Oliver (2011) amplified the importance of professional development for effectively integrating intentional movement into the learning environment. The study revealed that professional development support for middle and high school staff and principals is not available at the level it is needed.

Discussion of Findings

In the literature review of this study, medical studies were presented detailing the value of movement for cognitive growth and retention along with improving student's overall well-being. This study provided findings that MRI and PET scanshave shown that increased blood flow to the brain due to movement improves cognition (Bell et al., 2006; Ghilardi et al.; Stevens-Smith, 2006). Acknowledging that movement benefits students' cognitive growth, retention, and social development, the researcher explored the literature on movement integration into the learning environment. The theoretical framework of this study and the connection of medical and education research promotes the seriousness of exploring the current practice of traditional instructional practices in middle and high schools and at universities.

There is a problem with traditional instructional methods and the sedentary instructional practices in middle and high schools that continue to the university level. Currently, research trends focus on movement impact on early and elementary students and teachers. There is a gap in literature exploring movement as part of the learning environment for middle and high school students, teachers, and staff. Research regarding middle and high school principals' perceptions of intentional movement is needed. The study built on Bene et al.'s (2016) research where teachers' perceptions were explored, indicating the need for principals' support of movement integration. More should be understood about middle and high school principals' perceptions regarding intentional movement and methods to help support intentional movement initiatives sitewide to provide students with a positive educational experience.

This study adds to the body of research regarding how middle and high school principals perceive intentional movement as purposeful to the learning environment and what obstacles they must overcome to implement movement as an instructional strategy. The study concluded

that principals desire to integrate intentional movement strategies over traditional sedentary practices to promote classroom management, student engagement, and cognitive growth. The data revealed eight emerging themes from middle and high school principals' perspectives that will provide an opportunity for additional research.

There is a significant need for an in-depth understanding of how intentional movement as part of instruction influences student learning outcomes. This study found that principals encourage movement as part of the learning environment through think-pair-share, project-based learning, and transitions. The study noted how principals expressed that intentional movement is valuable and should be prioritized. However, they felt that not all courses could integrate movement and that the focus is more on student stamina to sit for long periods of class time in preparation for state testing and lecture-style courses at the university level. Principals observed that this mindset had created a culture with less student engagement, increased classroom management issues, and unfulfilled needs of students identified as ELL, ADHD, or with special needs. All interviewed principals expressed a desire for movement to occur frequently to improve student learning and retention. High school principal nine stated,

> If we could get them to work collaboratively and use movement to help, the students would be the winners. Teachers would be reaping the benefits because the organization's responsibility comes down to the student as they work in collaborative groups. There are more of a student-led classroom than a teacher-led one, so they have more buy-in because they understand everybody has a role.

Middle school principal participant 8 asserted,

> I think that integrated movement in the classroom as part of a school initiative would be a positive experience for both teachers and students. I think if we could get every teacher to

see the [value] of movement and increase the amount of movement in the instruction, that [the] mental health of students would increase because these kids would be getting more and their learning would increase.

Furthermore, this study discovered that principals shared perspectives on obstacles preventing them from incorporating intentional movement into the learning environment. Those barriers are the need for more strategies provided through professional development and the expectation for students to sit for longer durations of time as they progress through their educational experiences in preparation for continued studies at the university level. High school principal participant eight disclosed, "I think many teachers will not be comfortable with integrating movement into the classroom because of fear of losing control. Their purpose is not to get students up and moving. Their focus is to get students to do well on a test, and that is going to take time away from that." High school principal nine contributed, "I think that in most [AP] classes, it would be harder to incorporate movement because it is difficult to naturally have it fit because those courses have a great deal of content to cover and those courses usually are stage designed [lecture necessary]."

The obstacles expressed by principals suggest it would be valuable to investigate on a larger scale how the educational system demands of content overload and testing impact instruction. The interviews provided data supporting the notion that transition times were the most practiced form of movement in a student's day. Principals recognize the need for movement as they feel it is vital to the learning environment, but openly admit movement does not occur. Additional research is necessary to explore how intentional movement can be incorporated into instruction instead of a transition. Furthermore, the principals in this study divulged that traditional instructional methods contradict research as it relates to improving cognitive growth.

Strong et al. (2005) explored and identified that daily physical activity for at least 30 to 60 minutes reduces behavior and mental health issues and improves attention, creating more engaging, meaningful classes. Additionally, sitting for long periods prevents a student from significant cognitive growth and retention because the brain is not actively engaged in learning (Chisholm & Spencer, 2017). Movement is positively correlated to students' overall health, emotional, physical, and mental health.

This study supports the idea that principals need support to provide intentional movement strategies and that the educational system needs to be evaluated for improved research-based practices. The interviews were purposeful in learning that all principals expressed they believed that intentional movement improved students' overall health, but a sedentary approach was practiced more in schools. The reason behind this practice is the idea that movement is easier to implement in early and elementary grades because of less content and minimized demands on state testing. However, no research indicates that longer durations of sedentary practices improve cognitive performance or that movement is less beneficial for cognitive growth and retention as individuals age. High school principal six admitted, "I would like to have more movement classes available for students to take advantage of, and I would like movement opportunities for teachers, including yoga, because of the benefits to overall health."

Interviews provided themes concluding that principals would like a shift from traditional instructional practices, but do not have the skills, support, or resources to effectively initiate the instructional change. Additionally, there would need to be a systemic shift in education that would provide the space, opportunity, and support for principals to focus on instructional best practices not classroom management issues, inexperienced and emergency certified teachers' needs, content overload, or state testing demands. The results of this study should bring

awareness to educational leaders, policymakers, and medical professionals to shape literature and instructional practices that transition from traditional instructional methods to those that are more engaged in active learning.

Recommendations for Future Research

The findings revealed in this study point to five possible areas to consider for future research:

- As discussed in the literature review, the majority of studies focus on students, teachers, and principals perspectives in early and elementary education. This study primarily focused on middle and high school principals in Oklahoma. In the future, research should be conducted to broaden the scope of the study to include principals from different areas.
- Research that equips middle and high school principals with strategies and insights for supporting teachers with effective intentional movement practices is necessary. Principals need to be provided with strategies for movement integration that they can provide to their teachers to effectively integrate movement into the learning environment. The strategies would be beneficial to inexperienced, emergency certified, veteran, and teachers whose typical instructional practices are lecture based.
- Assuming future research provides strategies and insights for middle and high school principals to equip their teachers, future research might explore what methods and resources can be provided through conferences and professional development. The results of this study indicate an urgency to provide ongoing conferences and professional development for middle and high principals regarding strategies to effectively implement both brain breaks and movement as a site wide initiative for improving instruction.

Additionally, a focus of the conferences and professional development should include techniques for movement integration focused on classroom management strategies.

- This study exposes the need for a study into the learning outcomes and student engagement in middle and high schools to provide data driven results for principals to make the claim movement is essential to student learning and engagement. There is a need for research to explore the cognitive growth and retention outcomes when brain breaks and other interventions that incorporate movement are practiced rather than support the integration of intentional movement into the instruction for the purpose of learning. Also, future research may consider exploring whether there is a certain duration of time to implement intentional movement or if there are certain times within a forty-minute class the intentional movement should be implemented to maximize student learning and engagement.
- Research is needed to evaluate the relationship between movement and students' emotional, mental, and physical health in middle and high schools to determine if schools are a healthy environment for students to thrive. Future research should include ELL and ADHD students to explore if these students experience more success with intentional movement integration.

Implications for Policy and Practice

The results of this study provided insight into how principals describe the value of intentional movement in middle and high schools. A focus on middle and high school principals' perspective on movement is critical because great schools do not exist apart from inspired principals (Gray & Lewis, 2013) The study learned the benefits and obstacles of integrating intentional movement and brain breaks as part of the learning environment. Results of this study

contributed to relevant literature such as Benes et al. (2016) exploring teachers' perception of movement integration, and that concluded there was a need for principals' support. The analysis of the interview data provided in-depth understanding of the obstacles principles face when implementing intentional movement in middle and high schools. The need for additional research regarding international movement impact on students in middle and high schools are supported by the current study.

Results indicated that principals cultivate the school climate, implement innovative instructional methods, and facilitate a positive, healthy environment for students and teachers. Couros (2015) states that educators must continuously seek innovation and learn new methods for improving instruction. As this study indicated, middle and high school principals echo teachers' corresponding responses on the benefit of intentional movement integrations (Benes et al., 2016). Studies indicate that intentional movement benefits students' cognitive growth and engagement (Holzschneider et al., 2012; Lin et al., 2012). Students benefit from the whole-body learning experience, collaborative learning, actively engaging their brain while learning as they are doing, and are more engaged in the learning process (Dooly, 2008; Rickard et al., 1995). The school environment is enriched when intentional movement is implemented as part of the learning. Therefore, intentional movement should be a routinely practiced instructional strategy, especially in more extended class periods with ample instructional content.

Principals support movement practices in traditional lecture-based classes and believe teachers should receive support in implementing these practices. Quality professional development needs to be provided to principals to provide them with the "why" behind the strategy of intentional movement, then the "how" to support teachers in effectively integrating intentional movement into their instruction (Fenwick & Pierce, 2002). Professional development

is needed for principals to be encouraged and able to provide meaningful content that enables and equips them with the necessary skills to support their teachers. Professional development is a critical concern for principals as many teachers are overwhelmed with their responsibilities because they are inexperienced or emergency certified. Principals need strategies and resources to support the various needs of their teachers. With this in mind, principals acknowledge that intentional movement may interfere with classroom management initially, especially for new and inexperienced teachers. However, they firmly believe the potential benefits are significant if the teacher could strengthen their classroom management. Principals may experience an easier transition of integrating intentional movement if they do not have to create their own content or intentional movements, but are provided specific movements that teachers can easily integrate into their instruction.

Another recommendation for practice is to examine the systemic lack of promoting healthy lifestyles in schools. Early and elementary education provides students and families with nutrition and fitness programs in and outside the school. However, as students progress through the educational system, students are provided minimal movement and nutritional opportunities. This study demonstrated that testing demands shifted the focus from student learning to student memorization for testing in middle and high schools, which is the lowest form of learning. As part of this process, lecture-based instruction has become routine, eliminating best instructional practices that continue at the university level. The study indicated that principals believe ample intentional movement and collaboration opportunities lead to improved student engagement, cognitive growth, and retention.

This study adds to research on instructional practices, overall student health, and principals' perspectives in middle and high schools. This study's intent was to provide a voice to

middle and high school principals regarding what is known about the benefits of physical movement as part of the learning environment and the factors that influence the implementation of intentional movement as part of instruction. The findings of this study imply that principals understand the relationship between movement and cognitive growth, how movement improves student engagement, and the benefits to students and teachers overall when movement is implemented. From this study, middle and high school principals' understanding of intentional movement for learning needs to be explored in greater detail. The interviews and surveys indicated principals expressed little to no differentiation between movement as breaks or intentional movement for learning instruction. The demands of testing and university preparation promote the structure of sedentary instructional practices. More research is suggested to improve the approach to intentional movement as an instructional strategy for middle and high school students.

Chapter Summary

The findings of this study included quantitative data based on a survey of principals to learn if there was interest in intentional movement to enhance learning in the classroom. Next, qualitative data through interviews were collected to determine how principals believe movement could benefit students' engagement, collaboration, and overall health. The study explains through eight themes how principals believe they could develop an environment that promotes movement as part of instructional practices in middle and high schools, particularly in lecture-style classrooms. The study found that principals encounter obstacles to integrating movement as a school initiative, which is exacerbated considering many of the teachers are inexperienced or emergency certified and require classroom management strategies.

As the responsibilities of principals continue to focus on being instructional leaders of their respective schools, it is incumbent upon principals to be equipped with knowledge and resources to support teachers and, in turn, to improve student achievement. The study indicates that the demands on principals exceed the amount of time available for effectively executing purposeful learning opportunities, such as intentional movement to improve student learning opportunities and supporting teachers in best instructional practices. Efforts to promote intentional movement integration in the school environment could be bolstered by increasing the amount of supportive data through research in middle and high schools. These efforts would contribute to a systemic change that would benefit student cognitive growth and improve school culture for teachers and principals.

References

Abril, C. R. (2011). Music, movement, and learning. *MENC handbook of research on music learning*, *2*, 92-129.

Adams-Blair, H., & Oliver, G. (2011). Daily classroom movement: Physical activity integration into the classroom. *International Journal of Health, Wellness & Society, 1*(3), 147-154.

Adžić, S., Al-Mansour, J., Naqvi, H., & Stambolić, S. (2021). The impact of video games on students' educational outcomes. *Entertainment Computing*, *38*, 100412.

Aguilar Morocho, E. K., Paula Chica, M. G., Hernández Mite, K. D., Rivadeneira Arias, K. N., & López Arias, S. M. (2022). Manual of physical exercises applied to students who present tiredness during classes. *Journal of Language and Linguistic Studies*, *18*(2), 260-275.

Alberto, R., Shvarts, A., Drijvers, P., & Bakker, A. (2022). Action-based embodied design for mathematics learning: A decade of variations on a theme. *International Journal of Child-Computer Interaction*, *32*, 100419.

Aldiabat, K. M., & Le Navenec, C. L. (2018). Data saturation: The mysterious step in grounded theory methodology. *The qualitative report*, *23*(1), 245-261.

Alhamisi, J. C. (2011). Comparison of alternative and traditional teacher preparation programs for first year special education teachers in northwest Ohio. *Journal of the National Association for Alternative Certification*, *6*(1), 13-25.

