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## **Implementation of Movement Integration in the Classroom**

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IMPLEMENTATION OF MOVEMENT INTEGRATION IN THE CLASSROOM

by

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A capstone submitted in partial fulfillment of the  
requirements for the degree of Master of Arts in Teaching

Hamline University

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## CHAPTER ONE

### Introduction

#### Overview

The following chapter will provide a storyline of how I arrived at my area of study. The research question I want to address in this capstone project is: *How can movement integration in the classroom be used to improve classroom dynamic and decrease the prevalence of childhood obesity?* The specific components of classroom dynamic that I will focus on are classroom management and student engagement. I will begin by identifying the problem to be addressed and explaining its significance in the world of education. Next, I will explain the personal significance of this question in relation to my individual experiences in school and my observations in the workplace.

#### Background

Over time, the teaching profession has become an increasingly less desirable occupation as evidenced by the decreasing number of new teachers coming into the field each year (Akhtar, 2020). This reduction can be attributed, in part, to the difficulties that teachers face in current circumstances in relation to classroom management and student engagement, among other factors. These components have become more difficult to address and control as our society continues to advance. New tools and discoveries have brought about great opportunities, however, they have also led to various complications related to behavior and focus. Similar to a machine with parts, when one student in a classroom acts out or is unfocused, it can affect the entire classroom environment. The lack of opportunity for movement throughout the day is one causal factor for these observed misbehaviors and disengagement. Students spend about six hours of their day in

school and the majority of that time is spent sitting and listening. In young children, prolonged durations of inactivity result in a loss of interest, which in turn may lead to undesirable behaviors. In addition, a lack of physical activity can have negative implications on both the current and future health status of students. The intention of this project, which will be elaborated on throughout this essay, is to highlight the benefits of movement integration in the classroom and provide resources and tools that teachers can utilize in their own classrooms through the production of a website and professional development series.

### **History of Educational Legislation**

Prior to the 2015 change in legislation from No Child Left Behind (NCLB) to the Every Student Succeeds Act (ESSA), the focus of education was on reading, writing, and mathematics (Korte, 2015). Schools were awarded government funding based on improvement of standardized testing scores in these subject areas. This resulted in many teachers disregarding other subjects since there were no implications for failure in these areas of study. When ESSA was implemented, there was a shift in the focus of education as individuals realized that it was more important for students to be “well-rounded” and ready for the future. This act resulted in more emphasis being placed on courses such as science, social studies, physical education and the arts. This movement has since lost momentum in relation to specific subjects, namely physical education and the arts.

### **Early Lifestyle**

As a young child, I was very active and my parents supported this development by placing me in many types of sports. This was not possible for some families to afford and I see that as a huge disadvantage to those children. Research has shown that

promoting a healthy lifestyle early on in life aids in the development of lifelong health habits (Adamo et al., 2014). After-school activities provide an opportunity for children to socialize and be physically active. My fitness level was high and this benefitted me in multiple ways both as a child and in my adult life.

Around age ten, I committed to a single sport and spent about 24 hours a week at gymnastics. This allotment of time is excessive in my opinion, however, it helped me to develop great strength, determination, and endurance. Gymnastics allowed my body to expend the energy I had stored up so that I was able to focus and concentrate during the school day. My gymnastics career had a big influence on my decision to pursue exercise science as one of my majors in college as I was thinking about becoming a personal trainer in addition to teaching grade school.

While elementary education was my main focus in school, I learned a lot through the courses I took to fulfill my exercise science degree. I knew I had a passion for both teaching and exercise and I always hoped I could find a way to use these sets of knowledge in combination with each other. I discovered the perfect opportunity to do so when I learned about the concept of movement integration in school.

### **A Bump in the Road**

When I was 19 years old, in the middle of my freshman year of college, I was diagnosed with acute lymphoblastic leukemia (ALL), a quick-acting form of blood cancer. Prior to my diagnosis, I had been working out regularly and I was probably in the best shape I had ever been in. I attribute much of my body's success in beating this cancer to my health status going into treatments. I was treated in the children's ward because of the type of cancer I had and I observed many young children confined to a small room for

weeks and sometimes months at a time. I realize now that the current way classrooms are set up is not all that different from being in the hospital. Just like in the hospital, students are required to stay in one room for the majority of the day, but instead of a hospital bed, they are confined to their desk seats. The lack of opportunity for physical activity, whether it be strength- or cardio-based can be harmful and restrictive to children, especially when they are young and need a way to expend their excess energy.

### **Discovering Strengths and Weaknesses**

I began my journey toward becoming an elementary teacher in 2016, right after graduating from high school. I had been advised not to take any education courses in my first semester to focus on general courses, but after that first semester I had at least one clinical placement each year. These clinical placements allowed me to observe teachers who had been in the profession for elongated periods of time and it was clear that most of them had a certain temperament that worked for them.

In my early clinical placements, I was not confident in my teaching skills and abilities. This uncertainty made working with students more difficult because I felt a constant need to check-in with the classroom teacher to make sure I was doing things correctly. Having confidence in your abilities is a crucial component of teaching and a skill that I found I struggled with. This self-doubt shows in my teaching sometimes as I have a difficult time with classroom management.

Many of my education courses at Hamline stressed the importance of making connections with students to help keep them engaged through incorporation of content that was interesting to them as individuals. Throughout my years of education, I have always been considered a “good” student who followed the rules and got good grades. As

I have had time to reflect on my education, I have determined that all I really cared about in school was “getting the grades.” This way of thinking has led to a lack in retention of the knowledge and information I learned.

I have come to the realization that the purpose of school is not to show how smart you are in an instance, but rather to be able to use the skills and knowledge learned in school and apply them to the real world. I left high school feeling unprepared for what my future held and I did not have the basic “adulting” skills that are required to be successful on your own. Had I been more engaged in what I was learning and focused on how I might use the skills I was learning in a real-world situation, I would have felt more confident in my ability to be my own individual.

### **Exercise Science Grant Proposal**

Near the end of my coursework for my exercise science degree, I was required to take a capstone class in which I drafted a grant proposal. I had a difficult time deciding what I wanted to research and write about. Most of my peers in class planned to further their education in an area related to science, but for me that was not the case. While I don't dislike science, I had no further interest or reason to continue down that path and that made choosing a topic that I could approach from a scientific standpoint hard. The research that held the most interest and value to me was related to education and I was lucky to stumble upon the topic of movement integration in the classroom.

I was fascinated by what I discovered through my research and I realized I had been oblivious to many of the issues surrounding health in schools. Obesity has been a long-standing problem for Americans, but I did not recognize that it was so prevalent in not only adults, but also children. Once I delved deeper into the obesity problem that now

plagues people of all ages, I saw that the school system played a large part in this development due to a lack of opportunity for physical activity.

### **Professional Experiences**

Most of my professional experiences thus far have occurred while substitute teaching. This position has given me an opportunity to explore the similarities and differences across districts, schools, grades, and classrooms. As a new teacher this is very helpful as I can test out what works and what doesn't with different classes and age groups. I have found that all students seem to be more focused and engaged in the earlier parts of the day and this "energy" seems to divert into something else by the afternoon classes. Unfortunately for teachers, this excess energy that does not get used throughout the day often leads to unintentional disruptive behaviors.

