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Fostering Children's Academic Development Through Movement-Based Learning Environments

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Abstract

This study investigated how play and movement affect young children's learning in order to provide educators with teaching strategies that are effective and developmentally appropriate in supporting the whole child. Academics, standardized testing, and school readiness have been buzzwords in education since No Child Left Behind was enacted in 2001. The term "school readiness" has been interpreted to indicate worksheets, memorization, and direct instruction to increase academic scores on standardized tests (Klein, 2015). The Common Core Standards for reading have dramatically increased in recent decades, including the expectation that children leaving kindergarten be comprehensive emergent readers (Carlsson-Paige, Bywater-McLaughlin, & Almon, 2015). Over 71% of teachers feel there is too much testing and that this testing is not developmentally appropriate (Schroeder, 2007). The elevated pressure from the finality of high-stakes standardized testing and increasingly arduous state standards has equated to an increase in direct instruction of skills and a dramatic decrease in active play. Research found that play and movement have many direct and indirect benefits on learning and overall development. This paper examined 15 studies that focused on how play and movement affect learning and offered suggestions for what the education of young children should encompass in the future.

Keywords: play, movement, integrated movement, developmentally appropriate practice, didactic teaching

Chapter One: Introduction

Over the past twenty years, there has been a push in education to teach literacy and math skills in early childhood programs as a result of No Child Left Behind and other educational initiatives (Heidemann & Hewitt, 2010). With the amount of time spent on academics, physical activity and play has decreased or disappeared in classrooms (Bodrova, 2012). Educators use a variety of methods to increase literacy and math skills in young children, including direct instruction, interventions, rote memorization, and worksheets (Bodrova, 2012). Current trends in education showed previous time spent in active play and movement in early childhood programs and kindergarten classes is replaced by test preparation and testing, leading to a sedentary classroom environment (Heidemann & Hewitt, 2010). These drill-and-kill practices do not support the development of the whole child, as social emotional learning and a child's motivation to learn cannot be memorized or tested (Almon, 2018).

According to Joan Almon (2018), the co-founder of the Alliance for Childhood, children in the United States today have significantly less time to move and play in school than children in any past generation. Research indicated that the recommendation of daily physical activity for children is at least 60 minutes, while the average length of recess in elementary schools is 25 minutes (CDC, 2018). According to Lu & Montague (2016), "Childcare settings and schools have been identified as the most influential factors for children's physical activity, and physical activity habits are better formed and maintained if started in early childhood" (p. 410). It is critical to examine the trend of children living a more sedentary lifestyle than any other generation in the past as well as the effects of increased academic rigor and expectations even in young children (Bodrova, 2012). Research concluded that increasing play and movement in a child's day helps prepares a child for academic learning at school.

Scope of Research

When examining a topic as vast as play and movement and overall effects on learning, it is critical to consider the age of the participants as well as the neurological development of the participants. Therefore, this study focused primarily on children ages four to eight years old who are considered ‘typical’ in brain development. Moreover, the participants examined in this study are children; thus, researchers and readers must be aware of the spectrum of variance that comes with studying humans, especially young children (Galvan & Galvan, 2017). This includes, but is not limited to personalities, age, lived experiences, and individual needs and wants. This study analyzed how play and movement affect a child’s ability to learn in order to unearth how educators can create an optimal learning environment. Research findings were analyzed and synthesized.

Importance of the Study

Research showed as the amount of time young children are allowed to play and move freely within the school day decreases and instructional time increases, educators must know how play and movement impact children and overall learning (Almon, 2018). Educators must be able to meet the academic expectations of state’s standards while also cultivating developmentally appropriate practices with young children’s best interest in mind. A teacher’s educational philosophy and knowledge of play dramatically influences how the classroom environment is set up (Carlsson-Paige et al., 2015). In addition, a teacher’s mindset impacts the specific strategies employed throughout the school day to engage children (Bauml, Martin-Patton & Rhea, 2020). Therefore, teachers must commit to implementing specific teaching strategies that address the critical need of children to play and move. Teachers who possess a holistic growth mindset will support children to not only be successful, but also to reach each child’s full

potential. Because educators set the tone for a child's experience with schooling and learning, the importance and impact of this study is tremendous.