Ali, A., Aziz, Z., & Majzub, R. (2011). Teaching and learning reading through play. *World Applied Sciences Journal*, *14*(4), 15-20.

American Academy of Pediatrics. (2001). Committee on Sports Medicine and Fitness and Committee on School Health: Organized sports for children and preadolescents. *Pediatrics*, *107*, 1459-1462.

Anderson, J. (2016). The impact of sensory-based movement activities on students in general education.

Annansingh, F., & Howell, K. (2016). Using phenomenological constructivism (PC) to discuss a mixed method approach in information systems research. *Electronic Journal of Business Research Methods*, *14*(1), 39-49.

Apdy, A. P. R., & Asrifan, A. (2019, April). The Chinese mime game in teaching vocabulary in EFL classroom. In *Proceedings of the 65th TEFLIN International Conference* (Vol. 65, No. 01).

Applefield, J. M., Huber, R., & Moallem, M. (2000). Constructivism in theory and practice: Toward a better understanding. *The High School Journal*, *84*(2), 35-53.

Apriyanto, T., Manopo, B. A., Sudijandoko, A., Tahki, K., Sujiono, B., Resza, A. M., ... & Aprilo, I. (2021). Impact of brain breaks on supporting the physical activity during the Covid-19 Pandemic in elementary school. *Journal of Physical Education and Sport*, *21*, 2312-2317.

Archambault, L., Wetzel, K., Foulger, T. S., & Williams, M. K. (2010). Professional development 2.0: Transforming teacher education pedagogy with 21st-century tools. *Journal of Digital Learning in Teacher Education*, *27*(1), 4-11.

Ashmos Plowman, D., & Smith, A. D. (2011). The gendering of organizational research methods: Evidence of gender patterns in qualitative research. *Qualitative Research in Organizations and Management: An International Journal*, *6*(1), 64-82.

Atlay, M., Gaitán, A., & Kumar, A. (2008). Stimulating learning–Creating CRe8. *Understanding learning-centred higher education*, 231-250.

Ayers, W. (2004). *Teaching the personal and the political: Essays on hope and justice*. Teachers College Press.

Babakr, Z., Mohamedamin, P., & Kakamad, K. (2019). Piaget's cognitive developmental theory: Critical review. *Education Quarterly Reviews*, *2*(3).

Baecher, L., Artigliere, M., Patterson, D. K., & Spatzer, A. (2012). Differentiated instruction for English language learners as "variations on a theme" teachers can differentiate instruction to support English language learners. *Middle School Journal*, *43*(3), 14-21.

Baecher, L. H. (2011). Differentiated instruction for English language learners: Strategies for the secondary English teacher. *The Wisconsin English Journal*, *53*(2), 64-73.

Bailey, D. P. (2017). Sedentary behavior in human health and disease. *Frontiers in Physiology*, *8*, 901.

Bailey, C. G., & DiPerna, J. C. (2015). Effects of classroom-based energizers on primary grade students' physical activity levels. *Physical Educator*, *72*(3), 480.

Bartlett, T. (2011). The case for play. *The Education Digest*, *77*(1), 27.

Beckman, M. (1990). Collaborative learning: Preparation for the workplace and democracy? *College Teaching*, *38*(4), 128-133.

Beeks, W. (2006). The 'millionaire' method for encouraging participation. *Active Learning in Higher Education, 7*(1), 25-36.

Bell, E. C., Willson, M. C., Wilman, A. H., Dave, S., & Silverstone, P. H. (2006). Males and females differ in brain activation during cognitive tasks. *Neuroimage*, *30*(2), 529-538.

Benes, S., Finn, K. E., Sullivan, E. C., & Yan, Z. (2016). Teachers' perceptions of using

movement in the classroom. *Physical Educator*, *73*(1), 110.

Benner, G. J., & Garcia, J. J. (2019). Comprehensive trauma-informed care for the whole community: The whole child initiative model. *Educational Considerations*, *44*(2), 1-12.

Bennett-Levy, J. (2006). Therapist skills: A cognitive model of their acquisition and refinement. *Behavioral and Cognitive Psychotherapy*, *34*(1), 57-78.

Bermejo-Cantarero, A., Alvarez-Bueno, C., Martinez-Vizcaino, V., Garcia-Hermoso, A., Torres-Costoso, A. I., & Sanchez-Lopez, M. (2017). Association between physical activity, sedentary behavior, and fitness with health-related quality of life in healthy children and adolescents: A protocol for a systemic review and meta-analysis. *Medicine, 96*(12).

Biller, L. (2002). *Creating brain-friendly classrooms: Practical instructional strategies for education*. R&L Education.

Birks, M., Coyle, M., Porter, J., & Mills, J. (2011). Perceptions of hand hygiene amongst health care workers in Sibu, East Malaysia. *International Journal of Infection Control*, *8*, 10-13.

Birt, L., Scott, S., Cavers, D., Campbell, C., & Walter, F. (2016). Member checking: A tool to enhance trustworthiness or merely a nod to validation?. *Qualitative Health Research*, *26*(13), 1802-1811.

Biswas, A., Oh, P. I., Faulkner, G. E., Bajaj, R. R., Silver, M. A., Mitchell, M. S., & Alter, D. A. (2015). Sedentary time and its association with risk for disease incidence, mortality, and hospitalization in adults: a systemic review and meta-analysis. *Annals of Internal Medicine*, *162*(2), 123-132.

Bitsch, V. (2005). Qualitative research: A grounded theory example and evaluation criteria. *Journal of Agribusiness*, *23*(345-2016-15096), 75-91.

Blakemore, C. L. (2003). Movement is essential to learning. *Journal of Physical Education, Recreation & Dance*, *74*(9), 22-25.

Blaydes, J., & Hess, C. (2004). *Action-based learning lab manual*. *Murphy, Texas: Action Based Learning*.

Block, R. A., & Zakay, D. (2008). Timing and remembering the past, the present, and the future. In *psychology of time* (pp. 367-394). Emerald Publishing.

Boeije, H. (2002). A purposeful approach to the constant comparative method in the analysis of qualitative interviews. *Quality and Quantity*, *36*, 391-409.

Bloom, B. S., Englehart, M. D., Furst, E. J., Hill, W. H., & Krathwohl, D. R. (1956). Taxonomy of educational objectives: Handbook I. *Cognitive domain.* David McKay.

Boone, H. N., & Boone, D. A. (2012). Analyzing Likert data. *Journal of Extension*, *50*(2), 1-5.

Bowen, G. A. (2009). Document analysis as a qualitative research method. *Qualitative Research Journal*, *9*(2), 27-40.

Bowman, M. A., Vongkulluksn, V. W., Jiang, Z., & Xie, K. (2022). Teachers' exposure to professional development and the quality of their instructional technology use: The mediating role of teachers' value and ability beliefs. *Journal of Research on Technology in Education*, *54*(2), 188-204.

Boyle, M. H., Georgiades, K., Duncan, L., Comeau, J., Wang, L., & 2014 Ontario Child Health Study Team. (2019). The 2014 Ontario child health study–methodology. *The Canadian Journal of Psychiatry*, *64*(4), 237-245.

Bresler, L. (2004). Dancing the curriculum: Exploring the body and movement in elementary schools. In *Knowing bodies, moving minds: Towards embodied teaching and learning*, (pp. 127-151). Springer Publishing.

Buckwalter, J. A., & DiNubile, N. A. (1997). Decreased mobility in the elderly: The exercise antidote. *The Physician and Sportsmedicine*, *25*(9), 126-133.

Burns, M., Bally, J., Burles, M., Holtslander, L., & Peacock, S. (2022). Constructivist grounded theory or interpretive phenomenology. Methodological choices within specific study contexts. *International Journal of Qualitative Methods*, *21*, 16094069221077758.

Butina, M. (2015). A narrative approach to qualitative inquiry. *Clinical Laboratory Science*, *28*(3), 190-196.

Byun, W., Blair, S. N., & Pate, R. R. (2013). Objectively measured sedentary behavior in preschool children: Comparison between Montessori and traditional preschools. *International Journal of Behavioral Nutrition and Physical Activity*, *10*(1), 1-7.

Caldwell, J. E. (2007). Clickers in the large classroom: Current research and best-practice tips. *Cell Biology Education, 6*, 9-20.

Carlson, J. A., Engelberg, J. K., Cain, K. L., Conway, T. L., Geremia, C., Bonilla, E., ... & Sallis, J. F. (2017). Contextual factors related to implementation of classroom physical activity breaks. *Translational Behavioral Medicine*, *7*(3), 581-592.

Carlson, S. A., Fulton, J. E., Lee, S. M., Maynard, L. M., Brown, D. R., Kohl III, H. W., & Dietz, W. H. (2008). Physical education and academic achievement in elementary school: Data from the early childhood longitudinal study. *American Journal of Public Health*, *98*(4), 721-727.

Casaletto, K. B., Staffaroni, A. M., Wolf, A., Appleby, B., Brushaber, D., Coppola, G., … & Yaffe. (2020). Active lifestyles moderate clinical outcomes in autosomal dominant frontotemporal degeneration. *Alzheimer's & Dementia*, *16*(1), 91-105.

Cassilhas, R. C., Tufik, S., & de Mello, M. T. (2016). Physical exercise, neuroplasticity, spatial learning and memory. *Cellular and Molecular Life Sciences*, *73*, 975-983.

Charmaz, K. (2006). *Constructing grounded theory: A practical guide through qualitative analysis*. Sage.

Charmaz, K. (2008). Grounded theory as an emergent method. *Handbook of emergent methods*, *155*, 172.

Charmaz, K., & Bryant, A. (2010). *The Sage handbook of grounded theory*. Sage.

Charmaz, K., & Bryant, A. (2011). Grounded theory and credibility. *Qualitative Research*, *3*, 291-309.

Charmaz, K., & Thornberg, R. (2021). The pursuit of quality in grounded theory. *Qualitative Research in Psychology*, *18*(3), 305-327.

Chang, L. (1994). A psychometric evaluation of 4-point and 6-point Likert-type scales in relation to reliability and validity. *Applied Psychological Measurement*, *18*(3), 205-215.

Chesler, M. and Fox, R. (1966). Role playing Methods in the Classroom. *Chicago: Science Research Associates.*

Chisholm, A., & Spencer, B. (2017). Let's get moving!: Eight ways to teach information literacy using kinesthetic activities. *Pennsylvania Libraries: Research & Practice*, *5*(1), 26-34.

Choi, J., & Yi, Y. (2016). Teachers' integration of multimodality into classroom practices for English language learners. *Tesol Journal*, *7*(2), 304-327.

Coe, D. P., Pivarnik, J. M., Womack, C. J., Reeves, M. J., & Malina, R. M. (2006). Effect of physical education and activity levels on academic achievement in children. *Medicine and Science in Sports and Exercise*, *38*(8), 1515.

Coertjens, L., Vanthournout, G., Lindblom-Ylänne, S., & Postareff, L. (2016). Understanding individual differences in approaches to learning across courses: A mixed method approach. *Learning and Individual Differences*, *51*, 69-80.

Cole, K., Waldrop, J., D'Auria, J., & Garner, H. (2006). An integrative research review: Effective school-based childhood overweight interventions. *Journal for Specialists in Pediatric Nursing*, *11*(3), 166-177.

Conway, C. M. (2020). *Teaching music in higher education*. Oxford University Press.

Copeland, K. A., Sherman, S. N., Kendeigh, C. A., Kalkwarf, H. J., & Saelens, B. E. (2012). Societal values and policies may curtail preschool children's physical activity in child care centers. *Pediatrics, 129(2), 265-274.*

Corbin, J. M., & Strauss, A. (1990). Grounded theory research: Procedures, canons, and evaluative criteria. *Qualitative sociology*, *13*(1), 3-21.

Creswell, J. W. (2002). *Educational research: Planning, conducting, and evaluating quantitative* (Vol. 7). Prentice Hall.

Creswell J. W. (2003) *Research design: Qualitative, quantitative and mixed methods approaches.* Sage.

Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and conducting mixed methods research* (3rd ed.). Sage.

Croasmun, J. T., & Ostrom, L. (2011). Using likert-type scales in the social sciences. *Journal of adult education*, *40*(1), 19-22.

Cronholm, S. (2002, April). Grounded theory in use–A review of experiences. In *Proceedings of European Conference on Research Methods in Business, Reading*.

D'Agostino, E. M., Day, S. E., Konty, K. J., Larkin, M., Saha, S., & Wyka, K. (2018). The association of fitness and school absenteeism across gender and poverty: A prospective multilevel analysis in New York City middle schools. *Annals of Epidemiology*, *28*(3), 189-196.

de Melo Coelho, F. G., Gobbi, S., Andreatto, C. A. A., Corazza, D. I., Pedroso, R. V., & Santos-Galduróz, R. F. (2013). Physical exercise modulates peripheral levels of brain-derived neurotrophic factor (BDNF): A systemic review of experimental studies in the elderly. *Archives of Gerontology and Geriatrics*, *56*(1), 10-15.

Demir, K., & Karabeyoglu, Y. A. (2015). Factors associated with absenteeism in high schools. *Eurasian Journal of Educational Research*, *16*(62).

Deterding, N. M., & Waters, M. C. (2021). Flexible coding of in-depth interviews: A twenty-first-century approach. *Sociological Methods & Research*, *50*(2), 708-739.

Diamond, A. (2015). Effects of physical exercise on executive functions: Going beyond simply moving to moving with thought. *Annals of Sports Medicine and Research*, *2*(1), 1011.