In many of the classrooms I have been in, there has been some sort of movement or brain break in the daily schedule. In general, when a break is planned for, the students seem to benefit from it. As a substitute teacher I understand that students do not always act the way they would for their general teacher, whether that be negative or positive in relation to their standard behavior. This means that I may not be seeing their true reactions to the activities, however, students' excitement toward the breaks seems to reflect that they enjoy getting the opportunity to move. I have found that these breaks are most beneficial in younger students, however, the content of the breaks is often geared more toward the primary grades. If there were different options for the various age ranges, I think upper elementary students would be more willing to participate and would benefit from the activity.

## **Summary**

As discussed in this chapter, many teachers struggle to keep students engaged in their learning while maintaining a well-managed classroom. Throughout my various experiences both as a child and an adult, I have grown to recognize the important role that physical activity and movement play in all aspects of life. A lack of opportunity for movement in the day can result in multiple negative outcomes that often present themselves in environments where physical activity is more restricted, such as school classrooms. The purpose of this capstone project is to develop both a website and a professional development series that provide a synthesis of what is known about movement integration in the classroom and how to use the various types given specific circumstances. As evidence is provided to support the integration of movement in the classroom, my hope is that other teachers will recognize the importance of physical activity and the significant role it plays in daily functioning.

## **Chapter Two Preview**

In chapter two of this capstone, research-based evidence will be provided in the format of a literature review to support the integration of movement in the classroom. A brief history of movement integration in the education system will be discussed and the reasoning behind it will be introduced. Both student and teacher perspectives will be examined to understand the current debate over the implementation of movement in the classroom. The literature review will discuss the impact movement integration has on various aspects of life and investigate the specific components of movement and physical activity. Finally, examples of successful implementation will be presented and the elements that made these studies successful will be examined.

## CHAPTER TWO

### Literature Review

#### Chapter Overview

In this chapter, I will present many examples of relevant studies that pertain to and attempt to answer the question: “*How can movement integration in the classroom be used to improve classroom dynamic and decrease the prevalence of childhood obesity?*” Section one will give a brief history and reasoning for the implementation of movement in the classroom. The second section will examine perspectives and concerns related to movement integration. Section three will discuss the impacts movement and physical activity have on various aspects of life. The fourth section will elaborate on the specifics of movement integration attempting to answer the questions of how much, what type, and when. Section five will discuss approaches to take to help make movement integration successful.

#### History and Reasoning for Movement Integration

Recent reductions in opportunities to be physically active in school have led to increasing concern surrounding the major issue of childhood obesity. Children today lead much more sedentary lifestyles than their predecessors and this has serious implications for their future. Academic demands have risen consistently over time requiring a devotion of more time and emphasis placed on academic success. Unfortunately, some subjects have been pushed aside and deemed less important. This is largely due to the high stakes of standardized testing, which have placed reading, writing, and mathematics in elevated positions of importance. Some schools have taken recess and gym out of their curriculum completely, while others continue to implement minimal amounts of physical

activity into their routines. A majority of the school day consists of children sitting at their desks and silently listening to the teacher. This limited time for movement has resulted in issues related to engagement, social interaction, and behavior. These factors all play a large role in classroom dynamic and classroom management has become a skill that many teachers feel they are incompetent at. This section will provide specifics into the aforementioned problems in the education system and will lay out the areas in which movement integration can be used to counteract these issues.

### ***Higher Academic Demands***

As the world has evolved and advancements have been made, expectations have also risen in relation to educational requirements. The Common Core State Standards Initiative, which was introduced in 2010, placed high demands on both students and teachers (Farraj, 2008). This initiative aimed to establish consistent educational standards across the United States and grants were provided to states who adopted the standards. This education reform required students to meet specific levels of academic achievement based upon performance on standardized tests (Allen, 2020). There was a shift in teaching from child-centered to testing-centered instruction (Camahalan, 2015), which resulted in some subjects being deemed less important. Educators often find it difficult to take time away from teaching content that will be on standardized tests and allocating it for other subject areas. Many schools have placed so much emphasis on standardized tests that academics hold a higher importance than students' health (Bark, 2018).

### ***Reduced Physical Activity Programs***

As a result of increased academic demands, opportunities for physical activity and movement in the classroom have been greatly diminished and in some cases, removed

altogether (Farraj, 2018; Peters, 2021; Reilly et al., 2012; Tomporowski et al., 2007). Not so long ago, students would receive both physical education class and recess on a daily basis. Many schools have sacrificed time spent in these activities to allow for increased academic time (Farraj, 2018; Peters, 2021). Recess has been shown to reduce stress and anxiety and promote positive social interaction, language practice, and proper brain and body development for students of all ages (Bauernfeind, 2016). There is currently a national dilemma regarding the balance between physical activity and academic time (Camahalan, 2015). In a study conducted by Farraj (2018, p. 13), “36% of elementary school principals surveyed indicated that they did not view physical education as a subject.” While some students can rely on other forms of physical activity, such as those provided through participation in extracurricular activities, these amenities are not accessible to all (Bark, 2018). Even when physical education courses are offered, they may not provide adequate amounts of physical activity to promote learning and fight off obesity (Moon et al., 2020; Reilly et al., 2012).

### ***Health and Physical Activity Guidelines and Implications***

In 2018, physical inactivity was deemed “the biggest public health problem of the current century” as it was ranked as the fourth leading risk factor for global mortality (Wick et al., 2018). The Center for Disease Control and Prevention (2020) recommends that children ages six through seventeen years of age participate in at least one hour of moderate to vigorous physical activity each day. Half of children’s daily physical activity is recommended to occur during school hours (Institute of Medicine, 2013). When children are meeting the physical activity guidelines of at least sixty minutes per day, health benefits occur (Farraj, 2018). If students are not explicitly required to participate in

physical activity, there is concern that many students will not choose to be active (Camahalan, 2015).

### ***Sedentary Behavior***

After being sedentary for more than twenty minutes, there is a decline in students' ability to concentrate, understand, and recall information (Farraj, 2018). Research has shown that this decline can be attributed to a drop in glucose level and reduced oxygen to the brain (Reilly et al., 2012). Blood begins to pool in the leg muscles when seated longer than 17 minutes, which pulls needed oxygen and glucose from the brain. Melatonin is produced as a result and the learner gets lethargic and sleepy, making it difficult to focus (Bauernfeind, 2016). Stapp (2018) states that negative effects on physical and emotional senses can be seen after sitting longer than 10 minutes. "Any waking behavior with low energy expenditure, including sitting at a desk, is classified as sedentary behavior" (Peiris et al., 2021, p. 1). Many popular activities in today's world involve engaging in sedentary entertainment (Farraj, 2018), which has been demonstrated to have multiple adverse effects. Consequences such as higher risk of adult-sized health problems, hindered breakdown of fat and carbohydrates, and altered arterial blood flow also occur when children sit too long (Stapp, 2015). The typical classroom chairs also contribute to the problem as this inflexible seating often causes students to assume extreme postures in their attempts to move (Schilling and Schwartz, 2004). In addition, the increase of students identified with Attention Deficit Hyperactivity Disorder has risen due, in partiality, to the sedentary nature of the classroom (Stapp, 2018). When students with ADHD are kept from exercise, problems may occur (Camahalan, 2015).