Research Question

Research examined found it is essential that effective teachers are reflective and possess a growth mindset. Effective teachers are not only experts on best practices and current research in their field, but also look ahead to the future. This study analyzed current research and connected applications to current practices in the field of Early Childhood Education (ECE) which reflects the program's essential question (at Concordia University, St. Paul), "In light of early childhood theories, philosophies, and current research in the field regarding best practice, what is the future of programming and practice in early education?" This study aims to understand what is known about the effects of play and movement on a child's ability to learn in order to prepare educators to provide an optimal learning environment and asks the research question; "How does play and movement promote academic learning in young children?"

Definition of Terms

Play is commonly defined in an educational realm as including three components: it is enjoyable, it is a chosen activity, and it can be manipulated and changed by the players (Mraz, Porcelli, & Tyler, 2016). In addition, play almost always includes emotional or physical risk of some sort by the players (Mraz et al., 2016). This study specified if the play or movement is with a group or solo, as play can take place in both settings.

Movement is a word that was used frequently in this study. Movement refers to children having the autonomy and ability to move from one place to another (Heidemann & Hewitt, 2010). Movement may also include the movement of just a specific body part (ex. arm) and will be identified in the analysis. Integrated Movement will refer to intentional and purposeful

movement that is embedded into academic lessons and activities and relates to the learning objectives (Mavilidi, Okely, Chandler, Louise Domazet & Paas, 2018).

Developmentally Appropriate Practice (DAP) is a framework developed by the National Association for the Education of Young Children (NAEYC) that effective teachers utilize when working with children (2020). This framework encompasses research-based teaching strategies that considers a child's age, stage of development, and individuality while being culturally responsive in order to promote ideal growth and learning for that child (NAEYC, 2020). DAP provides best practice standard that apply to current teaching practices. Didactic Teaching will refer to a teacher centered model in which the children are predominantly passive listeners while the teacher does most of the lecturing (Fisher, Hirsh-Pasek, Newcombe & Golinkoff, 2013).

Conclusion

Research showed that Play and movement are critical components in a child's cognitive development, yet data indicated that in many classrooms today, time spent in play and movement is decreasing. Researchers have examined this trend and finding that purposeful movement and play-based teaching strategies better prepare a child for school and learning (Bodrova, 2012). Bodrova (2012) noted that current research is showing a positive correlation between the development of executive function skills and school success. Additionally, Bodrova explained that executive function skills include working memory, inhibitory control and mental/cognitive flexibility; these executive function skills are necessary and critical for later academic success in school yet are often ignored by the academic curriculum (2012). Adults often assume children should "just know" how to operate in these executive function domains or that these executive functions will develop automatically. However, current research indicated that educators can most effectively strengthen these critical executive function skills in children through play and

movement (Bodrova, 2012). In Chapter Two, a review of literature examined how increasing time spent in play and movement during the school day positively impacted children's overall learning and retention of information. Following, a summary and analysis of the findings from the literature review will be provided.

Chapter Two: Literature Review

This literature review examined the importance of movement and play as a key component of education in young children by analyzing the findings of 15 peer-reviewed studies. These findings offered an answer to the enduring question: “How does play and movement promote academic learning in young children?” The 15 studies that were reviewed included nine quantitative and three qualitative research studies as well as two mixed methods analyses and one ethnographic study. Each study analyzed a different aspect of movement and play within education. These 15 studies explored best practices for supporting the needs of young learners through play and movement in some capacity and offered an answer to the research question. Several themes emerged from the review of literature available regarding the impact of play and movement on academic performance including the positive effects of play on cognitive functioning, the role of a teacher’s pedagogical approach, the benefits of integrated movement, specified implications regarding mathematics and reading achievement, and the importance of student engagement. These themes will be explored and explained further in this chapter.

Positive Effects on Cognitive Functioning

Play and movement can have a significant and positive impact on the brain development among young children. Hillman, Pontifex, Castelli, Khan, Raine, Scudder, Drollette, Moore, Wu, & Kamijo (2014) presented a quantitative study that measured the correlation between active play and brain health and development. Prior to the study, the participants, 220 children ages eight to nine years old, took physical and cognitive tests that were repeated again at the end of the study. Hillman et al. (2014) studied children ages eight and nine years old because this represents a period in schooling when standardized testing increases and allotted time for play during the school day decreases. The children were divided into two groups, with one group

engaging in two hours of active play time after school throughout the school year. The children in the group had the option of attending the after school play activities every day for nine months. The control group did not have set time for movement. Hillman et al. (2014) discovered “substantial improvement” in the executive function scores in children that participated in the active play time group versus children that did not participate in active play based on the year of year assessment. Hillman et al. (2014) emphasized a positive correlation between the number of participated exercise sessions and the overall gain in cognitive scores. Researchers noted that all of the children showed brain development over the year. However, the children who participated in the active play group showed faster brain development, an increase in executive function skills, and an increase in concentration. Hillman et al. (2014) also stated that the children in the active group lost overall more body fat than the control. The results of this study suggested that movement supports cognitive functioning and learning among young children.