Dooly, M. (2008). Constructing knowledge together. *Telecollaborative language learning: A guidebook to moderating intercultural collaboration online*, 21-45.

Douglas, M. R. (2003). The statistics of string/M theory vacua. *Journal of High Energy Physics*, *2003*(05), 046.

Dunn, R., & Brasco, R. (2006). Supervisory styles of instructional leaders. *School*

Administrator, *63*(8), 40.

Dyson, B. J. (2008). Assessing small-scale interventions in large-scale teaching: A general methodology and preliminary data. *Active Learning in Higher Education*, *9*(3), 265-282.

Ebert, M. (2012). Yoga in the classroom. *Green Teacher*, (97), 3.

Egerter, S., Braveman, P., Sadegh-Nobari, T., Grossman-Kahn, R., & Dekker, M. (2009). Education matters for health. *RWJF Commission to Build a Healthier America.*

Emerson, A. (2022). The case for trauma-informed behaviour policies. *Pastoral Care in Education*, *40*(3), 352-359.

Erickson, H. C. (2017). *Elementary teacher perceptions regarding the use of kinesthetic learning strategies* [Doctoral dissertation, Walden University].

Ergorul, C., & Eichenbaum, H. (2004). The hippocampus and memory for "what,""where," and "when." *Learning & Memory*, *11*(4), 397-405.

Evans, S. E., Beauchamp, G., & John, V. (2015). Learners' experience and perceptions of informal learning in key stage 3 music: A collective case study, exploring the implementation of musical futures in three secondary schools in Wales. *Music Education Research*, *17*(1), 1-16.

Fan, X., & Cao, Z. B. (2017). Physical activity among Chinese school-aged children: National prevalence estimates from the 2016 Physical Activity and Fitness in China–The Youth Study. *Journal of Sport and Health Science*, *6*(4), 388-394.

Fedewa, A., Davis, M. A., & Ahn, S. (2015). Effects of stability balls on children's on-task behavior, academic achievement, and discipline referrals: A randomized controlled trial. *American Journal of Occupational Therapy*, *69*(2), 1-9.

Felder, R. M., & Brent, R. (2009). Active learning: An introduction. *ASQ higher Education*

Brief, *2*(4), 1-5.

Fenwick, L. T., & Pierce, M. C. (2002). Professional Development of Principals. *ERIC Digest.*

Ferguson, L. (2005). The role of movement in elementary music education: A literature review. *Update: Applications of Research in Music Education*, *23*(2), 23-33.

Ferketich, S. (1990). Internal consistency estimates of reliability. *Research in Nursing & Health*, *13*(6), 437-440.

Field, T., Diego, M., & Sanders, C. E. (2001). Exercise is positively related to adolescents' relationships and academics. *Adolescence*, *36*(141), 105.

Fink, A. (2002). *How to ask survey questions* (Vol. 1). Sage.

Fink, D. B., & Ramstetter, C. L. (2018). "Even if they're being bad, maybe they need a chance to run around": What children think about recess. *Journal of School Health*, *88*(12), 928-935.

Finkel, E. (2012). Principals as instructional leaders. *District Administration*, *48*(6), 50.

Finn, K. E., & McInnis, K. J. (2014). Teachers' and students' perceptions of the active science curriculum: Incorporating physical activity into middle school science classrooms. *Physical Educator*, *71*(2), 234.

Fofana, F., Bazeley, P., & Regnault, A. (2020). Applying a mixed methods design to test saturation for qualitative data in health outcomes research. *PloS One*, *15*(6), e0234898.

Fontanella, B. J. B., Campos, C. J. G., & Turato, E. R. (2006). Coleta de dados na pesquisa clínico-qualitativa: Uso de entrevistas não-dirigidas de questões abertas por profissionais da saúde. *Revista Latino-Americana de Enfermagem*, *14*, 812-820.

Fosnot, C. T., & Perry, R. S. (1996). Constructivism: A psychological theory of learning. *Constructivism: Theory, Perspectives, and Practice*, *2*(1), 8-33.

Fraser-Thomas, J., & Côté, J. (2006). Youth sports: Implementing findings and moving forward with research. *Athletic Insight*, *8*(3), 12-27.

Fratiglioni, L., Paillard-Borg, S., & Winblad, B. (2004). An active and socially integrated lifestyle in late life might protect against dementia. *The Lancet Neurology*, *3*(6), 343-353.

Fredericks, C. R., Kokot, S. J., & Krog, S. (2006). Using a developmental movement program to enhance academic skills in grade 1 learners. *South African Journal for Research in Sport, Physical Education and Recreation*, *28*(1), 29-42.

Fulginiti, E. (2009). Using movement and kinesthetic learning to teach academics in a fourth-grade classroom.

Fung, C. K. H., & Cheng, D. P. W. (2012). Consensus or dissensus? Stakeholders' views on the role of play in learning. *Early Years*, *32*(1), 17-33.

Gardner, H., Feldman, D. H., Krechevsky, M., & Chen, J. Q. (Eds.). (1998). *Project Zero frameworks for early childhood education: Project Spectrum–early learning activities* (Vol. 2). Teachers College Press.

Gaston, A., Moore, S., & Butler, L. (2016). Sitting on a stability ball improves attention span and reduces anxious/depressive symptomatology among grade 2 students: A prospective case-control field experiment. *International Journal of Educational Research*, *77*, 136-142.

Gauvain, M., & Rogoff, B. (1989). Ways of speaking about space: The development of children' skill in communicating spatial knowledge. *Cognitive Development*, *4*(3), 295-307.

Geltner, J. A., & Clark, M. A. (2005). Engaging students in classroom guidance: Management strategies for middle school counselors. *Professional School Counseling*, *9*(2), 2156759X0500900213.

Gehris, J. S., Gooze, R. A., & Whitaker, R. C. (2015). Teachers' perceptions about children's movement and learning in early childhood education programmes. *Child: Care, Health and Development*, *41*(1), 122-131.

Ghilardi, M. F., Ghez, C., Dhawan, V., Moeller, J., Mentis, M., Nakamura, T., ... & Eidelberg, D. (2000). Patterns of regional brain activation associated with different forms of motor learning. *Brain research*, *871*(1), 127-145.

Glaser, B. G. (1965). The constant comparative method of qualitative analysis. *Social Problems*, *12*(4), 436-445.

Glaser, B. G. (1999). The future of grounded theory. *Qualitative Health Research*, *9*(6), 836-845.

Goldspink, C., & Foster, M. (2013). A conceptual model and set of instruments for measuring student engagement in learning. *Cambridge Journal of Education*, *43*(3), 291-311.

Gottfried, A. E. (1985). Academic intrinsic motivation in elementary and junior high school students. *Journal of Educational Psychology, 77*(6), 631–645. https://doi.org/10.1037/0022-0663.77.6.631

Graham, S., Harris, K. R., Fink, B., & MacArthur, C. A. (2001). Teacher efficacy in writing: A construct validation with primary grade teachers. *Scientific Studies of Reading*, *5*(2), 177-202.

Graham, G., Parker, S., Wilkins, J. L., Fraser, R., Westfall, S., & Tembo, M. (2002). The effects of high stakes testing on elementary school art, music, and physical education. *Journal of Physical Education, Recreation & Dance*, *73*(8), 51-54.

Gray, D. L., & Lewis, J. P. (2013). Lessons Learned in Preparing Principals to Become Instructional Leaders. *International Journal of Educational Leadership Preparation*, *8*(1), 140-143.

Gray, T., & Madson, L. (2007). Ten easy ways to engage your students. *College Teaching*, *55*(2), 83-87.

Griffiths, M. D. (2010). Trends in technological advance: Implications for sedentary behaviour and obesity in screenagers. *Education and Health*, *28*(2), 35-38.

Grissom, J. B. (2005). Physical fitness and academic achievement. *Journal of Exercise Physiology Online*, *8*(1).

Groleau D., Pluye P. and Nadueau L. (2007) A mix-method approach to the cultural understanding of distress and the non-use of mental health services. *Journal of Mental Health*, *16*(6), 731–741.

Guetterman, T. C., Babchuk, W. A., Howell Smith, M. C., & Stevens, J. (2019). Contemporary approaches to mixed methods–grounded theory research: A field-based analysis. *Journal of Mixed Methods Research*, *13*(2), 179-195.

Guskey, T. R. (2007). Using assessments to improve teaching and learning. In *Ahead of the curve: The power of assessment to transform teaching and learning* (pp. 15-29). Solution Tree Press.

Hackmann, D. G. (2004). Constructivism and block scheduling: Making the connection. *Phi Delta Kappan*, *85*(9), 697-702.

Haerens, L., Deforche, B., Maes, L., Stevens, V., Cardon, G., & De Bourdeaudhuij, I. (2006). Body mass effects of a physical activity and healthy food intervention in middle schools. *Obesity*, *14*(5), 847-854.

Halasz, J. R., & Kaufman, P. (2008). Sociology as pedagogy: How ideas from the discipline can inform teaching and learning. *Teaching Sociology*, *36*(4), 301-317.

Halgunseth, L. (2009). Family engagement, diverse families, and early childhood. *Young Children*, *64*(5), 56-58.

Hall, E. M. (2007). Integration: Helping to get our kids moving and learning. *Physical Educator*, *64*(3), 123.

Halliday, M. A. (1993). Towards a language-based theory of learning. *Linguistics and Education*, *5*(2), 93-116.

Hallinger, P., & McCary, C. E. (1990). Developing the strategic thinking of instructional leaders. *The Elementary School Journal*, *91*(2), 89-108.

Hamilton, M. B. (2002). *The sociology of religion: An introduction to theoretical and comparative perspectives*. Routledge.

Harpe, S. E. (2015). How to analyze Likert and other rating scale data. *Currents in Pharmacy Teaching and Learning*, *7*(6), 836-850.

HEALTHY Study Group. (2009). HEALTHY study rationale, design and methods: Moderating risk of type 2 diabetes in multi-ethnic middle school students. *International Journal of Obesity*, *33*(Suppl 4), S4-20.

Hedges, H., Cullen, J., & Jordan, B. (2011). Early years curriculum: Funds of knowledge as a conceptual framework for children's interests. *Journal of Curriculum Studies*, *43*(2), 185-205.

Hellison, D. (2010). *Teaching personal and social responsibility through physical activity*. Human Kinetics.

Hennink, M. M., Kaiser, B. N., & Marconi, V. C. (2016). Code saturation versus meaning saturation. *Qualitative Health Research, 27*(4), 591-608. doi:10.1177/1049732316665344

Hess, K., Jones, B., Carlock, D., & Walkup, J. R. (2009). *Cognitive rigor: Blending the strengths of Bloom's taxonomy and Webb's depth of knowledge to enhance classroom-level processes*. ERIC.

Hmelo-Silver, C. E., Duncan, R. G., & Chinn, C. A. (2007). Scaffolding and achievement in problem-based and inquiry learning: a response to Kirschner, Sweller, and Clark. *Educational Psychologist*, *42*(2), 99-107.

Hohepa, M., Scragg, R., Schofield, G., Kolt, G. S., & Schaaf, D. (2009). Self-reported physical activity levels during a segmented school day in a large multiethnic sample of high school students. *Journal of Science and Medicine in Sport*, *12*(2), 284-292.

Holzschneider, K., Wolbers, T., Röder, B., & Hötting, K. (2012). Cardiovascular fitness modulates brain activation associated with spatial learning. *Neuroimage*, *59*(3), 3003-3014.

Horgan, J. (2003). Lecturing for learning. In *A handbook for teaching and learning in higher education* (pp. 79-92). Routledge.

Holton, J. A. (2007). The coding process and its challenges. In *The Sage handbook of grounded theory*, (pp. 265-289). Sage.

Horgan, J. (2003). Lecturing for learning. In *A handbook for teaching and learning in higher education* (pp. 79-92). Routledge.

Hruska, B., & Clancy, M. E. (2008). Integrating movement and learning in elementary and middle school. *Strategies*, *21*(5), 13-20.

Hubrich, S., Weber, J., Wittwer, R., & Gerike, R. (2020). *TravelVu and TravelViewer–New ways of collecting and evaluating travel survey data*. Institute of Transportation Planning and Road Traffic.

Hughes, F. P. (2021). *Children, play, and development*. Sage.

Hulac, D. M., Mickelson, L. R., Briesch, A. M., Maroeca, H., Hartjes, C., Anderson, K., & Ederveen, K. (2020). Stability balls and student on-task behavior. *Journal of Behavioral Education*, 1-18.

Hyndman, B., Telford, A., Finch, C. F., & Benson, A. C. (2012). Moving physical activity beyond the school classroom: A social-ecological insight for teachers of the facilitators and barriers to students' non-curricular physical activity. *Australian Journal of Teacher Education*, *37*(2), 1-24.

Ibrahim, R. H., & Hussein, D. A. (2016). Assessment of visual, auditory, and kinesthetic learning style among undergraduate nursing students. *International Journal of Advanced Nursing Studies*, *5*(1), 1-4.

Immekus, J. C., Snyder, K. E., & Ralston, P. A. (2019, May). Multidimensional item response theory for factor structure assessment in educational psychology research. In *Frontiers in Education* (Vol. 4, p. 45). Frontiers Media SA.

Jacobson, L. (2008). Children's lack of playtime seen as troubling health, school issue. *Education Week*, *28*(14), 1-14.

Jacobsohn, L., Rodrigues, P., Vasconcelos, O., Corbetta, D., & Barreiros, J. (2014). Lateral manual asymmetries: A longitudinal study from birth to 24 months. *Developmental Psychobiology*, *56*(1), 58-72.