### ***Attention and Engagement***

Both attention and engagement are skills that have been demonstrated to be important pieces in learning new information. Students tend to check out mentally when they begin to get tired or bored (Farraj, 2018), which leads to inefficient learning of material being presented. There is a fine balance between skills and challenges in relation to learning. According to Streat (2011), when challenges exceed skills, anxiety occurs and when skills exceed challenges, boredom is experienced. A child's brain can only process a certain amount of information at a time and any information delivered after this capacity is reached goes to waste (Farraj, 2018). Attention decreases continually after about 10 to 30 minutes when listening to a lecture (Streat, 2011). One way to combat this is to incorporate movement. It has been proven that a majority of school-aged children are kinesthetic learners (Farraj, 2018) meaning they learn best through active participation. This fact makes movement integration an even better option, but movement is beneficial for all students regardless of their preferred learning style (Bark, 2018).

### ***Healthy Habits in Early Life***

Research has shown that behaviors practiced early on in life can affect physical activity in later years of life (Camahalan, 2015). Allen (2020) states that "creating opportunities for physical activities and movements in schools can help establish lifelong healthy habits for students." There is a relationship between motor proficiency and cognitive functions which can be seen at a very early age (Tilp et al., 2019). These skills, which can be developed through participation in physical activity and movement, are very important for success in everyday life (Geertsen et al., 2016).

### ***Schools as the Ideal Setting to Promote Physical Activity***

Most of a child's waking hours are spent at school, so it is important to consider how their physical activity experiences are influenced by this. Both current and future development are influenced by school, where children exist and learn to behave (McMullen et al., 2019). School has been identified as an ideal setting for the implementation of movement and physical activity because nearly all children attend on a regular basis (Allen, 2020; World Health Organization, 2008; Moon et al., 2020). Schools are a contributing factor to physical inactivity due to the sedentary nature of lessons (Martin & Murtagh, 2017), but they also provide an opportunity to turn this problem around.

### ***Summary***

This section aimed to provide background information into the current status of the education system and present a possible option for its reform. Academic expectations for students have risen leading to less time devoted to certain subjects that have been deemed less important. Increased emphasis on standardized testing performance has caused physical activity and movement to be placed on the back burner. This reduction in opportunity to be physically active has serious physical and mental health implications that have been highlighted in this chapter. Classroom dynamic has also been affected as a result of this new focus and issues related to classroom management and engagement have become more prevalent and more difficult to address. A clear need for change has been identified and movement integration in the general education classroom has been proposed as an option for increasing opportunity for children to achieve physical activity recommendations. Reasoning for this possible solution has been provided and will

continue to be elaborated on throughout this chapter. The next section in this chapter will examine the perspectives on implementation of movement in the classroom.

### **Perspectives on Movement Integration**

The idea of integrating movement in the classroom is not new, but many teachers have concerns related to the concept that have kept them from giving it a chance.

Although statistics are known about some of the benefits of incorporating physical activity in the classroom, there are still some worries regarding space, time, and behavior. In many studies related to movement integration in the classroom, teachers entered with negative thoughts but came out with a different perception. This section will provide real-life examples and perspectives related to movement integration in the classroom.

#### ***Concerns***

Although movement integration in the classroom has many positive implications, there is some apprehension regarding specific aspects of its application. In multiple studies related to the inclusion of physical activity in the general education classroom, teachers have expressed worry surrounding the issue of maintaining a safe environment. Classrooms may have spatial constraints for physical activity and movement due to the layout of objects in the room and the limited amount of space available (Allen, 2020; Martin & Murtagh, 2017). Another possible barrier to implementing physical activity in the classroom relates to regaining control after a movement break (Camahalan, 2015; Martin & Murtagh, 2017; Stylianou et al., 2016). Teachers expressed concerns that students would not be able to “recenter” themselves and regain focus following high energy movement activities. Time was also identified as a reason for concern as teachers

worried about the extra planning that would be required to implement movement in their classrooms (Bark, 2018; Martin & Murtagh, 2017; Stylianou et al., 2016).

### ***Student Perspectives***

In studies that collected data on student perspectives of movement integration in the classroom, three common themes were present: engagement, learning, and health. While these were not the only topics students discussed in their responses, they were the most commonly noted areas where students saw or experienced a change from their accustomed routine. In the study conducted by Peiris et al. (2021) where movement breaks were implemented in some classes, students reported higher levels of concentration in the classes with the movement breaks. Many students in the McMullen et al. (2019) study made comments about being bored in the typical classroom, but noticed a change when physical activity was implemented. Students reported that they enjoyed the movement opportunities and many made connections between movement and enhanced learning and memory (McMullen et al., 2019). They also associated the movement lessons with exercise and health benefits. In Martin and Murtagh's (2017) study, baseline student perspectives of English and Math were taken and they did not illustrate engagement or social interaction. After implementing movement into the lessons, post intervention perspectives were collected and a majority of students illustrated themselves participating happily in physical activity with their peers during content delivery. (Martin & Murtagh, 2017).

### ***Teacher Perspectives***

While many teachers have reservations about implementing movement in the classroom, almost all who try it report positive outcomes. It can be very difficult to try

new approaches in teaching, especially when there is so much weight placed on student success on standardized tests. Many teachers who have included physical activity opportunities in their classroom have seen positive student outcomes and responses (Leung et al., 2018). In a study conducted by Leung et al. (2018), teachers considered the movement intervention as easy to implement and stated they were likely to continue using the strategy in the future. In Reilly et al.'s (2012) study, teachers felt that the movement helped to reduce stress. Within the teacher-provided data from Martin and Murtagh's (2017) study, four common themes emerged in relation to implementation of movement and physical activity in the classroom: academic benefits, sustainability of the program, student enjoyment, and challenges faced. Teachers from this study also noted that movement implementation helped to improve their lessons by adding variety (Martin & Murtagh, 2017). In another study involving the implementation of yoga in schools, teachers were able to use lessons from the yoga instruction to reinforce concepts of developing relationships in the classroom (Finnan, 2015). The combination of these results help other teachers to see that, although there are challenges to including movement in the classroom, there are also many benefits. In the next section, more evidence will be presented highlighting the direct and indirect impacts movement and physical activity can have on multiple aspects of life.

### ***Summary***

The goal of this section was to present all viewpoints pertaining to the debate of whether or not movement integration in the classroom can be used to improve classroom dynamic. There are valid concerns relating to issues of maintaining a safe classroom environment, added planning time, and returning focus post-intervention. Student

perspectives demonstrate mostly positive outcomes related to the integration of movement in the classroom, however, it should be noted that there were some students who did not feel comfortable participating. Many teacher perceptions were questionable pre-implementation, but most opinions related to physical activity in the classroom were positive post-implementation. It is important to keep the concerns and perspectives in mind when thinking about the integration of movement so that these worries can be alleviated and addressed. The next section will discuss areas of life that movement integration in the classroom may impact.

### **Impact of Movement Integration**

Movement Integration has been shown to have beneficial effects on many areas and components of life. Participating in physical activity not only reduces both mental and physical health risks, but also leads to higher development of school-related skills. Some of these skills include concentration, engagement, productivity, alertness, and enjoyment. Movement integration provides students with an opportunity to use multiple senses, which often leads to a decrease in off-task behavior. Many of these benefits can be attributed to the fact that being physically active positively impacts brain structure and functioning. The inclusion of movement in the classroom can also aid in the development of motor skills. The implementation of specific movements can result in increased calmness, relaxation, reduced stress, and self-awareness. This section will elaborate on the effects of incorporating movement in the classroom and why these effects are important and beneficial.