Research found that improved cognitive functioning and self-regulation skills are vital to a child’s success at school. Becker, McClelland, Loprinzi & Trost (2014) examined the relationship between active play during recess and academic learning. The participants included 51 prekindergarten children who were given pre-and post-tests that measured overall self-regulation skills, time spent in active play, as well as math and reading skills. Becker et al. (2014) used path analyses to compare data from the tests and found a statistically positive correlation between active play time and self-regulation skills. Becker et al. (2014) also found through a statistically positive correlation between self-regulation skills and higher academic skills, with a focus on math and reading. This suggests that play and movement can improve more than just cognitive development; many life skills can be gleaned from play. Active play cultivates self-regulation and self-regulation fosters academic achievement.

Impacts of Integrated Movement

Physical activity integrated into learning activities also has positive effects on learning. Mavilidi, Okely, Chandler & Paas (2017) presented a quantitative study that examined the impact of implementing physical activities into academic learning lessons as well as the overall retention of academic skills. The participants represented seven different early childhood sites and included a total of 90 children with an average age of 4.90 years old. The participants experienced a series of academic science lessons with the objective being able to identify the names of planets and the order of the planets from the sun. The children were randomly assigned into one of three groups. The first being a control group in which the children were taught the science lesson through a direct instruction method, with the children sitting and given no opportunities for physical movements during the lesson. The second group was a non-integrated physical activity group, in which the children had an opportunity for movement that was unrelated to the objective of the science lesson (running around the room for two minutes). The third group was an integrated physical activity group in which the children started at the sun and would run to the various planets in order. For example, the students would first run from the sun to Mercury (closest planet) and then back to the sun and would then run to Venus (second closest planet from the sun). The science lessons were taught once a week to each group and continued for four weeks. At the end of four weeks, an immediate post-test was given to the children and the post-test was repeated again six weeks later.

The post-tests measured retention of the material learned (the order and names of the planets from the sun) and overall enjoyment of the science lessons. Mavilidi et al. (2017) hypothesized that the integrated physical activity group would perform better on the immediate and delayed post-test compared to the other groups, as well as rate overall enjoyment on the

lessons the highest. Mavilidi et al.'s (2017) hypothesis was proven correct as the integrated physical activity group performed substantially better on retention of material and overall enjoyment of the lessons compared to the other groups. The non-integrated physical activity group scored the second highest on retention of material and enjoyment of the lesson while the control group (no movement) experienced the lowest retention scores and lowest overall enjoyment of the lessons. Mavilidi et al. (2017) discussed not only the significant cognitive gains of incorporating integrated body movements into learning lessons, but also the physical and psychological improvements that movement has on children.

Impact of Integrated Movement on Mathematics and Reading

Research suggests that integrated physical movements positively impact learning and retention of mathematical concepts. Mavilidi, Okely, Chandler, Louise Domazet & Paas (2018) offered a quantitative study measuring the correlation between integrating physical activities and retention of mathematical skills. The participants in the study consisted of 120 four and five year olds with the median age around four and half years old. The children represented nine different child-care settings and consisted of 57 girls and 63 boys. The children were randomly assigned to one of four different groups: integrated physical activity, non-integrated physical activity, sedentary, and observed integrated activity group. All participants were given three assessments: a pre-test, an immediate post-test, and a delayed post-test six months after the study. The academic lesson that the children were taught was a math lesson with the learning objectives of improvement in counting to twenty and accurately identifying the numerical symbol (ex. '5') that is associated with the verbal word (ex. 'five').

Mavilidi et al. (2018) placed foam numbers from one to twenty in a vertical line and all four groups were given the same verbal instruction, in which the teacher counted aloud from one to twenty and backwards from twenty to one and called out various numbers while pointing to the corresponding location on the number line. The children in the integrated physical activity group moved while the teacher was counting and would jump, run, or leap to and from numbers. The children in the integrated physical group walked forward on the numbers when the teacher counted aloud in progression and walked backwards on the numbers when the teacher counted down from twenty. The children in the observed integrated activity group watched peers use gross motor skills during the lesson but had to stay seated. The children in the non-integrated physical activity group were given a break during the lesson to run around the room for one minute. The children in the sedentary group listened to the teacher and looked at the foam numbers but were unable to move and touch the numbers.