Jeong, H. J., Liao, H. H., Han, S. H., & Lee, W. C. (2020). An application of item response theory to scoring patient safety culture survey data. *International Journal of Environmental Research and Public Health*, *17*(3), 854.

Jensen, E. (2005). *Teaching with the brain in mind*. ASCD.

Jensen, E. P. (2008). A fresh look at brain-based education. *Phi Delta Kappan*, *89*(6), 408-417.

Johnson, J. E., Christie, J. F., Yawkey, T. D., & Wardle, F. P. (1987). *Play and early childhood development*. Scott, Foresman & Co.

Jones, J. R., & Henry, M. (2022). *Redefining instructional leadership: The skills and energy required of an instructional leader*. Rowman & Littlefield.

Jones, M. G., Jones, B. D., & Hargrove, T. Y. (2003). *The unintended consequences of high-stakes testing*. Rowman & Littlefield.

Jones, Sr., I. C., & Blake, V. (2017). *Fearless conversations school leaders have to have: Step out of your comfort zone and really help kids*. Corwin Press.

Kaddoura, M. (2013). Think pair share: A teaching learning strategy to enhance students' critical thinking. *Educational Research Quarterly*, *36*(4), 3-24.

Kafka, N., & Limberg, R. (2013). Surveying teachers about the use of stability balls as an intervention. *Journal of Undergraduate Research at Minnesota State University, Mankato*, *13*(1), 3.

Kaltman, G. S. (2010). Hands-on learning. *Childhood Education*, *87*(2), S7.

Kaufman, D. M. (2003). Applying educational theory in practice. *BMJ*, *326*(7382), 213-216.

Kawagley, A. O., Norris-Tull, D., & Norris-Tull, R. A. (1998). The indigenous worldview of Yupiaq culture: Its scientific nature and relevance to the practice and teaching of science. *Journal of Research in Science Teaching*, *35*(2), 133-144.

Kelle, U. (2007). “Emergence” vs. “forcing” of empirical data? A crucial problem of “grounded theory” reconsidered. *Historical Social Research/Historische Sozialforschung, Supplement*, 133-156.

Khan, S. N. (2014). Qualitative research method-phenomenology. *Asian Social Science*, *10*(21), 298.

Khandkar, S. H. (2009). *Open coding*. University of Calgary.

Kien, C. L., & Chiodo, A. R. (2003). Physical activity in middle school-aged children participating in a school-based recreation program. *Archives of Pediatrics & Adolescent Medicine*, *157*(8), 811-815.

Kilbourne, J. R., Scott-Webber, L., & Kapitula, L. R. (2017). An activity-permissible classroom: Impacts of an evidence-based design solution on student engagement and movement in an elementary school classroom. *Children, Youth and Environments*, *27*(1), 112-134.

King, B. R., Rumpf, J. J., Verbaanderd, E., Heise, K. F., Dolfen, N., Sunaert, S., ... & Swinnen, S. P. (2020). Baseline sensorimotor GABA levels shape neuroplastic processes induced by motor learning in older adults. *Human Brain Mapping*, *41*(13), 3680-3695.

King, L., & Schielmann, S. (2004). *The challenge of Indigenous education: Practice and perspectives*. Unesco.

Kluka, D. A. (1999). *Motor behavior: From learning to performance*. Morton.

Koozer, M. (2019). *The relationship between faculty training and pedagogical practice in post-secondary music conservatories* [Doctoral dissertation, Fordham University].

Koretz, D. M. (1991). The effects of high-stakes testing on achievement: Preliminary findings about generalization across tests.

Krog, S. (2015). Speed stacking: An appropriate tool to enhance academic learning in the foundation phase. *African Journal for Physical Health Education, Recreation and Dance*, *21*(4.2), 1417-1433.

Kroll, T., & Neri, M. (2009). Designs for mixed methods research. *Mixed Methods Research for Nursing and the Health Sciences*, *31*, 31-49.

Kuczala, M., & Lengel, T. (2017). *Ready, set, go!: The kinesthetic classroom 2.0*. Corwin Press.

Kuo, F. R., Hsu, C. C., Fang, W. C., & Chen, N. S. (2014). The effects of Embodiment-based TPR approach on student English vocabulary learning achievement, retention and acceptance. *Journal of King Saud University-Computer and Information Sciences*, *26*(1), 63-70.

Lammers, W. J., & Murphy, J. J. (2002). A profile of teaching techniques used in the university classroom: A descriptive profile of a US public university. *Active Learning in Higher Education*, *3*(1), 54-67.

Lavenne-Collot, N., Jallot, N., Maguet, J., Degrez, C., Botbol, M., & Grandgeorge, M. (2021). Early motor skills in children with autism spectrum disorders are marked by less frequent hand and knees crawling. *Perceptual and Motor Skills*, 00315125211037983.

Leasa, M., Corebima, A. D., & Suwono, H. (2017). Emotional intelligence among auditory, reading, and kinesthetic learning styles of elementary school students in Ambon-Indonesia. *International Electronic Journal of Elementary Education*, *10*(1), 83-91.

Leasa, M., Corebima, A. D., & Batlolona, J. R. (2020). The effect of learning styles on the critical thinking skills in natural science learning of elementary school students. *Ilkogretim Online*, *19*(4).

Leech, N. L., Dellinger, A. B., Brannagan, K. B., & Tanaka, H. (2010). Evaluating mixed research studies: A mixed methods approach. *Journal of mixed methods research*, *4*(1), 17-31.

Lengel, T., & Kuczala, M. (Eds.). (2010). *The kinesthetic classroom: Teaching and learning through movement*. Corwin Press.

Leung, S. O. (2011). A comparison of psychometric properties and normality in 4-, 5-, 6-, and 11-point Likert scales. *Journal of Social Service Research*, *37*(4), 412-421.

Levinson, M., Geller, A. C., & Allen, J. G. (2021). Health equity, schooling hesitancy, and the social determinants of learning. *The Lancet Regional Health–Americas*, *2*.

Li, D., & Sullivan, W. C. (2016). Impact of views to school landscapes on recovery from stress and mental fatigue. *Landscape and Urban Planning*, *148*, 149-158.

Lin, S., Kim, Y. B., & Lombardi, F. (2012). Design of a ternary memory cell using CNTFETs. *IEEE Transactions on Nanotechnology*, *11*(5), 1019-1025.

Lomborg, K., & Kirkevold, M. (2003). Truth and validity in grounded theory–A reconsidered realist interpretation of the criteria: fit, work, relevance and modifiability. *Nursing Philosophy*, *4*(3), 189-200.

Lombardi, D., Shipley, T. F., & Astronomy Team, Biology Team, Chemistry Team, Engineering Team, Geography Team, Geoscience Team, and Physics Team. (2021). The curious construct of active learning. *Psychological Science in the Public Interest*, *22*(1), 8-43.

Lu, X., Huang, J., Yi, Y., Shen, M., Weng, X., & Gao, Z. (2016). Holding biological motion in working memory: An fMRI study. *Frontiers in Human Neuroscience*, *10*, 251.

Luppi, E. (2009). Education in old age: An exploratory study. *International Journal of Lifelong Education*, *28*(2), 241-276.

Madigan, J. B. (2004). *Thinking on your feet* (2nd ed.). Action Based Learning.

Magill, R., & Anderson, D. I. (2010). *Motor learning and control*. McGraw-Hill.

Mahar, M. T. (2011). Impact of short bouts of physical activity on attention-to-task in elementary school children. *Preventive Medicine*, *52*, S60-S64.

Mahar, M. T., Kenny, R. K., Shields, A. T., Scales, D. P., & Collins, G. (2006). *Energizers: classroom-based physical activities K-2*. East Carolina University.

Mahar, M. T., Murphy, S. K., Rowe, D. A., Golden, J., Shields, A. T., & Raedeke, T. D. (2006). Effects of a classroom-based program on physical activity and on-task behavior. *Medicine and Science in Sports and Exercise*, *38*(12), 2086.

Markant, D. B., Ruggeri, A., Gureckis, T. M., & Xu, F. (2016). Enhanced memory as a common effect of active learning. *Mind, Brain, and Education*, *10*(3), 142-152.

Manuela Crispim Nascimento, C., Rodrigues Pereira, J., Pires de Andrade, L., Garuffi, M., Leme Talib, L., Vicente Forlenza, O., ... & Stella, F. (2014). Physical exercise in MCI elderly promotes reduction of pro-inflammatory cytokines and improvements on cognition and BDNF peripheral levels. *Current Alzheimer Research*, *11*(8), 799-805.

Marks, H. M., & Printy, S. M. (2003). Principal leadership and school performance: An integration of transformational and instructional leadership. *Educational Administration Quarterly*, *39*(3), 370-397.

Marston, K. J., Newton, M. J., Brown, B. M., Rainey-Smith, S. R., Bird, S., Martins, R. N., & Peiffer, J. J. (2017). Intense resistance exercise increases peripheral brain-derived neurotrophic factor. *Journal of Science and Medicine in Sport*, *20*(10), 899-903.

Martínez-Bello, V. E., Bernabé-Villodre, M. D. M., Lahuerta-Contell, S., Vega-Perona, H., & Giménez-Calvo, M. (2021). Pedagogical knowledge of structured movement sessions in the early education curriculum: Perceptions of teachers and student teachers. *Early Childhood Education Journal*, *49*, 483-492.

Martin, J. (2022). Self, reality, knowledge and theory: Is Social Constructionism antithetical to sport and exercise psychology research?. *Psychology*, *13*(9), 1353-1390.

Martin, R., & Murtagh, E. M. (2017). Effect of active lessons on physical activity, academic, and health outcomes: A systemic review. *Research Quarterly for Exercise and Sport*, *88*(2), 149-168.

McCombs, B. L., & Whisler, J. S. (1997). *The learner-centered classroom and school: Strategies for increasing student motivation and achievement.* Jossey-Bass.

McConnell, K. (2005). Fitness education 12. In *Standards-Based Physical Education Curriculum Development*, p. 263.

McDowell, T. R., Schmittzehe, E. T., Duerden, A. J., Cernusca, D., Collier, H., & Woelk, K. (2019). A student-choice model to address diverse needs and promote active learning. *Journal of Science Education and Technology*, *28*(4), 321-328.

McGrath, C., Palmgren, P. J., & Liljedahl, M. (2019). Twelve tips for conducting qualitative research interviews. *Medical Teacher*, *41*(9), 1002-1006.

McLeod, S. (2013). *Erik Erikson's stages of psychosocial development*. Simply Psychology.

McMorris, T. (2017). The development of the acute exercise–catecholamines–cognition interaction theory: Implications for learning and memory. In *Physical Activity and Educational Achievement* (pp. 89-110). Routledge.

McMullen, J., Kulinna, P., & Cothran, D. (2014). Physical activity opportunities during the school day: Classroom teachers' perceptions of using activity breaks in the classroom. *Journal of Teaching in Physical Education*, *33*(4), 511-527.

McMurrer, J. 2008. *Instructional time in elementary schools: A closer look at changes for specific subjects.* Center on Education Policy.

McNally, J., I'anson, J., Whewell, C., & Wilson, G. (2005). 'They think that swearing is okay': First lessons in behaviour management. *Journal of Education for Teaching*, *31*(3), 169-185.

Medina, J. (2008). *Brain rules: 12 principles for surviving and thriving at work, home, and school*. Pear Press.

Medina, J. A., Netto, T. L., Muszkat, M., Medina, A. C., Botter, D., Orbetelli, R., ... & Miranda, M. C. (2010). Exercise impact on sustained attention of ADHD children, methylphenidate effects. *ADHD Attention Deficit and Hyperactivity Disorders*, *2*, 49-58.

Mele, V., & Belardinelli, P. (2019). Mixed methods in public administration research: Selecting, sequencing, and connecting. *Journal of Public Administration Research and Theory*, *29*(2), 334-347.

Merriam, S. B. (1998). *Qualitative research and case study applications in education: Revised and expanded from "case study research in education."* Jossey-Bass.

Meyer, U., Schindler, C., Zahner, L., Ernst, D., Hebestreit, H., van Mechelen, W., ... & Kriemler, S. (2014). Long-term effect of a school-based physical activity program (KISS) on

fitness and adiposity in children: A cluster-randomized controlled trial. *PloS One*, *9*(2), e87929.

Meyer, D. K., Turner, J. C., & Spencer, C. A. (1997). Challenge in a mathematics classroom: Students' motivation and strategies in project-based learning. *The Elementary School Journal*, *97*(5), 501-521.

Mills, J., Bonner, A., & Francis, K. (2006). The development of constructivist grounded theory. *International Journal of Qualitative Methods*, *5*(1), 25-35.

Mills, J., Bonner, A., & Francis, K. (2006). Adopting a constructivist approach to grounded theory: Implications for research design. *International Journal of Nursing Practice*, *12*(1), 8-13.

Miller, S. C., & Lindt, S. F. (2018). Engaging elementary students through movement integration in mathematics and reading: An exploratory study to understand teachers' perceptions. *Curriculum and Teaching Dialogue*, *20*(1/2), 31-179.

Mis, R. M. (2008). *An examination of how middle school teachers use common planning time to foster their professional learning* [Doctoral dissertation, Kent State University].

Mitchell, D. (2012). *Learning through movement and music: Exercise your smarts*. Human Kinetics.

Mittal, V. A., Firth, J., & Kimhy, D. (2020). Combating the dangers of sedentary activity on child and adolescent mental health during the time of COVID-19. *Journal of the American Academy of Child and Adolescent Psychiatry*, *59*(11), 1197.