### ***Brain Structure***

Physical exercise is known to have an effect on multiple factors that influence the development of the brain (Chiang & Griego, 2017; Tomporowski et al., 2007). Movement and physical activity promote biological changes in processes such as neurogenesis, synaptogenesis, and angiogenesis (Daly-Smith et al, 2018; Egger et al, 2019; Reilly et al, 2012; Tomporowski et al, 2007). Neurogenesis is the formation of new neurons, synaptogenesis is the formation of new synapses, and angiogenesis is the formation of new blood vessels. All three of these processes enhance brain function allowing for greater neuron communication (*How do neurons work?*, 2017) and more effective transport of blood and oxygen throughout the body (*Blood and blood vessels*, 2021). This enhanced functioning of the brain leads to higher development of a variety of skills.

Hillman et al. (2008) discovered a relationship between higher levels of fitness and larger volumes of gray matter and anterior white matter in the brain, which is predictive of performance in older adults. It has been shown that greater cortical activation can be seen in children who are physically fit and this corresponds with higher cognitive performance (Tomporowski et al., 2007). Studies also demonstrate that physical activity can strengthen the hemispheres of the brain (Bark, 2018) and optimal learning occurs when the two hemispheres of the brain work together (Bauernfeind, 2016). New discoveries through brain imaging reveal that brain regions are modulated when learning complex motor or balance tasks, supporting spatial orienting and memory (Tilp et al., 2019). Learning by doing has been shown to create more neural networks improving overall learning ability (Bauernfeind, 2016).

### ***Cognitive Function***

Research by Hillman et al (2008) has demonstrated that cognitive function is influenced by physical activity and movement. Cognition is defined as “the mental action or process of acquiring knowledge and understanding through thought, experience, and the senses” (Zhang, 2019, p. 2). While there are multiple cognitive processes that benefit from participation in exercise, executive functions are the most impactful (Egger et al., 2019; Hillman et al., 2008). There are three subdivisions of executive function: updating, inhibition, and shifting (Egger et al., 2019; Tomporowski et al., 2007). As defined by Egger et al. (2019), updating refers to the ability to keep relevant information in working memory; inhibition refers to the avoidance of dominant, automatic, or prepotent responses; and shifting refers to the ability to change among multiple tasks, operations, rules, or perspectives. Some of the skills associated with these executive functions are scheduling, planning, working memory, multi-tasking, and dealing with ambiguity (Hillman et al., 2008).

Multiple studies have discovered specific areas of improvement in cognitive functions as a result of participation in physical activity and movement. Tilp et al. (2019) noticed improvements in memory and spatial cognition when balance training was implemented. In a study conducted by Geertsens et al. (2016), better semantic memory was associated with participation in leisure sports. A connection between higher exercise capacity and fewer errors in spatial working memory was also made during this study (Geertsens et al., 2016). In Bauernfeind’s (2016) study, energizers (type of movement break) were found to improve information storage and retrieval as well as awakening the brain and helping to refocus. Bauernfeind (2016) also relayed that certain kinds of

movements can stimulate the release of the body's natural motivators, noradrenaline and dopamine. Reilly et al. (2012) discovered that the enhanced brain functioning provided by movement can also help students to be more alert and better able to complete complex mental tasks.

### ***School-related Skills***

Many studies have shown positive correlations between physical activity and school-related skills. Physical activity arouses the release of adrenaline, which results in increased attentiveness and readiness to learn (Farraj, 2018). In a study conducted by Camahalan (2015), movement integration was found to increase ability to work independently. McMullen et al. (2019) noticed that when physical activity was integrated in the classroom, students showed more enjoyment and engagement in school subjects. Results from Martin and Murtagh's study (2017) indicated a positive correlation between movement integration and better concentration, enhanced learning, and increased academic motivation.

Another area that was affected by implementing physical activity in the classroom was students' ability to maintain positive relationships (Finnan, 2015). Chiang and Griego's (2017) study helped demonstrate that the integration of movement activated the use of multiple senses to learn, which aids in the storage and retrieval of memory. This study also allowed researchers to make the connection between learning and social behaviors. In the study conducted by Peiris et al. (2021), concentration, engagement and productivity were all seen to increase following the implementation of movement breaks. All of the aforementioned skills that movement integration affects can be positively applied in school environments to improve both teaching and learning.

While there were many aspects that increased after the integration of movement, undesirable behaviors decreased as a result of the additional movement. In the study conducted by Farraj (2018), movement integration resulted in a decrease in the frequency of disruptive and inappropriate behaviors. A similar effect was seen in Camahalan's (2015) study where the young participants had much less frequent outbursts when allowed physical activity breaks following completion of assignments. These changed behaviors demonstrate a connection between incorporation of movement in the classroom and less off-task and disruptive behaviors.

### ***Reduced Health Risk***

Participating in physical activity can result in many health benefits and can also reduce both mental and physical health risks. Some physical benefits exercise provides are reduced risk of cardiovascular disease, cancer, diabetes, respiratory disease, and obesity (Hillman et al., 2008; Martin & Murtagh, 2017). Participation in physical activity also affects mental health by contributing to higher self-esteem, positive mental health, improved cognition, and improved academic performance (Martin & Murtagh, 2017). Exercise reduces insulin resistance, reduces inflammation, and stimulates the release of growth factors which affect the health and growth of cells and vessels in the brain (Bark, 2018). Heart rate and circulation also increase with movement, which can increase performance in other areas (Farraj, 2018).

### ***Summary***

Levels of physical activity and movement can have impacts on physical, mental, and social health and lifestyle. Many studies have been conducted that demonstrate the impact movement and physical activity can have on both the structure and function of the

brain. Since everything is processed through the brain, this means that exercise indirectly affects development of skills as well, which can affect behavior and ability both in school and at home. Participating in some form of physical activity also leads to a reduction of health risks and increases positive health outcomes. The following section will address questions of when, how much, and what type of movement integration activities are appropriate and beneficial under various circumstances.

### **Specifics of Movement Integration**

Many of the concerns related to the implementation of movement in the classroom relate to teachers not knowing appropriate measures to take. There are many different ways to implement movement and each type can be used to achieve specific goals. All movement is beneficial in the sense that children are getting some form of exercise, but various types of movement can also help with other skills. Some factors to consider when integrating movement in the classroom are: duration and timing, cognitive demand, types of movement, and intensity and complexity. This section aims to provide evidence of how various types and components of movement can be used to achieve specific goals.

#### ***Duration and Timing***

Two components that impact the effectiveness of movement integration are the length of implementation and when it is implemented. The length or duration can refer to both the individual activities themselves or how long the program is continued. Long-term physical activity programs have been shown to have a positive effect on executive function and academic achievement (Egger et al., 2019). It has also been demonstrated that when performed on a regular basis for multiple weeks, exercise can

alter brain functions that impact cognition and behavior (Tompsonowski et al, 2007). A study conducted by Tilp et al. (2019) reported increased visuo-coordinative performance measures when intervention periods were longer. Conversely, brief bouts of physical activity have also led to positive results and require less time taken away from academic studies. Stylianou et al. (2016) found that focusing on short activities that were easy to implement made teachers more likely to implement movement in their classrooms. Hillman et al. (2009) discovered that increases in attention and academic performance in preadolescent children could be seen after performing one bout of moderately intense aerobic exercise.