Moberly, D. A., Waddle, J. L., & Duff, R. E. (2005). The use of rewards and punishment in early childhood classrooms. *Journal of Early Childhood Teacher Education*, *25*(4), 359-366.

Mobley, K., & Fisher, S. (2014). Ditching the desks: Kinesthetic learning in college classrooms. *The Social Studies*, *105*(6), 301-309.

Montgomery, P., & Bailey, P. H. (2007). Field notes and theoretical memos in grounded theory. *Western Journal of Nursing Research*, *29*(1), 65-79.

Morse, J. M. (2007). Sampling in grounded theory. In *The Sage handbook of grounded theory*, 229-244.

Morton, S. F. (2016). Engagement Through Brain Breaks in the Secondary Classroom.

Moura, C. O. D., Silva, Í. R., Silva, T. P. D., Santos, K. A., Crespo, M. D. C. A., & Silva, M. M. D. (2021). Methodological path to reach the degree of saturation in qualitative research: Grounded theory. *Revista Brasileira de Enfermagem*, *75*.

Mullins, N. M., Michaliszyn, S. F., Kelly-Miller, N., & Groll, L. (2019). Elementary school classroom physical activity breaks: Student, teacher, and facilitator perspectives. *Advances in physiology education*, *43*(2), 140-148.

Munhall, P. (Ed.). (2012). *Nursing research*. Jones & Bartlett Learning.

Murphy, J. F., Weil, M., Hallinger, P., & Mitman, A. (1982). Academic press: Translating high expectations into school policies and classroom practices. *Educational Leadership*, *40*(3), 22-26.

Neaum, S. (2017). Becoming a reader and writer: looking after literacy in the early years. In C. Walker-Gleaves, & D. Waugh (Eds.), *Looking after literacy* (pp. 1-16). Sage.

Nemoto, T., & Beglar, D. (2014). Likert-scale questionnaires. In *JALT 2013 Conference Proceedings* (pp. 1-8).

Nerhood, H. L., & Thompson, S. W. (1994, October). Adjustable sit-stand workstations in the office. In *Proceedings of the Human Factors and Ergonomics Society Annual Meeting, 38*(10), 668-672. Sage.

Nicolopoulou, A. (2010). The alarming disappearance of play from early childhood education. *Human Development*, *53*(1), 1-4.

Norris, J., van der Mars, H., Kulinna, P., Amrein-Beardsley, A., Kwon, J., & Hodges, M. (2017). Physical education teacher perceptions of teacher evaluation. *The Physical Educator*, *74*(1), 41-62.

Ogden, C. L., Fryar, C. D., Martin, C. B., Freedman, D. S., Carroll, M. D., Gu, Q., & Hales, C. M. (2020). Trends in obesity prevalence by race and Hispanic origin–1999-2000 to 2017-2018. *JAMA*, *324*(12), 1208-1210.

Orovwiroro, G. (2017, October 20). Feedback is a gift. Retrieved March 30, 2019, from https://leadmastersblog.com

Padilla García, J. L., & Benítez Baena, I. (2014). Validity evidence based on response processes.

Paley, V. G. (1993). *You can't say you can't play*. Harvard University Press.

Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., & Hoagwood, K. (2015). Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. *Administration and Policy in Mental Health and Mental Health Services Research*, *42*, 533-544.

Pandit, N. R. (1996). The creation of theory: A recent application of the grounded theory method. *The Qualitative Report*, *2*(4), 1-15.

Paradise, R. (1994). Indigenous students in classroom activities. *Education as Cultural Construction*, *4*, 89.

Patterson, M. P. (2011). *Movement and learning in lecture classrooms*. University of Missouri-Columbia.

Pearson, N., Haycraft, E., Johnston, J. P., & Atkin, A. J. (2017). Sedentary behaviour across the primary-secondary school transition: A systemic review. *Preventive Medicine*, *94*, 40-47.

Perso, T., & Hayward, C. (2020). *Teaching Indigenous students: Cultural awareness and classroom strategies for improving learning outcomes*. Routledge.

Piaget, J. (1976). Piaget's theory.

Popeska, B., Jovanova-Mitkovska, S., Chin, M. K., Edginton, C. R., Mo Ching Mok, M., & Gontarev, S. (2018).

Powell, M. B., & Guadagno, B. (2008). An examination of the limitations in investigative interviewers' use of open-ended questions. *Psychiatry, Psychology and Law*, *15*(3), 382-395.

Pui-Wah, D. C. (2010). Exploring the tactfulness of implementing play in the classroom: A Hong Kong experience. *Asia-Pacific Journal of Teacher Education*, *38*(1), 69-82.

Raghupathi, V., & Raghupathi, W. (2020). The influence of education on health: An empirical assessment of OECD countries for the period 1995-2015. *Archives of Public Health*, *78*(1), 1-18.

Ramli, R. (2019). Promoting active learning activities to improve students' speaking ability. *Social Science Learning Education Journal*, *4*(5).

Rampin, R., & Rampin, V. (2021). Taguette: Open-source qualitative data analysis. *Journal of Open-Source Software*, *6*(68), 3522.

Ramsden, P., Prosser, M., Trigwell, K., & Martin, E. (2007). University teachers' experiences of academic leadership and their approaches to teaching. *Learning and instruction*, *17*(2), 140-155.

Ramstetter, C., & Murray, R. (2017). Time to play: Recognizing the benefits of recess. *American Educator*, *41*(1), 17.

Rapley, T. J. (2001). The art(fulness) of open-ended interviewing: sSome considerations on analyzing interviews. *Qualitative research*, *1*(3), 303-323.

Rasmussen, M., & Laumann, K. (2013). The academic and psychological benefits of exercise in healthy children and adolescents. *European Journal of Psychology of Education*, *28*, 945-962.

Ratey, N. A. (2008). *The disorganized mind: Coaching your ADHD brain to take control of your time, tasks, and talents*. St. Martin's Press.

Rieg, S., & Paquette, K. (2009). Using drama and movement to enhance English language learners' literacy development. *Journal of Instructional Psychology, 36*(2), 148.

Richards, A. J. (2019). Teaching mechanics using kinesthetic learning activities. *The Physics Teacher*, *57*(1), 35-38.

Rickard, K. A., Gallahue, D. L., Gruen, G. E., Tridle, M., Bewley, N., & Steele, K. (1995). The play approach to learning in the context of families and schools: An alternative paradigm for nutrition and fitness education in the 21st century. *Journal of the American Dietetic Association*, *95*(10), 1121-1126.

Riggs, E. G., & Gholar, C. R. (2008). *Strategies that promote student engagement: Unleashing the desire to learn*. Corwin Press.

Riley, R. W. (1996). Revealing socially constructed knowledge through quasi-structured interviews and grounded theory analysis. *Journal of Travel & Tourism Marketing*, *5*(1-2), 21-40.

Rini, D. S., Adisyahputra, D. V. S., & Sigit, D. V. (2020). Boosting student critical thinking ability through project-based learning, motivation and visual, auditory, kinesthetic learning style. *Universal Journal of Educational Research*, *8*(4), 37-44.

Rodondi, N., Pletcher, M. J., Liu, K., Hulley, S. B., & Sidney, S. (2006). Marijuana use, diet, body mass index, and cardiovascular risk factors (from the CARDIA study). *The American Journal of Cardiology*, *98*(4), 478-484.

Ronkainen, N., Wiltshire, G., & Ryba, T. V. (2018). Critical realism in qualitative and mixed methods research in sport and exercise psychology.

Rosenthal, L. (2019). *Fits and starts: One elementary school's journey toward trauma-informed leadership*. East Carolina University.

Routen, A. C., Johnston, J. P., Glazebrook, C., & Sherar, L. B. (2018). Teacher perceptions on the delivery and implementation of movement integration strategies: The CLASS PAL (Physically Active Learning) Programme. *International Journal of Educational Research*, *88*, 48-59.

Russell, F. A. (2012). A culture of collaboration: Meeting the instructional needs of adolescent English language learners. *TESOL Journal*, *3*(3), 445-468.

Saha, S. K., & Singh, S. (2016). Collaborative learning through language games in ESL classroom. *Language in India*, *16*(10), 180-189.

Sallis, J. F., McKenzie, T. L., Conway, T. L., Elder, J. P., Prochaska, J. J., Brown, M., ... & Alcaraz, J. E. (2003). Environmental interventions for eating and physical activity: A

randomized controlled trial in middle schools. *American Journal of Preventive Medicine*, *24*(3), 209-217.

Samsudin, M. A., Bakar, K. A., & Noor, N. M. (2019). The benefits of music and movement in early mathematics. *Creative Education*, *10*(12), 3071-3081.

Samuelsson, I. P., & Pramling, N. (2014). Children's play and learning and developmental pedagogy. In *The Sage handbook of play and learning in early childhood*, 169-179.

Sarason, S. B. (1990). What are schools of education for? In *Schools as collaborative cultures: Creating the future now* (pp. 51-680).

Scott, C., & Medaugh, M. (2017). Types of observers. In *The international encyclopedia of communication research methods*, (pp. 1-5).

Seah, S., Williamson, V. M., Garcia, B. E., Mejia, L., Salus, M. S., Martin, C. T., & Maxwell, D. P. (2007). Evaluation of a co-dominant SCAR marker for detection of the Mi-1 locus for resistance to root-knot nematode in tomato germplasm. *Report of the Tomato Genetics Cooperative*, *57*, 37-40.

Sheets-Johnstone, M. (2011). *The primacy of movement* (Vol. 82). John Benjamins Publishing.

Sheldon, S. B., & Epstein, J. L. (2004). Getting students to school: Using family and community involvement to reduce chronic absenteeism. *School Community Journal*, *14*(2), 39-56.

Shephard, R. J., & Trudeau, F. (2000). The legacy of physical education: Influences on adult lifestyle. *Pediatric Exercise Science*, *12*(1), 34-50.

Sigauke, I., & Swansi, K. (2020, June). "Classic" grounded theory: An extraction of Saldana's coding heuristics. In *International Forum Journal, 23*(1), 5-23.

Simpson, E. J. (1966). The classification of educational objectives, psychomotor domain.

Singh, K. (2007). *Quantitative social research methods*. Sage.

Skoning, S. (2010). Dancing the curriculum. *Kappa Delta Pi Record*, *46*(4), 170-174.

Slavin, R. E. (1989). Cooperative learning and student achievement: Six theoretical perspectives. *Advances in motivation and achievement*, *6*, 161-177.

Sowell, T. (2002). Teaching to the test. *Washington Times*.

Sparrow, L., Sparrow, H., & Swan, P. (2000, February). Student centered learning: Is it possible? In *Flexible futures in tertiary teaching. Proceedings of the 9th Annual Teaching Learning Forum* (pp. 2-4). Curtin University of Technology Perth.

Spielmann, C., Hartford, S. D., & Pearce, K. L. (2012). The effects of movement-based learning on student achievement in the elementary school classroom. *RevaRitz Shop, Hartford*.

Sprenger, M. (1999). *Learning and memory: The brain in action*. ASCD.

Stagg Peterson, S., & Dwyer, B. (2016). Research in Canada's northern rural and Indigenous communities: Supporting young children's oral language and writing. *The Reading Teacher, 70*(3), 383-387.

Stahl, N. A., & King, J. R. (2020). Expanding approaches for research: Understanding and using trustworthiness in qualitative research. *Journal of Developmental Education*, *44*(1), 26-28.

Stevens-Smith, D. A. (2004). Movement and learning: A valuable connection. *Strategies*, *18*(1), 10-11.

Stevens-Smith, D. A. (2006). Brain games. *Strategies*, *19*(6), 19-23.

Stevens-Smith, D. A. (2016). Physical literacy: Getting kids active for life. *Strategies*, *29*(5), 3-9.

Stevens, F. C., Kaplan, C. D., Ponds, R. W., & Jolles, J. (2001). The importance of active lifestyles for memory performance and memory self-knowledge. *Basic and Applied Social Psychology*, *23*(2), 137-145.

Stipek, D. (2002). Good instruction is motivating. In *Development of achievement motivation* (pp. 309-332). Academic Press.

Stößlein, M., & Changchun, P. R. (2009). Activity-based learning experiences in quantitative research methodology for (time-constrained) young scholars–course design and effectiveness. In *POMS 20th Annual Conference, Orlando, Florida* (pp. 1-33).

Straker, L. M., Harris, C. J., Joosten, J., & Howie, E. K. (2022). Academic implications of screen use and sedentary behavior in a school with a 1-to-1 device policy. *Technology, Pedagogy and Education*, *31*(4), 1-15.

Strauss, A., & Corbin, J. M. (1997). *Grounded theory in practice*. Sage.

Strauss, V., & Hanscom, A. (2014, August 8). Why so many kids can't sit still in school today. *The Washington Post*.

Strean, W. B. (2011). Creating student engagement? HMM: Teaching and learning with humor, music, and movement. *Creative Education*, *2*(3), 189.

Strong, W. B., Malina, R. M., Blimkie, C. J., Daniels, S. R., Dishman, R. K., Gutin, B., ... & Trudeau, F. (2005). Evidence based physical activity for school-age youth. *The Journal of Pediatrics*, *146*(6), 732-737.

Stoughton, E. H. (2007). "How will I get them to behave?": Preservice teachers reflect on classroom management. *Teaching and Teacher Education*, *23*(7), 1024-1037.

Summerford, C. (2001). What is the Impact of exercise on brain function for academic learning. *Teaching Elementary Physical Education*, *12*(3), 6-8.

Sullivan, J. V. (2018). Learning and embodied cognition: A review and proposal. *Psychology Learning & Teaching*, *17*(2), 128-143.

Sun, P. Y. (2003). *Using drama and theatre to promote literacy development: Some basic*

classroom applications. ERIC.

Tandon, P. S., Tovar, A., Jayasuriya, A. T., Welker, E., Schober, D. J., Copeland, K., ... & Ward, D. S. (2016). The relationship between physical activity and diet and young children's cognitive development: A systematic review. *Preventive medicine reports*, *3*, 379-390.

Tesch, R. (1990). *Qualitative research: Analysis types and software tools*. Falmer.

Tesch, R. (2013). *Qualitative research: Analysis types and software*. Routledge.

Tomlinson, C. A. (2001). *How to differentiate instruction in mixed-ability classrooms*. ASCD.

Tomlinson, C. A., & McTighe, J. (2006). *Integrating differentiated instruction & understanding by design: Connecting content and kids*. ASCD.

Thomas, E. M., & Centeio, E. E. (2020). The benefits of yoga in the classroom: A mixed-methods approach to the effects of poses and breathing and relaxation techniques. *International Journal of Yoga*, *13*(3), 250.

Timmons, B. W., LeBlanc, A. G., Carson, V., Connor Gorber, S., Dillman, C., Janssen, I., ... & Tremblay, M. S. (2012). Systematic review of physical activity and health in the early years (aged 0–4 years). *Applied Physiology, Nutrition, and Metabolism*, *37*(4), 773-792.

Tolmie, A., Muijs, D., & McAteer, E. (2011). *Quantitative methods in educational and social research using SPSS*. McGraw-Hill.

Tompkins, P. S. (2009). Rhetorical listening and moral sensitivity. *The International Journal of Listening*, *23*(1), 60-79.

Tomporowski, P. D., Davis, C. L., Miller, P. H., & Naglieri, J. A. (2008). Exercise and children's intelligence, cognition, and academic achievement. *Educational Psychology Review*, *20*, 111-131.

Tomporowski, P. D., McCullick, B. A., & Pesce, C. (2015). *Enhancing children's cognition with physical activity games.* Human Kinetics.

Turner, L., Chriqui, J. F., & Chaloupka, F. J. (2013). Withholding recess from elementary school students: Policies matter. *Journal of School Health*, *83*(8), 533-541.

Tunnicliffe, S. (2015). Child's play or a child's crucial work? The importance of play in learning science.

Urquhart, C. (2022). *Grounded theory for qualitative research: A practical guide*. Sage.

Vaishnav, R. S., & Chirayu, K. C. (2013). Learning style and academic achievement of secondary school students. *Voice of Research*, *1*(4), 1-4.

Vaismoradi, M., Turunen, H., & Bondas, T. (2013). Content analysis and thematic analysis: Implications for conducting a qualitative descriptive study. *Nursing & Health Sciences*, *15*(3), 398-405.

Vavken, P., Pagenstert, G., Grimm, C., & Dorotka, R. (2012). Does increased health care spending afford better health care outcomes? Evidence from Austrian health care expenditure since the implementation of DRGs. *Swiss Medical Weekly*, *142*(2324).

Vellutino, F. R., Fletcher, J. M., Snowling, M. J., & Scanlon, D. M. (2004). Specific reading disability (dyslexia): What have we learned in the past four decades?. *Journal of Child Psychology and Psychiatry*, *45*(1), 2-40.

Villa, Richard A., & Nevin, Ann I. (2006). The many faces of collaborative planning and teaching. *Theory into Practice, 45*(3), 239.

Vygotsky, L. (1978). Interaction between learning and development. *Readings on the Development of Children*, *23*(3), 34-41.

Vygotsky, L. S., & Cole, M. (1978). *Mind in society: Development of higher psychological processes*. Harvard University press.

Wayson, W. W. (1988). *Up from excellence: The impact of the excellence movement on schools*. Phi Delta Kappa.

Webster, C., Russ, L., Vazou, S., Goh, T., & Erwin, H. (2015). Integrating movement in academic classrooms: Understanding, applying and advancing the knowledge base. *Obesity Reviews, 16*(8), 691-701.

Webster, C. A., Zarrett, N., Cook, B. S., Egan, C., Nesbitt, D., & Weaver, R. G. (2017). Movement integration in elementary classrooms: Teacher perceptions and implications for program planning. *Evaluation and Program Planning*, *61*, 134-143.

Wehling Weepie, A. K., & McCarthy, A. M. (2002). A healthy lifestyle program: Promoting child health in schools. *The Journal of School Nursing*, *18*(6), 322-328.

Weller, S. C., Vickers, B., Bernard, H. R., Blackburn, A. M., Borgatti, S., Gravlee, C. C., & Johnson, J. C. (2018). Open-ended interview questions and saturation. *PloS One*, *13*(6), e0198606.

White, D. E., Oelke, N. D., & Friesen, S. (2012). Management of a large qualitative data set: Establishing trustworthiness of the data. *International Journal of Qualitative Methods*, *11*(3), 244-258.

Whitebread, D. (2010). Play, metacognition and self-regulation. *Play and learning in the early years*, 161-176.

Winter, B., Breitenstein, C., Mooren, F. C., Voelker, K., Fobker, M., Lechtermann, A., ... & Knecht, S. (2007). High impact running improves learning. *Neurobiology of Learning and Memory*, *87*(4), 597-609.

Williams, M., & Moser, T. (2019). The art of coding and thematic exploration in qualitative research. *International Management Review*, *15*(1), 45-55.

Wojtys, E. M. (2017). Healthy Kids. *Sports Health*, *9*(6), 496-497.

Wood, E. A. (2013). *Play, learning and the early childhood curriculum*. Sage.

Young, D. R., Felton, G. M., Grieser, M., Elder, J. P., Johnson, C., Lee, J. S., & Kubik, M. Y. (2007). Policies and opportunities for physical activity in middle school environments. *Journal of School Health*, *77*(1), 41-47.

Young, M. S., Robinson, S., & Alberts, P. (2009). Students pay attention! Combating the vigilance decrement to improve learning during lectures. *Active Learning in Higher Education*, *10*(1), 41-55.

Zavalishina, S. Y., Karpov, V. Y., Rysakova, O. G., Rodionov, I. A., Pryanikova, N. G., & Shulgin, A. M. (2021). Physiological reaction of the body of students to regular physical activity. *Journal of Biochemical Technology*, *12*(2), 44-47.

Appendix A

IRB Approval

The UNIVERSITY of OKLAHOMA

Institutional Review Board for the Protection of Human Subjects

Approval of Initial Submission – Exempt from IRB Review – AP01

Date: March 31, 2022 **IRB#:** 14224

Principal Investigator: Misty Henry

Approval Date: 03/30/2022

Exempt Category: 2

Study Title: MOVEMENT AND LEARNINGIN LECTURE-STYLE CLASSROOMS IN HIGH SCHOOL

On behalf of the Institutional Review Board (IRB), I have reviewed the above-referenced research study and determined that it meets the criteria for exemption from IRB review. To view the documents approved for this submission, open this study from the *My Studies* option, go to *Submission History*, go to *Completed Submissions* tab and then click the *Details* icon.

As principal investigator of this research study, you are responsible to:

- Conduct the research study in a manner consistent with the requirements of the IRB and federal regulations 45 CFR 46.
- Request approval from the IRB prior to implementing any/all modifications as changes could affect the exempt status determination.
- Maintain accurate and complete study records for evaluation by the HRPP Quality Improvement Program and, if applicable, inspection by regulatory agencies and/or the study sponsor. • Notify the IRB at the completion of the project.

If you have questions about this notification or using iRIS, contact the IRB @ 405-325-8110 or irb@ou.edu.

Cordially,

Lara Mayeux

Lara Mayeux, Ph.D.

Appendix B

Interview Participant Recruitment Letter

Hello (Potential Participant's Name)

I am a graduate student at the University of Oklahoma under the direction of Dr. Maiden in the education department. I am conducting a research study to learn principals' perception of movement as part of instruction in middle and high schools in the Oklahoma City area. There is a lack of empirical research exploring the voice of leadership and with your help I would like to fill that void and give voice to the instructional leaders at both middle and high school levels. There is ample research from studies describing the benefits of movement for cognitive growth and student engagement in elementary grades and a few in middle school. This study aims to understand the perceptions of principals to learn if movement is viewed as important at these grade levels.

I am recruiting principals to participate in a zoom or in person interview that will be recorded to help with authenticity. The interview will be at the participants choosing of time and date. Also, the interview will not last longer than an hour. If you choose to participate your identity will remain anonymous and you will be assigned a digital code as your identifier. Your transcribed interview will be sent back to you for confirmation and provide an opportunity for you to omit or add to any responses. Your insights from your experience will be beneficial to students, teachers, and the educational community.

Your participation in this study is voluntary. If you have any questions concerning the research study, please call me at 720-695-@@@@ or by e-mail at misty.henry-1@ou.edu.
I value your time and interest in this interview!

Misty Henry, M. Ed.
Doctoral Candidate, Doctorate in Instructional Leadership at the University of Oklahoma

Appendix C

Informed Consent

Consent to Participate in Research at the University of Oklahoma

You are invited to participate in research about **movement in lecture style classrooms and your opinions on movements impact on learning in middle and high schools including lecture style courses.**

If you agree to participate, you will **provide answers to questions via phone and email.**

You are also giving me permission to access your student's scores as an average.

You may experience these risks: **none**

You may experience these benefits: **none**
(OR: There are no risks or benefits.)

If you participate, you will receive this compensation: **none**

Your participation is voluntary, and your responses will be: **[anonymous with a number identifier and confidential only shared with the OU faculty reviewing my thesis and those interested in reading a published thesis if the thesis is published. Can we include your name with any quotes? ___ Yes ___ No**

After removing all identifiers, we might share your data with other researchers or use it in future research without obtaining additional consent from you.

[If you would like me to contribute your data to an archive, please provide the name of the organization. _____]

Even if you choose to participate now, you may stop participating at any time and for any reason. **[Your photographs or video images maybe used in University research reports unless you tell me not to do this.]**

If you have questions about this research, please contact:
Misty Henry

Appendix D

Principal's Survey

Movement Survey adapted by Benes et al. and modified to learn principals perception of movement and movement integration into lecture style classes as a school initiative.

Q3 In which areas do you serve as a principal?	Demonstrating knowledge of self and system
Q4 In which school settings are you currently serving as a school principal?	Demonstrating knowledge of self and system
Q5 In which type of school setting have you served as a principal?	Demonstrating knowledge of self and system
Q6 What percentage of students in the school(s) where you are or have been a principal were approved for free or reduced-priced lunch? Check all that apply	Demonstrating knowledge of self and system
Q7 What is your age group?	Demographic
Q8 In what year did you complete your preparation program to be a principal?	Demographic
Q9 Do you think student movement in the classroom would improve student engagement?	Demonstrating knowledge of content and pedagogy. Question regarding movement in the classroom. RSQ1

Q10 Do you believe student movement in the classroom would benefit classroom management?	Demonstrating knowledge of content and pedagogy Establishing a culture for learning Question regarding movement in the classroom. RSQ1
Q11 Do you feel student movement in the classroom would help with student focus?	Demonstrating knowledge of content and pedagogy Question regarding movement in the classroom. RSQ1
Q12 Do you believe student movement in the classroom would help with learning retention?	Demonstrating knowledge of content and pedagogy Question regarding movement in the classroom. RSQ1
Q13 Do you think teachers would need support in the classroom to offer movement practices?	Demonstrating knowledge of Teachers Question regarding movement in the classroom. RSQ1
Q14 Do you feel this would depend on the teacher's personality, grade level teaching, or experience (years of teaching)?	Demonstrating knowledge of Teachers Question regarding movement in the classroom. RSQ1
Q15 Do you think role-playing, drama, hands-on activities are examples of kinesthetic/movement learning that can be used in any grade level?	Demonstrating knowledge of content and pedagogy Question regarding movement in the classroom. RSQ2
Q16 Kinesthetic learners express their learning best with projects. Is this something you feel is better in a specific grade level?	Demonstrating knowledge of content and pedagogy Question regarding movement in the classroom. RSQ2
Q17	Establishing a culture for learning

What are your concerns for movement in the classroom?	Question regarding movement in the classroom. RSQ2
Q18 Students who learn through kinesthetic methods focus more on hands-on activities. Do you think it is important for all grade levels to continue learning this way?	Demonstrating knowledge of content and pedagogy Question regarding movement in the classroom. RSQ2
Q19 Do you feel kinesthetic learners are often removed from the classroom for behavior issues?	Demonstrating knowledge of content and pedagogy Question regarding movement in the classroom. RSQ1
Q20 Do you feel students who need kinesthetic methods are offered opportunities to learn with best practices for their needs?	Establishing a culture for learning Question regarding movement in the classroom. RSQ2
Q21 Do you feel learning outcomes are documented for these students in other methods besides testing for example profiles?	Establishing a culture for learning Question regarding movement in the classroom. RSQ2
Q23 Do you feel teachers will need professional development to learn best practices of movement in the classroom?	Demonstrating knowledge of Teachers Question regarding movement in the classroom. RSQ2
Q24 Do you feel movement in the classroom is beneficial to students who are identified as ELL and special needs?	Demonstrating knowledge of content and pedagogy Question regarding movement in the classroom. RSQ2

Note: This table describes survey questions and their correlation to administrator content knowledge.