The timing of implementation can refer to the time of day at which the activity is done or when it is determined to be needed. Movement can be integrated as a part of the daily classroom routine which provides a consistency for students and/or it can be used when teachers see a need for it. Research conducted by Peiris et al. (2021) suggests that the timing of the break is important to reduce disruption. Reilly et al. (2012) indicates that getting students moving every 15-20 minutes could aid in maintenance of attention, but this is seen as an unattainable goal to some teachers. When teachers attempt to implement movement in specific allotments of time, this may become an inconvenience as it can be disruptive if they are in the middle of a lesson. Most studies recommend implementing physical activity as a part of students' daily routine (Allen et al., 2020; Finnan, 2015; Reilly et al., 2012; Stylianou et al., 2016; Tomporowski et al., 2007). Allen et al. (2020) found that consciously creating time for movement activities made implementation easier. Stylianou et al. (2016) also suggests having a routine for returning to seats following physical activity to reduce time away from learning.

### ***Cognitive Demand***

One of the most debated areas of movement integration in the classroom is whether the activities should include academic content or provide a mental break for students. Egger et al. (2019) argue that due to the lack of cognitive engagement, pure aerobic physical activity does not necessarily lead to improvements in cognitive function and academic achievement. They state that cognitively demanding activities activate specific regions of the brain that lead to cognitive benefits in executive function. The authors do, however, acknowledge that “cognitive engagement is not the only crucial characteristic responsible for the cognitive gains in terms of executive functions” (Egger et al, 2019). Streaan (2011), Allen (2020), and McMullen et al. (2019) argue that incorporating learning objectives with the movement opportunities can help to shift attention while naturally integrating academic concepts. This allows teachers to incorporate physical activity without taking away from academic time. Other researchers view movement integration as an opportunity to give students a break from learning to regain students’ attention. Moon et al. (2020) discovered that non-academic movement opportunities were the most effective at increasing engagement in school. Brain breaks that do not include academic concepts can be used to take focus off hard lessons for short periods of time or can be used in transition periods to differentiate between each part of the day (Bark, 2016). Both cognitively demanding movement breaks and physical activity breaks without inclusion of academic concepts can be beneficial depending on the situation and goal of the activity.

### ***Types of Movement***

There are a number of studies that have been conducted surrounding the implementation of movement in the classroom and researchers have found that various types of movement have different effects. Some types of movement that have been proven beneficial are fundamental movement patterns, yoga and meditation, music with movement, alternative seating, and strength, cardio, and flexibility training. No single type of movement has been generalized as best and the various types are often most beneficial in specific situations.

**Fundamental Movement Patterns.** As babies, humans learn and go through the fundamental movement patterns which aid in proper brain development. These movements have been given the title BrainDance. Strean (2011) states that “cycling through these patterns sitting or standing has been found to be beneficial” (p. 2). These movements include breath, tactile, core-distal, head-tail, upper-lower, body-side, cross-lateral, and vestibular. Reilly et al. (2012) also found that crossing the midline with the hands and arms can help coordinate the hemispheres of the brain, which has been proven to increase learning ability. This study identified activities that work on fundamental skills such as hopping or jumping, throwing and catching, or doing non-locomotor skills as important to brain development (Reilly et al, 2012).

**Yoga and Meditation.** Some forms of exercise, especially yoga and meditation, provide mental health benefits such as increased ability to relax, be calm, and persevere (Allen, 2020). Yoga and meditation have also been identified as methods of mindfulness that can help students focus, remain engaged, and do better on tests (Farraj, 2018). Finnan (2015) determined, through a study, that classroom community can be built through a

shared yoga practice and may encourage peaceful engagement with others. Many of the skills, strategies, and attitudes learned through the practice of yoga can be transferred and used in a school setting to achieve success (Finnan, 2015).

**Music with Movement.** Incorporating music with the integration of movement in the classroom has been shown to activate both hemispheres of the brain, enhancing learning exponentially. Bauernfeind (2016) states that “music engages and motivates the learner and movement lays the foundation for learning.” This study found that including both music and movement in activities gets the whole student involved in learning, increasing retention of information and making learning fun by creating a learning state that holds attention (Bauernfeind, 2016).

**Alternative Seating.** Multiple new strategies and tools have been developed in an attempt to help make learning more accessible for the growing population of students with Attention Deficit Hyperactivity Disorder (ADHD). Alternative seating was developed as an option for students to have some ability to move in their seats through a limited range of motion that would not be distracting to peers. While this method does not provide a significant amount of physical activity, it is still classified as movement integration. Alternative seating options such as the disc ‘o’ sit cushion have been shown to increase sensory integration. Standing desks are another form of alternative seating that have resulted in increases in energy expenditure, justifying their classification as a form of physical activity. Foot fidgets connect a stretchy band to the legs of a student’s chair or desk providing an opportunity for sensory input which can enhance levels of concentration. In addition to increasing attention to task and in-seat behavior, therapy balls have also shown positive results in relation to decreased discomfort while seated

(Stapp, 2018). In a similar study conducted by Schilling and Schwartz (2004), using balls as chairs resulted in improvements in attention, maintained sitting, and overall school performance. In a study utilizing stand-biased desks, students who were previously more sedentary showed increased levels of physical activity and decreased time spent sitting (Swartz et al., 2020). In a study conducted by Seifert and Metz (2016) in a preschool setting, the use of wiggle cushions improved attention and persistence in the classroom.

**Strength, Cardio, and Flexibility Training.** Another debated question about integration of movement in the classrooms is whether the activities should have components of strength, cardio, flexibility or a combination of all of these. All three of these components are important in maintaining a healthy lifestyle, but not as much research has been conducted in relation to this question. Each type of training has a different purpose, all of which contribute to avoidance of health risks such as obesity. Strength training builds muscles that are important for developing motor skills, cardio training burns calories and improves endurance which improves heart health, while flexibility training enhances muscle control and prevents muscle injury. Including a mixture of these types of exercise can lead to improvements in sensorimotor and coordinative fitness (Tilp et al., 2019).

### ***Intensity and Complexity***

When implementing movement interventions in the classroom, it is important to consider that students may not all be at the same fitness level. If movement activities are too complex for some individuals, they may feel uncomfortable participating due to fear of embarrassment or failure (Camahalan, 2015). Physical activity should be age and developmentally appropriate for students (Allen, 2020). Moon et al. (2020) found that

vigorous activity breaks were more effective in reducing off-task behavior, however, it is important to consider whether students are ready for that level of exercise. Considerations of whether movement activities should be done as a whole class or individually should also be made.

### ***Summary***

This section provided many different examples of movement types that can be used depending on the goal or reason for the movement activity. It is important to observe and take note of what the class needs at certain times of the day. All of the variations of physical activity can be beneficial, but some relate more specifically to certain skills. A combination of all formats of movement integration can be used and there is not a one size fits all solution that works for everyone. The categories within this section provide areas to think about when deciding what the purpose and goal of each movement activity is and allows for evidence-based contemplation of best practices for movement integration. The following section will provide details on how to implement movement integration in classrooms successfully.

### **Successful Implementation of Movement Integration**

The push for a well-rounded education has led to some amazing changes; however, some individuals still have reservations about implementing new ideas. The previous sections have highlighted concerns and perspectives related to movement integration as well as facts and data obtained from research studies on this topic, but just providing information has not yet led to implementation and there is clearly a piece missing. For movement to be successfully integrated in general education classrooms, other factors also need to be present. In many of the studies that achieved positive

outcomes, support was provided by teachers and administrators. Participants also understood the science and reasoning behind the implementation of movement and physical activity. It is important for all participants to be provided with information and resources which allow them to follow through with this new technique. This section will provide explanation and reasoning for components that are important to the successful implementation of movement integration in the classroom.

### ***Administrator and Teacher Support***

Both administrators and teachers play large roles in the education of students and their support is needed for new strategies to work. Farraj (2018) argues that teachers and principals of schools should advocate for as much physical education as possible. Stylianou et al (2016) uses Guskey's model of teacher change to point out that modifying established practices can be a gradual and difficult process in which time and effort are required. For changes to occur, a purpose needs to be stated for school districts and benefits, implementation techniques, and success stories need to be presented (Allen, 2020). Moon et al. (2020) points out that showing the connection between other teaching behaviors is important to student success in the classroom and movement integration may increase teachers' desire to implement this strategy.

### ***Provided Information and Resources***

Many "classroom teachers lack the information needed to respect the importance of physical activity embedded in the curriculum" (Camahalan, 2015, p. 8). Physical education courses have been a part of school curriculum for a long time, but the benefits of exercise are not typically touched on in these classes. If teachers could see the transfer of skills learned through movement and physical activity in the classroom, this may lead

to a greater understanding and appreciation of the movement integration strategy. One of the main concerns of teachers in regards to implementation of movement in the classroom is the time requirement for planning lessons. Provision of tools and resources for the integration of movement in the classroom helps to alleviate this worry as lessons are already pre-planned. Resources can also provide ideas for teachers on how to utilize movement in activities they are already implementing.

### ***Encouragement of Participation***

Participation can be a deterrent for movement integration when not addressed and encouraged. Some students may feel uncomfortable participating in physical activity, especially when peers may be watching them. Having conversations with students who choose not to participate can be beneficial in finding a cause and solution to help them find enjoyment in physical activity. One way to encourage student participation is for the teachers to also participate in the movement activities. Finnan (2015) discovered that a dimension of appreciation was added to the movement integration experience when the teacher participated alongside the students. In this study, teachers found that they were able to move away from their role as teacher and this helped to normalize the activity.

### ***Sustained Professional Development***

Moon et al. (2020) state that successful implementation of movement integration can be supported by introducing effective teaching skills and enhancing classroom management skills. Stylianou et al. (2016) recommends sustained professional development to provide teachers with skills and knowledge to implement regular physical activity. Many of the successful movement integration studies utilized professional development and follow-up check-ins to help remind teachers to implement the strategy

in effective ways (Finnan, 2015; Leung et al., 2018; Martin & Murtagh, 2017; McMullen et al., 2019; Stylianou et al., 2016). In some of these professional development sessions, teachers were encouraged to set implementation goals for themselves so that they continued use of the strategy.

### ***Summary***

This section provided additional techniques that can be used to make integrating movement in the classroom easier and more effective. While facts and data are crucial to gaining an understanding of this concept, the actual implementation requires more than just knowledge. Participation and willingness to try are two key aspects of movement integration and without these components, its implementation will not be successful. Demonstrating teacher and administrator support for physical activity and movement helps students to internalize the importance of these aspects of life. It is also crucial that teachers feel they are not being burdened with a difficult task and this can be accomplished by providing information, resources, and sustained professional development.

### **Conclusion**

The goal of this chapter was to present evidence from studies that have been conducted in relation to the integration of movement and physical activity in the general education classrooms. This information was provided in an attempt to answer the question “*How can movement integration in the classroom be used to improve classroom dynamic and decrease the prevalence of childhood obesity?*” First, a background and relevance of movement integration were provided. Next, perspectives and viewpoints were discussed as a means to highlight concerns and experiences related to the

integration of movement in the classroom. The impacts movement and physical activity have on various aspects of life were also discussed. Research was then presented in relation to the specific types of movement and when and how often it should be implemented. Finally, important aspects of implementation were provided.

### **Chapter Three Preview**

In chapter three, the project layout will be discussed and explanation will be given as to why specific formats were chosen. The intended audience for this project will be divulged and details will be provided about how to navigate the website and professional development sessions being created. Reasoning will also be given for these choices of presentation and interaction that connects back to the research and the holes that are left to fill in regards to the topic of movement integration. The chapter will reference studies related to adult learning to explain the methods behind the formatting choices that were made. Finally, a timeline will be included with information about completion dates of each portion of the project.

## CHAPTER THREE

### Project Description

#### Chapter Overview

This chapter will provide details surrounding how and why this project was created. In the first section, holes in the literature related to movement integration will be identified to demonstrate the need for this project. Section two will describe the project overview. In section three, a theoretical framework will be provided for how the most important information will be determined and displayed. The fourth section will discuss the intended audience for both the website and the professional development series and explain why the information presented is relevant to educators, administrators, and the teaching profession as a whole. Section five will present a timeline to show the creative process and time frame of the project. The final section will describe how the project will be evaluated for effectiveness and the guidelines on which the program will be assessed.

#### Holes in the Literature

The goal of this project was to determine an answer to the question: “*How can movement integration in the classroom be used to improve classroom dynamic and decrease the prevalence of childhood obesity?*” Classroom management and student engagement are two crucial elements of classroom dynamic and movement integration aims to improve on both of these standards. When reviewing the literature related to implementation of movement in the classroom, I noticed two areas of information that seemed to be lacking. These identified areas were synthesized resources with specific outcome goals and sustained professional development. Many of the studies briefly

discussed these topics and identified the needs, but none elaborated on how these needs could be met.

### **Project Overview**

The project includes both an online website and a series of professional development sessions addressing the topic of movement integration in the classrooms. The website provides both information and resources related to the integration of physical activity in the general education setting. The professional development is centered more on information related studies that have shown varying outcomes when specific movement integration strategies were utilized. This section will include a detailed project description.

### ***Website Layout***

The website was created using the Google Sites design platform. The website has a home page with information about movement integration and multiple tabs for various desired outcomes and purposes of different movement activities. The tabs are labeled as follows: Calming Movement, Brain Breaks, Exercise Skills, and Cognitive Skills. There is also a “blog” tab where individuals can make posts related to implementing movement in the classroom. Each tabbed section provides a variety of resources including videos and activities.

**Calming Movement.** This section focuses on movement aimed to calm the body. The resources provided include yoga and meditation videos and activities that guide participants through breathing exercises and fundamental movement patterns. These practices can help to recenter the body and are important in developing functional skills.

**Brain Breaks.** This section focuses on fun movement aimed to give participants a true break from the cognitive demands of school. The resources include videos and activities that involve silly animations and characters to which the students can relate. This type of movement is designed to give students a chance to “get their sillies out” and use some of the pent up energy in a setting where this behavior is permitted and expected.

**Exercise Skills.** This section focuses on strength development as well as increasing cardiorespiratory and flexibility levels. The resources include various exercises that aid in regular development of the body. This type of movement aims to establish regular exercise practices by introducing basic skills that can improve overall health.

**Cognitive Skills.** This section focuses on integrating movement opportunities into academic concepts and lessons. The resources are specific to various goals and standards of education and provide ways to include movement in already existing lesson plans. The purpose of this type of movement is to implement kinesthetic learning where participants are learning and moving at the same time.

### ***Professional Development Layout***

The professional development plan consists of a series of two consecutive sessions to discuss what movement integration is and how it affects classroom management, student engagement, and childhood obesity. There are also multiple check-ins following the initial professional development sessions to have conversations about successes and failures of the integration process. This allows educators to figure out what techniques work best and what could be improved upon.