Appendix E

Interview Protocol and Questions

This protocol was followed to provide consistency during the interviews:

1. Interviewer will welcome the participant to the focus group and explain that the meeting will be recorded via Zoom application to help provide accuracy to the interview.
2. Interviewer will define the purpose of the study.
3. Interviewer will explain the participant's right to opt out of participating in the focus group.
4. Interviewer will ask if the participant has any questions.
5. Interviewer will explain that the participant has a right to refuse to answer any or all questions.
6. Interviewer will explain the participant's right to confidentiality.
7. Interviewer will provide a working definition of key terms and focus questions to be asked, along with consent to participate.
8. Interview will explain after the interview is transcribed the participant will be sent the transcript for their review. Participants have the right to omit or add to any sections of the transcript for clarification.
9. Interviewer will ask if the participant is willing to participate and continue with the interview questions.
10. Interviewer will welcome the participant to the focus group and explain that the meeting will be recorded via Zoom application to help provide accuracy to the interview.
11. Interviewer will define the purpose of the study.

12. Interviewer will explain the participant's right to opt out of participating in the focus group.
13. Interviewer will ask if the participant has any questions.
14. Interviewer will explain that the participant has a right to refuse to answer any or all questions.
15. Interviewer will explain the participant's right to confidentiality.
16. Interviewer will provide a working definition of key terms and focus questions to be asked, along with consent to participate.
17. Interview will explain after the interview is transcribed the participant will be sent the transcript for their review. Participants have the right to omit or add to any sections of the transcript for clarification.
18. Interviewer will ask if the participant is willing to participate and continue with the interview questions.

Interview Questions

Demographic questions:

1. Your age
2. Your gender
3. Years as a principal
4. Years as an assistant principal
5. Area of leadership (High/Middle)
6. Highest level of education
7. Year you completed your principal certification
8. Number of years taught

Questions related to experience and movement perspectives:

1. How many students receive free or reduced meals in your school?
2. How many AP courses does your school offer? (High)
3. How many Honors courses does your school offer? (Middle)
4. Is classroom management a concern for your school?
5. What is the culture of your school for students?
6. What is the culture of your school for teachers?
7. What is your leadership style?

Questions regarding movement in the classroom:

1. What do you think of when you hear the phrase “movement in the classroom” or “brain breaks or energizers”?
2. What is your understanding of the connections between movement as part of instruction and cognitive growth?
3. What do you think are the barriers and/or challenges of using movement as part of instruction ?
4. Do you think that teachers should integrate movement as part of instruction into the classroom? Why or why not?
5. Currently, do you encourage or expect teachers to use movement in the classroom as part of instruction?
6. What types of support or resources do you believe you would need to provide to teachers to enable them to incorporate movement into their instruction?
7. What types of professional development for movement in the classroom as part of instruction do you feel your teachers would need?

8. How often would you provide this professional development?
9. What are your thoughts on movement as part of the learning environment versus movement as part of instruction?
10. What do you think are the benefits of using movement as part of instruction?
11. How do you think movement as part of instruction could be implemented in lecture styles classrooms and do you feel it would be beneficial? Why or why not?

Questions related to movement in schools:

1. Do you believe that lack of movement and physical activity in middle and high schools is a problem? Why or why not?
2. Do you think that middle and high schools share part of the responsibility for increasing students' physical activity during the school day? Why or why not?
3. What practices does your school currently use to get students active during the school day?
4. Do you think the district is supportive of movement as part of instruction initiatives? Why or why not?
5. How do you effectively monitor school initiatives to improve student learning and do you think that system would work for monitoring student learning with movement as part of instruction?
6. If you are expecting teachers to use movement as part of instruction, how are you effectively implementing this? Strategies? What is working or not?
7. What impact would movement as part of instruction make on student engagement and classroom management?

For the following, please select your perception of knowledge of movement in the

classroom.

For movement integration, use the following definition:

When reflecting on movement as part of instruction think of movement as a brain break (creating intentional space for students to unwind their brain and lasting no longer than five minutes of movement without the purpose of learning) When thinking about movement as part of instruction consider movement as planned and incorporated into the lesson plan for guiding students into learning for cognitive growth.

For the following questions the scale (1= No Knowledge, 2= Little Knowledge, 3= Neutral Knowledge, 4= Some Knowledge, 5= Very Knowledgeable) was used.

1. My knowledge of the various health benefits of integrating physical activity into part of students' learning?
2. My knowledge of the correlation between movement and learning as beneficial for the whole body (mental, physical, and emotional)?
3. My knowledge of the ample benefits of integrating movement into the classroom school wide?
4. My knowledge of the positive relationship between movement and student behavior in the classroom for students and teachers?
5. My knowledge of student attitudes toward movement as part of instruction in the classroom..
6. I have knowledge of various methods for integrating movement into the classroom as part of instruction.

For the following questions the scale (1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree) was used.

1. I believe that students would benefit from movement in the classroom.
2. In the future, I would like to encourage teachers to integrate movement into the curriculum school.
3. I believe the district would support integrating movement into the classroom.
4. I think that integrating movement into the classroom as part of a school initiative would be a positive experience for both students and teachers.
5. I believe that students would enjoy learning if teachers integrated movement into the classroom and be more engaged.
6. I think that with training and support, teachers would enjoy and be able to integrate movement into the classroom.
7. I would like training or professional development about integrating movement into the classroom.
8. I am comfortable teaching teachers methods to integrate movement into the curriculum.
9. I currently have teachers that utilize movement to help teach concepts in the classroom at my site.
10. I think that integrating movement into the classroom would cause class management issues and would be disruptive.
11. How knowledgeable of movement as part of instruction do you feel you are?
12. How knowledgeable of movement as part of instruction do you feel your teachers are?
13. Do you feel that ELL students and those with disabilities would benefit from movement as part of instruction?

When reflecting on movement as part of instruction think of movement as a brain break (creating intentional space for students to unwind their brain and lasting no longer than five minutes of movement without the purpose of learning) When thinking about movement as part of instruction consider movement as planned and incorporated into the lesson plan for guiding students into learning for cognitive growth.

Reflection of current teachers' instructional practices regarding movement as part of instruction:

1. How many days during the school year were teachers absent not including professional and/or personal days.
2. How many lessons per week did teachers implement purposeful movement as part of instruction at your site?
3. On average, how many minutes did teachers integrate movement into their lessons/instruction in the form of a brain break or as part of instruction?
4. On average, how many of those classes that integrate movement into instruction are AP or Honors courses?
5. How would you like those responses to change and why?

Appendix F

Content Validation Table

Research Questions Theory

(Movement Survey adapted by Benes et al. and modified to learn principals perception of movement and movement integration into lecture style classes as a school initiative.)

Survey Item	Theoretical Connection	Citations
Q3 In which areas do you serve as a principal?	Demonstrating knowledge of self and system	Fink, A. (2002). How to ask survey questions (Vol. 1). Sage.
Q4 In which school settings are you currently serving as a school principal?	Demonstrating knowledge of self and system	Fink, A. (2002). How to ask survey questions (Vol. 1). Sage.
Q5 In which type of school setting have you served as a principal?	Demonstrating knowledge of self and system	Fink, A. (2002). How to ask survey questions (Vol. 1). Sage.
Q6 What percentage of students in the school(s) where you are or have been a principal were approved for free or reduced-priced lunch? Check all that apply	Demonstrating knowledge of self and system	Fink, A. (2002). How to ask survey questions (Vol. 1). Sage.

Q7 What is your age group?	Demographic	Fink, A. (2002). How to ask survey questions (Vol. 1). Sage.
Q8 In what year did you complete your preparation program to be a principal?	Demographic	Fink, A. (2002). How to ask survey questions (Vol. 1). Sage.
Q9 Do you think student movement in the classroom would improve student engagement?	Demonstrating knowledge of content and pedagogy. Question regarding movement in the classroom. RSQ1	Archambault, L., Wetzel, K., Foulger, T. S., & Kim Williams, M. (2010). Professional development 2.0: Transforming teacher education pedagogy with 21st century tools. Journal of Digital Learning in Teacher Education, 27(1), 4-11.
Q10 Do you believe student movement in the classroom would benefit classroom management?	Demonstrating knowledge of content and pedagogy Establishing a culture for learning Question regarding movement in the classroom. RSQ1	Goldspink, C., & Foster, M. (2013). A conceptual model and set of instruments for measuring student engagement in learning. Cambridge Journal of Education, 43(3), 291-311.
Q11 Do you feel student movement in the classroom would help with student focus?	Demonstrating knowledge of content and pedagogy Question regarding movement in the classroom. RSQ1	Goldspink, C., & Foster, M. (2013). A conceptual model and set of instruments for measuring student engagement in learning. Cambridge Journal of Education, 43(3), 291-311.
Q12 Do you believe student movement in the classroom would help with learning retention?	Demonstrating knowledge of content and pedagogy Question regarding movement in the classroom. RSQ1	Marks, H. M., & Printy, S. M. (2003). Principal leadership and school performance: An integration of transformational and instructional leadership. Educational administration quarterly, 39(3), 370-397.

Q13 Do you think teachers would need support in the classroom to offer movement practices?	Demonstrating knowledge of Teachers Question regarding movement in the classroom. RSQ1	Archambault, L., Wetzel, K., Foulger, T. S., & Kim Williams, M. (2010). Professional development 2.0: Transforming teacher education pedagogy with 21st century tools. Journal of Digital Learning in Teacher Education, 27(1), 4-11.
Q14 Do you feel this would depend on the teacher's personality, grade level teaching, or experience (years of teaching)?	Demonstrating knowledge of Teachers Question regarding movement in the classroom. RSQ1	Archambault, L., Wetzel, K., Foulger, T. S., & Kim Williams, M. (2010). Professional development 2.0: Transforming teacher education pedagogy with 21st century tools. Journal of Digital Learning in Teacher Education, 27(1), 4-11.
Q15 Do you think role-playing, drama, hands-on activities are examples of kinesthetic/movement learning that can be used in any grade level?	Demonstrating knowledge of content and pedagogy Question regarding movement in the classroom. RSQ2	Popeska, B., Jovanova-Mitkovska, S., Chin, M. K., Edginton, C. R., Mo Ching Mok, M., & Gontarev, S. (2018).
Q16 Kinesthetic learners express their learning best with projects. Is this something you feel is better in a specific grade level?	Demonstrating knowledge of content and pedagogy Question regarding movement in the classroom. RSQ2	Popeska, B., Jovanova-Mitkovska, S., Chin, M. K., Edginton, C. R., Mo Ching Mok, M., & Gontarev, S. (2018).
Q17 What are your concerns for movement in the classroom?	Establishing a culture for learning Question regarding movement in the classroom. RSQ2	Marks, H. M., & Printy, S. M. (2003). Principal leadership and school performance: An integration of transformational and instructional leadership. Educational administration quarterly, 39(3), 370-397.
Q18 Students who learn through kinesthetic methods focus	Demonstrating knowledge of content and pedagogy	Popeska, B., Jovanova-Mitkovska, S., Chin, M. K., Edginton, C. R., Mo Ching

more on hands-on activities. Do you think it is important for all grade levels to continue learning this way?	Question regarding movement in the classroom. RSQ2	Mok, M., & Gontarev, S. (2018).
Q19 Do you feel kinesthetic learners are often removed from the classroom for behavior issues?	Demonstrating knowledge of content and pedagogy Question regarding movement in the classroom. RSQ1	Popeska, B., Jovanova-Mitkovska, S., Chin, M. K., Edginton, C. R., Mo Ching Mok, M., & Gontarev, S. (2018).
Q20 Do you feel students who need kinesthetic methods are offered opportunities to learn with best practices for their needs?	Establishing a culture for learning Question regarding movement in the classroom. RSQ2	Popeska, B., Jovanova-Mitkovska, S., Chin, M. K., Edginton, C. R., Mo Ching Mok, M., & Gontarev, S. (2018).
Q21 Do you feel learning outcomes are documented for these students in other methods besides testing for example profiles?	Establishing a culture for learning Question regarding movement in the classroom. RSQ2	Marks, H. M., & Printy, S. M. (2003). Principal leadership and school performance: An integration of transformational and instructional leadership. Educational administration quarterly, 39(3), 370-397.
Q22 What is your race?	Demographic	Fink, A. (2002). How to ask survey questions (Vol. 1). Sage.

Q23 Do you feel teachers will need professional development to learn best practices of movement in the classroom?	Demonstrating knowledge of Teachers Question regarding movement in the classroom. RSQ2	Archambault, L., Wetzel, K., Foulger, T. S., & Kim Williams, M. (2010). Professional development 2.0: Transforming teacher education pedagogy with 21st century tools. Journal of Digital Learning in Teacher Education, 27(1), 4-11.

Q24 Do you feel movement in the classroom is beneficial to students who are identified as ELL and special needs?	Demonstrating knowledge of content and pedagogy Question regarding movement in the classroom. RSQ2	Irvine, J. J. (2010). Culturally relevant pedagogy. The Education Digest, 75(8), 57.

Note: This table describes the survey question and their connection to the research questions of the study and the pedagogy connection.