The first professional development session focuses on discussion around what classroom management and student engagement mean to each individual. Following this conversation, participants are asked to think about what strategies they have already tried for achieving higher classroom management skills and student engagement. The issue of childhood obesity will then be addressed and participants will be asked to think about what factors lead to a lack of physical activity. Finally, participants will be asked to think about how classroom management, student engagement, and childhood obesity might relate to one another. The goal of this session is to better understand what makes a classroom well-managed, how we can tell when a student is engaged, and what contributes to childhood obesity.

Session two of professional development explores movement integration as a possible approach to achieving a better classroom dynamic and decreasing childhood obesity. The reasoning behind and benefits of movement integration. First, participants will be asked what they already know about movement integration and there will be an open discussion about the concerns and barriers of implementing movement in the classroom. A condensed version of the literature review will be presented along with the website that was developed, with accompanying resources. Finally, time is allotted to share ideas and questions related to the implementation of this strategy. The goal of this session is to address possible barriers to the integration of movement and alleviate concerns by reviewing previously conducted studies on this topic.

Each of the sessions are scheduled for one hour, however, the timing will largely depend on the length of discussions within the sessions. Following the two sessions, which are scheduled approximately one week apart from each other, regular check-ins

will occur in 2-month intervals. This will provide consistency and serve as a reminder to continue implementation. The check-ins will be conducted in a staff meeting format and will be informal conversations related to how the implementation process is going. Staff members will be separated into grade levels and specialists for about 30 minutes to discuss how they have been using movement in their classrooms. After this small group discussion, all staff members will be asked to reconvene to discuss as a large group.

### **Theoretical Framework**

The choices of formatting for presentation of content related to movement integration were based off of multiple educational theories. Transformation Theory, presented by Jack Mezirow (2000), discusses how adults learn new information and transform their understandings to accept new ideas. Everyone has different perspectives and approaching new learning with an open mind is a crucial piece to accepting new knowledge. Merryfield (2012) shares four strategies for increasing open-mindedness: making cross-cultural interaction ordinary; challenging stereotyping, prejudice, and overgeneralization; demonstrating ways to learn from ordinary people; and teaching the habit of seeking out multiple perspectives. Transformation Theory stresses the importance of making meaning by becoming aware of one's own assumptions and expectations when approaching a topic (Mezirow, 2000). Before beginning the professional development sessions, participants will be immersed in a mindfulness movement activity to clear their minds and be truly present. They will then be asked to think about how their beliefs and values might affect their ability to approach topics with an open mind before beginning the exercise.

This project also operates on Guskey's Model of Teacher Change which states that "the most significant changes in teacher attitudes and beliefs come after they begin using a new practice successfully and see changes in student learning" (Guskey, 1985, p. 3). Many of the studies cited in the literature review suggested that benefits may not be seen immediately after implementation as students need time to learn the expectations and rules that apply to this new strategy. This relates to approaching new ideas with an open mind because the approach taken will be affected by mindset and if a strategy is not believed to be effective, it will most likely fail. When a new strategy is introduced with a positive mindset and positive outcomes are seen, teachers will be more likely to implement the strategy. By providing resources through the website and having teachers participate in movement themselves through the professional development, they will likely be more inclined to give this new strategy a chance.

### **Intended Audience**

This project was designed to be used in schools as a strategy to improve classroom management, increase student engagement, and decrease the prevalence of obesity. The professional development part of this project is meant to introduce teachers to the strategy of movement integration and provide them with information about how to use it most effectively. The website was also created for educators to have a synthesized collection of movement integration resources to utilize and easily implement in their classrooms. Administrators and those involved in the development of classroom curriculum can also benefit from this project by increasing their base of knowledge on this topic and witnessing the many benefits and positive outcomes that can result from implementation of this strategy. The videos and activities provided on the website will be

beneficial for students who are able to learn and focus better when they are given more opportunities to participate in physical activity.

### **Timeline**

This section will provide details about when each portion of the project will be completed. The website will be created first and when that is done, the professional development sessions will be designed. Works obtained from other designers will be included on the website. The goal is to eventually add movement integration content in the areas where it is lacking. As resources are collected it will become clear which website tabs need to be enhanced.

The entire website will be operational by the end of July. It is estimated that each tabbed section will take about two weeks to complete and the home page will require approximately one week as the information has already been gathered. The professional development series will be ready to be presented by the end of August. Creating these sessions will not take as long because a large portion will be discussion-based making planning ahead hard to accomplish. The main portion of the professional development that will require a larger time commitment is deciding which information is the most important in understanding why movement integration in the classrooms has the potential to be a successful strategy.

### **Assessment**

This project will be assessed for effectiveness regularly through feedback from teachers implementing the strategy as well as administrators who allow for presentation of the professional development. On the website, there will be a space to leave reviews and comments about what users like and dislike. Prior to and following the first

professional development session, participants will be asked to complete a paper form regarding their opinions and knowledge on movement integration and whether they plan to use the strategy or not. At the check-in professional development sessions, surveys will be given anonymously via google forms to obtain input on the effectiveness of the strategy in various classrooms.

### **Summary**

Both the website, which provides resources, and professional development have been identified in previous studies to be effective ways of presenting information and increasing likelihood of implementing movement integration. Many of the concerns related to implementation of physical activity in the classroom relate to the additional time and effort required to alter lesson plans and find extra time in the already busy school day. By providing a synthesized website with resources for specific outcomes and starting a discourse surrounding the idea of movement integration through professional development, the strategy of movement integration is presented in an easily applicable and beneficial format and lighting. This chapter provided details about how and why specific project formats were chosen and discussed timing of the process as well as how the project will be assessed.

### **Chapter Four Preview**

In Chapter Four, the purpose of this project will be reviewed and its implications will be analyzed. This chapter will discuss what was learned throughout this process from the perspectives of researcher, writer, and learner. The most important pieces from the literature review will be revisited and highlighted as information that helped to make this project possible. Limitations of this project will be presented and suggestions for future

direction of research related to the topic of movement integration will be provided.

Project contributions to the teaching profession will be highlighted and next steps for making this project more accessible to the general public will be discussed.

## CHAPTER FOUR

### Conclusion

#### Chapter Overview

This chapter will reflect on the capstone process as a whole and will review important takeaways related to the research question: “*How can movement integration in the classroom be used to improve classroom dynamic and decrease the prevalence of childhood obesity?*” Major learnings and influences from literature research will be highlighted and the implications of the movement integration project will be discussed. Limitations of the project and proposed ideas for future research will be examined. Formatting for the communication of results will also be discussed. Finally, this capstone paper will conclude with a delineation of how this project could impact the world of education.

#### Major Learnings

This project began as a desire to combine my passions for exercise and teaching and led to the discovery of a new strategy for presenting content in a fun and engaging way. I chose to pursue a teaching career early on in life, but as I grew up, I found myself struggling with the concepts of student engagement and classroom management. Developing this project has allowed my level of confidence in my teaching abilities to grow as I learned more about how movement integration can be used to accomplish both an engaged and well-managed classroom.

Prior to deciding on movement integration in the classroom as my main topic for this project, I had studied the benefits of exercise from a scientific perspective, but I had no idea how many aspects of life are impacted by even a small amount of physical

activity. The brain is a complex organ and all activities of daily life are controlled, in some manner, by processes in the brain. Through the research conducted for this project, I learned the basics of many processes the brain is responsible for and how various structures of the brain can impact the effectiveness of these processes.

Another takeaway I had from this project was the emergent need for change in the current education system. Through research in this project, I learned many disheartening statistics about how sedentary the youth of today have become and how the school environment is a contributing factor to this lifestyle. Before pursuing this topic of research, I had never stopped to think about how inactive students are during the school day. Besides the minimal physical education opportunities, students remain seated for nearly the entire school day. Not only does this have major health implications due to physical inactivity, but it can also lead to poor posture, resulting in back problems.

### **Influential Literature**

There were many sources that influenced the direction I took with this project as I knew from the beginning what topic I wanted to research, but had no idea how to turn my learning and studies into something physical that could be used by others. As mentioned in the introduction of this paper, my interest in the topic of movement integration began when contemplating what I wanted to write about for my final capstone project in my exercise science degree. Some influential literature that piqued my interest related to the concept of movement integration were works by Stapp (2018), Schilling and Schwartz (2004), Swartz et al. (2020), and Seifert and Metz (2016), which talked about the use of alternative seating in educational settings.

After realizing my interest in movement integration in the classroom and deciding on this topic for my capstone project, I recognized the need to dive deeper into my purpose for pursuing this area of study. After skimming some articles, I noticed that classroom management, student engagement, and childhood obesity were three factors that seemed to pop up often in literature related to movement and physical activity in the classroom. Finding these common themes made me reflect on my own struggles with classroom management and student engagement and also increased my awareness of the growing problem of childhood obesity. Some influential literature related to these skills and problems were Tomporowski et al. (2007), Peters (2021), Wick et al. (2018), Allen (2020), Farraj (2018), and Reilly et al. (2012). These sources allowed me to understand the need for change in our current school system and helped me find purpose in improving these areas of need.

As I continued my research and learned about the many benefits that resulted from incorporating movement and physical activity into the classroom, the cognitive domain emerged as the most positively impacted area. The brain is a complex structure and understanding how movement integration influenced the development of various skills of cognitive function was often difficult because I did not have the level of education required to understand some of the terms and concepts being discussed. Some literature that helped to break these concepts down into terms that were comprehensible by the general population were Hillman et al. (2008), Egger et al. (2019), Tomporowski et al. (2007), Tilp et al. (2019), and Geertsen et al. (2016). These sources allowed me to identify both executive functioning and motor control as specific areas of cognitive functioning that can be improved with the implementation of movement integration.

After collecting most of my sources that I planned to use in my capstone paper, I realized I still didn't have a complete picture of how I wanted this project to turn out. In conducting my research, I realized there was an abundance of varying goals and outcomes of implementing movement in the classroom, but no synthesis of findings. I learned that different types of movement resulted in different outcomes, but I didn't make this connection until I had sifted through many different sources. Some literature that helped me to recognize the need for more organization of movement integration leading to specific desired outcomes included Egger et al. (2019), Streaan (2011), Chiang and Griego (2017), Farraj (2018), Bark (2018), Bauernfeind (2016), and Leung et al. (2018).

One component I failed to think about until later in my research was perspectives and opinions on movement integration. I realized that I had personal biases toward accepting movement integration as a possible solution to improving classroom dynamic and childhood obesity because of my exercise background and I needed to address the concerns related to the implementation of movement in the classroom. Some literature that helped me see and understand the perspectives of others were Stylianou et al. (2016), Leung et al. (2018), McMullen et al. (2019), Moon et al. (2020), and Martin and Murtagh (2017). These sources led to my discovery of Guskey's model of teacher change which explains that changes in practice only occur when beliefs and attitudes change. This redirected the formatting of my project to include both a website providing structured resources with purposeful outcomes as well as professional development sessions largely centered around discussion.

## **Project Implications**

While there are many benefits to implementing movement and physical activity in the classroom, the concerns that some teachers have regarding space, time, and focus should be considered. When integrating movement in the classroom, it is important to consider the layout of the classroom because there is potential for injury if there is not adequate space to perform the movements. In regards to time, it is true that incorporating movement does require some planning ahead. This project attempts to eliminate much of that planning time by providing resources that are ready to use, however, some teachers may prefer to incorporate movement into lessons they already have planned and this may require extra thought about restructuring the plans, which takes time. The focus piece is also a legitimate concern as students may have a difficult time returning their focus to academics following certain types of movement breaks. This project aimed to provide a variety of movement options to alleviate the issue of refocusing. For example, to return focus, a teacher may choose to use one of the calming movement resources or something from the “life skills” section which provide quieter, relaxing sounds and movements.

## **Limitations**

As mentioned earlier in this paper, a limitation to the implementation of movement activities in the classroom is that not all students feel comfortable performing exercises or movements in front of others. This project is also limited in the area of diversity. Currently, there are not many available movement resources that address variety in culture and backgrounds. Many of the videos do have representation of multiple races and ethnicities, however, since movement in school is not common to many cultures, it may seem out of place or inappropriate to some students. Another

hinderance is that not all students are capable of performing some of the movements shown on the video. The concerns mentioned in the previous section of space and time could also be limitations related to the implementation of movement in the classroom.

### **Future Direction**

When I first began to think about this project and what it would involve, I was over enthusiastic and had unrealistic expectations for what I could accomplish in the time I had. Given more time to add to this project, I would love to create some of my own movement videos that could be followed along with. Many teachers are hesitant to incorporate movement into their daily routines because it takes away from learning time, so to reignite the movement toward incorporating more physical activity and exercise into school, a greater volume of cognitive movement resources need to be made available. A goal of mine is to create movement videos that are directly related to state standards and objectives.

I had also initially intended to break down the tabs on the website even further to make separate pages based on age/grade level. Many teachers have shown interest in implementing movement in their classroom, however, the current resources are mostly intended for younger children, such as those in elementary school. My hope is to expand on these resources and develop content that can be used in upper grades as well. In order for this to be successful, the content needs to be relevant and relatable, so I would need to collaborate with other teachers who are more familiar and have worked with students in upper level grades.

### **Communication of Results**

I plan to communicate the results of this project through scheduled professional development sessions in my school district. The website that was created as a part of this project will be discussed and reviewed in the second session of the professional development series. I also plan to share the professional development slides and a link to the website with all of my teacher colleagues in the school that I teach at. When teaching lessons, I will watch for signs that my students are becoming disengaged and will plan to implement movement activities from the website then and as a regular part of our classroom routine.

### **Project Benefits for Education**

This project will be a benefit to the education profession in that it provides a synthesis of research related to movement integration in the classroom and a resource for finding movement and physical activity opportunities that have specific purposes and outcomes. The website created provides a platform for educators to connect and collaborate with each other about ideas on how to implement movement and physical activity in schools. The professional development series allows for deep reflection of both successful and unsuccessful methods and strategies and introduces the more recent strategy of movement integration in classrooms. These resources will provide teachers with knowledge and ease-of-access needed to implement movement in their classrooms.

### **Summary**

This chapter included a reflection on the process of creating this capstone project to respond to the question: *“How can movement integration in the classroom be used to improve classroom dynamic and decrease the prevalence of childhood obesity?”* First, I

described major learnings I had in both a personal and professional sense. In the influential literature section, I explained my process of research and what I learned along the way from various sources that contributed to the design of the final project. I discussed the implications of the project as well as the limitations of the provided resources. Future direction for further investigation and possible next steps were also included. Finally, I talked about how the results would be communicated and what the benefits of this project are to the education profession.

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