Table 8

Codebook of Categories

Tag	Description	Number of Highlights
Interesting	Further review required	3
Positive culture	Describing movement as positive part of education	4
Do not know	Describing the lack of available knowledge regarding movement	16
Student Engagement		60
Student motivation		6
Engaged		14
Covid		12
Classroom Management		51
Professional Development		48
Testing		24
Teacher Fear of losing control		14
Student participation		20
Observations		18
Blood Flow		4
Learn While Do		23
Lecture Based		41
Student Collaboration		30
Peer observations		1
Necessary		21

Project Driven	4
Movement Stops at Elementary	4
Sit at Desk Worksheets	3
Whole Body Learning	25
Memorization	12
Cognitive Growth	24
Neurons	2
Transitions	35
Instruction	70
Sit and Learn	13
Time Restriction	9
Elementary Comparison	11
Prioritize	2
Researched Based Strategies	5
Movement	236
Intentional for learning	21
Classroom Space	6
Encourage Teachers	9
Best Practices	13
Teacher to Teacher Support	23
Movement planned	15
Spontaneous Movement	3
Sit and Learn with purpose balance	3
Brain/Learning Depletion	2

Brain break		28
Traditional Learning		36
Social Learning		14
Responsibility of the School		16
Lack of Movement Issue		7
Take Notes		6
Data consumption		2
Student Autonomy and Voice		1
Emergency Certified	Teaching is not their degree	7
Attendance		1
Expectations		8
Supporting Teachers		54
Servant Leadership		8
Movement to Calm Down		2
Procedures		10
Challenge of Movement		26
Movement as Part of Instruction		46
Data Driven		14
Parental Support		4
Kinesthetic		9
Better Retention		11
Social Media focus		3
Student Athletes		6
Social Trend of Lack of Movement	Students in comparison to previous generations have less opportunities to play outdoors and are more engaged in technology.	5
Classroom Technology	A new online program for students to access during the day at school that is completely online based.	2

Culture of Learning		2
Limited Attention Span		2
Chunking Information		5
Music Integration		4
Multitasking		1
University Instructional Practices		3
Crossing the Midline		4
Teacher Modeling Movement		5
Mental Health		1
Virtual Learning		2
Sedentary Lifestyle		3
PE or Movement Learning Course		4
Teacher Movement Opportunities		2
Student Need Movement		9
Situational Leadership		1
Retention		14
Limited Time		4
Teachers will not do again		5
Movement Integration Process	Start small and build up the endurance and culture	9
Encourage Movement in the Classroom		5
Faculty Meetings		5
Modeling		14
Strategy		9
Teacher Willingness		15

ABL lab		1
Flexible Seating		1
Long Class Periods		5
Teachers Support Movement		3
Beneficial for Students		6
AP classes		3
Connection		4
Health Improvement for Students		3
Schools are not Healthy Environments		3
Systematic Concern		8
Recess		6
Structured Movement		6
Unstructured Movement		3
Too Much Content		3
Movement lifestyle		2
Learning to Mastery		1
Focus is credits for college		2
Soft Skills		1
Health not a focus of schools		1
PE	One semester	4
District Supportive		2
Classroom culture		3
Students do not care about learning		1
Student Fights		2

Science Teachers	2
Student Focus	3
Student shorter attention spans	1
Unstructured time	2
Improved student behavior	2
Relationships	2
Limited attention span	3
beneficial for teachers	3
Good for teachers	1
Technology	6
English Language Learners	3
Gifted Students	1
Learning Process	2
Students disengaged	1
Students fidgeting	1
Walk after lunch	7
Energy	1
Stem	1
Four Square	2
Walk after recess	5
Resources	2
college prep	2
Active Learning	6
Hands On Learning	3

Project Based Learning	4
Constructive Pedagogy	1
Holistic Approach	1
Brain More Active	1
Brain to be more alert	2
Think Pair Share	1
sensory aware	2
Time to Process Information	3
Parent support	1
Buy In	6
higher order thinking	3
Students connect to learning	4
Art Integration	1
Blooms Taxonomy	1
Inexperienced Teachers	2
Teacher to Teacher Climate	2
Teacher Retention	1
School Climate	2
Positive School Climate	1
Kids are not engaged	1
English as a Second Language	1
Collaborative Leadership	1
Student Movement	4
Activate Prior Knowledge	1

Top Down Approach	10
Classroom Culture	1
Prepare Students For Movement	1
Content	1
Mathematics	1
School climate	3
Teaching Strategies	4
Students Academically Behind	2
Teacher Informal Assessment	3
Socialization	3
State Requirement	4
School Responsibility	4
Cafeteria Food	2
Yoga	2
New Classes	2
Student Experiment	1
After School Sports	3
Student Responsibilities at Home	1
Student Needs	1
ADHD	5

Notes: Categories were developed from Codes from interviews.

Table 9

Codes to Theme One" Opportunity/obstacles of implementing movement into lecture style courses"

Data Source	Categories	Number of occurrences
Interview Transcript	Student Motivation to engage in movement	10
Interview Transcript	Concerns from Covid Pandemic	12
Interview Transcript	Transition time back to instruction	35
Interview Transcript	Classroom Space limitations	6
Interview Transcript	Teachers willingness to use movement strategies	20
Interview Transcript	Principals fear of teachers losing control of the class	14
Interview Transcript	Content depth and testing demands	4
Interview Transcript	Teacher to teacher climate and retention	3
Interview Transcript	Expectation/prioritizing movement as an site initiative	21
Interview Transcript	Benefits lifestyle and learning to mastery	3

Note: Data Describes evidence to support Research Question One: What are principals perspectives on movement breaks in lecture style courses?

Table 10

Codes to Theme Three" Movement Supports Cognitive Growth and Retention"

Data Source	Code	Number of occurrences
Interview Transcript	Movement during learning for long term retention	61
Interview Transcript	Movement is necessary for cognitive growth/retention	21
Interview Transcript	Students need movement for cognitive clarity	9
Interview Transcript	Learn while doing something is vital	23
Interview Transcript	Teachers willingness to use movement strategies	20
Interview Transcript	Instruction that includes chunking information	5
Interview Transcript	Cognitive Growth is maximized	24
Interview Transcript	Improved Long Term Retention	25
Interview Transcript	Constructivist Pedagogy	1
Interview Transcript	Increases Higher Order Thinking	3
Interview Transcript	Brain is more active for learning	11

Note: Data Describes evidence to support Research Question One: What are principals perspectives on movement breaks in lecture style courses?

Table 11

Codes to Theme Four" Movement is Essential to Whole Body Learning"

Data Source	Categories	Number of Occurrences
Interview Transcript	Beneficial to Students Health Overall	6
Interview Transcript	Daily Kinestic practices are critical	9
Interview Transcript	Daily Movement is necessary in learning activities	21
Interview Transcript	Crossing the midline practices benefits the whole body	4
Interview Transcript	Improves blood flow which increases learning	4
Interview Transcript	Whole body learning experiences are essential	25
Interview Transcript	Engages and promotes learning for ESL students	4
Interview Transcript	Movement with a whole body focus improves learning	100
Interview Transcript	Intentional for Learning	21
Interview Transcript	Movement variations to calm or engage students	11
Interview Transcript	Helps students with multitasking or sensory needs	3

Notes: This Data Provides Insight on Research Question Two: What are principals' perspectives on movement in middle/high school courses?

Table 12

Codes to Theme Five" Promotes Student Engagement"

Data Source	Categories	Number of Occurrences
Interview Transcript	Brain Breaks as part of learning or a break keep student attention for longer class periods	28
Interview Transcript	Student Participation and Attendance Increases	21
Interview Transcript	Student Engagement Significantly Increases	77
Interview Transcript	Helps students with ADHD	8
Interview Transcript	Less Behavior Issues and Fights	9
Interview Transcript	project-based Learning Opportunities	11
Interview Transcript	Involves the other content and the Arts	13
Interview Transcript	Students are Connected to Their Learning	8

Notes: This Table Provides Support of Research Question Two: What are principals' perspectives on movement in middle/high school courses?

Table 13

Codes to Theme Six"Enables Student Opportunities for Collaboration

Data Source	Code	Number of occurrences

Interview Transcript	Student Collaboration for Learning	45
Interview Transcript	Provides Space for Socialization	36
Interview Transcript	Daily Movement is Necessary in Learning Activities	21
Interview Transcript	Value of Unstructured Movement Opportunities	5
Interview Transcript	Movement provides Opportunities for Student Voice	2
Interview Transcript	Whole Body Learning Experiences are Essential	25
Interview Transcript	Engages and promotes learning for ESL students	3

Notes: This Table Provides Support of Research Question Two: What are principals' perspectives on movement in middle/high school courses?

Table 14

Codes to Theme Ten" Teacher Support"

Data Source	Category	Number of occurrences

Interview Transcript	Supporting teachers is necessary	63
Interview Transcript	Observations of teachers will be critical	19
Interview Transcript	Modeling best instructional practices	42
Interview Transcript	A culture of learning must be an vital initiative	18
Interview Transcript	Data driven practices/instruction must be provided	14
Interview Transcript	Principals must practice servant leadership	11
Interview Transcript	Instruction/procedures must be supported	80
Interview Transcript	Must have parents and teachers buy in.	13
Interview Transcript	Expectation/prioritizing movement as an site initiative	21
Interview Transcript	Classroom technology and resources that make Implementation of movement easier/timely	8

Notes: This table provides data to support Research Question Three: How do principals believe they could develop an environment that supports movement?

Table 15

Codes to Theme Seven " Movement Shifts Traditional Instruction"

Data Source	Category	Number of occurrences
Interview Transcript	Many classes including AP, Mathematics, or heavy content based focus on providing information more than letting students engage with the learning.	5

Interview Transcript	Classes are longer averaging 40 minutes or more but teachers feel they do not have enough time to cover heavy content demands.	5
Interview Transcript	Sit and learn with lectures is what is known and taught for AP courses	67
Interview Transcript	Memorization and the use of worksheets is the focus of traditional learning not students learning how to think	16
Interview Transcript	Traditional instruction produces students who are not engaged in learning.	11
Interview Transcript	Traditional Learning is not effective and students are falling behind	36
Interview Transcript	The thought of transitions as the only movement students need during the day	35
Interview Transcript	Traditional instructions need to shift to movement integration even if starting small such as Flexible seating.	10

Notes: This table provides data to support Research Question Three: How do principals believe they could develop an environment that supports movement?

Table 16

Codes to Theme Eight " Movement Improves Classroom Management"

Data Source	Category	Number of occurrences
Interview Transcript	Movement increases a positive learning culture	8
Interview Transcript	Students have shorter attention spans and need instruction that meets them where they are	3
Interview Transcript	Movement planned that is part of learning or a brain	27

	break is equally important	
Interview Transcript	Best instructional practices	13
Interview Transcript	Provides informal assessment of student learning while allotting time for students to think	6
Interview Transcript	Classroom management must be in order and will improve with movement	51
Interview Transcript	Movement as part of instruction would be essential to developing a positive learning environment.	46

Notes: This table provides data to support Research Question Three: How do principals believe they could develop an environment that supports movement?

Table 17

Codes to Theme Two" Absences of Professional Development"

Data Source	Categories	Number of occurrences
Interview Transcript	Movement as Part of Instruction is Mostly Geared to Elementary Levels	15
Interview Transcript	Principals Do Not Know Movement Instructional Strategies	16
Interview Transcript	Principals Need More Tools	19
Interview Transcript	Classroom Management Resources for New/Emergency Certified	15

Interview Transcript	Professional Development is Significantly Lacking to Support Middle/High School Staff	48

Notes: The data in this Table provides evidence for Research Sub Research Question 1: What do principals express as obstacles for creating an environment that promotes movement as part of instruction site wide.

Table 18

Codes to Theme Nine" Exposes a systemic Concern"

Data Source	Categories	Number of occurrences
Interview Transcript	University Preparation Demands Lecture Readiness	10
Interview Transcript	Movement is necessary for cognitive growth/retention	21
Interview Transcript	Challenges of Movement Integration Site Wide	26
Interview Transcript	Need Data Driven Instructional Strategies for Middle/High School Students	21
Interview Transcript	Demands of Testing Outweigh Learning	24
Interview Transcript	Time Restriction	12
Interview Transcript	Movement Integration is a School Responsibility	20
Interview Transcript	Movement is a State Requirement	14
Interview Transcript	Students Behind Multiple Levels Need Teachers with	5

	Effective Strategies Grades Below Grade Level	
Interview Transcript	Impact from Covid/Virtual Learning	3
Interview Transcript	Data Supports Movement for Cognitive Benefits yet Best Practices Are Not Expected in Middle/High School	14
Interview Transcript	Inexperienced Teachers as a systemic Concern	19
Interview Transcript	Schools are Not Implementing Healthy Practices	8
Interview Transcripts	Shifts in Student Lifestyles/Needs	11
Interview Transcripts	Current Movement Opportunities May Miss the Mark for Reaching Each Student	42
Interview Transcript	Districts Will Be Supportive	15

Notes: The data in this Table provides evidence for Research Sub Research Question 1: What do principals express as obstacles for creating an environment that promotes movement as part of instruction site wide.

Table 19

Themes derived from categories for Research Questions.

Research Questions	Themes	Number of Occurrences
RSQ1	Theme 1: Opportunities/obstacles of implementing movement as part of instruction.	128
	Theme 3:	203

	Movement supports cognitive growth and retention.	
RSQ2	Theme 4: Movement is essential to whole body learning.	208
	Theme 5: Promotes student engagement.	175
	Theme 6: Enables students opportunities for collaboration.	137
RSQ3	Theme 10: Teacher support is necessary for movement to be successfully implemented at a site level.	289
	Theme 7: Movement shifts traditional teaching methods.	185

	Theme 8: Movement improves classroom management practices.	154
Sub-RSQ1	Theme 2: Absence of Professional Development	113
	Theme 9: Exposes a systemic Concern	275

Note: The Table provides how many times the categories provided support of the theme in the coding/categorizing process.