Mavilidi et al. (2018) found that the integrated physical activity group did statistically better in the immediate and delayed post-tests compared to the other three groups. The integrated physical activity group also rated overall enjoyment of the activity higher than the other three groups. When comparing the non-integrated physical activity group, the observed integrated physical activity group, and the sedentary group, Mavilidi et al. (2018) found no statistical difference in the immediate and delayed post-test scores. This study suggested that for preschool-aged children, integrated movement within and relevant to math lessons can contribute to higher academic achievement and retention.

Movement has a positive impact on mathematics achievements among older children as well as preschool-aged children. Shoval (2011) presented a quantitative study regarding the relationship between mindful movement and learning academic information with a focus on

acquiring the mathematical concept of angles. Shoval (2011) collected data from six different schools for the study; the participants included 261 children who were in second or third grade. Shoval (2011) examined the overall learning of angles by comparing the control group (103 children) and the experimental group (158 children). Shoval (2011) asserted that there were no statistical differences between the makeup of the two groups with specification on gender, cognitive abilities or behaviors. Shoval (2011) hypothesized that the experimental group would academically outperform the control group. The control group was taught using a didactic method, with the teacher giving verbal instructions on the material and then assigning workbook pages for students to complete. Conversely, the teachers who taught the experimental group completed a course on how to embed movement in teaching and cooperative learning amongst students prior to teaching the lessons. Shoval (2011) further explained that there was no statistical difference amongst the eight teachers involved in the study with focus on years teachings and performance rating. Over the span of four weeks, Shoval (2011) found that the children in the experimental group scored statically better than the control group on all facets tested related to the understanding of angles. The findings of Shoval (2011) suggest the importance of integrative movement within math lessons in order to support retention and cognition of key concepts.

Research found that movement can positively impact both math and reading skills. Erwin, Fedewa & Ahn (2013) examined the effects of implementing a physical activity intervention on learning, with a focus on math and reading. The study focused on third graders from a public school district. The children were divided into two groups: one group received integrated physical activities during the designated reading and math blocks. The integrated physical activities added up to a total of at least 20 minutes a day. The control group followed

traditional reading and math schedules with physical activity occurring only during recess and designated physical education class. Erwin et al. (2013) found that while both groups improved in mathematics and reading, the group that received integrated physical activities outperformed the control group in both math and reading. Erwin et al. (2013) noted that the data suggested that the integrated physical activities fostered greater math growth than reading and implied that future studies should focus on this emerging hypothesis.

Integration of purposeful movement when teaching children academic information leads to a higher rate of learning and retention. Shoval, Sharir, Arnon & Tenenbaum (2018) presented a quantitative study detailing the academic results amongst kindergarteners when comparing the incorporation of mindful movement versus movement versus the absence of movement. The participants included 160 children between the ages of four and six years old. The children in the study were split into three distinct groups. The first group of children were taught academic information using mindful movement, which consisted of purposeful movements that were embedded in academic lessons. The second group of children were taught the same academic material and had movement breaks; the breaks were child-led and not tied to the academic lesson. The third group of children were taught the same academic information through didactic teaching with no opportunities for movement. Pre-and post-assessments were administered to the children focusing on reading and mathematics, which included the Comprehensive Reading Test (CRT), Mathematics Achievement Test (MAT), Standard Progressive Matrix of the Raven A+B Test and C Test (SPM Matrix) and Sequencing Test of Ordinal Numbers (Shoval et al. 2018). Shoval et al. (2018) ran the experiment for 29 weeks and found there was a positive statistical difference in children's learning when mindful movement was combined during learning according to the assessment data. Shoval et al. (2018) clarified that all tests except CRT yielded a

high statistical difference, whereas the CRT was substantially higher for children who participated in mindful movement. Shoval et al. (2018) did not find a statistical difference when comparing unstructured movement and didactic teaching. Shoval et al. (2018) confirmed that those in the movement group outperformed the control group. This study took place in a predominantly middle class suburban area and future studies should include urban and diverse populations. Regardless of the limited scope of this study, Shoval et al. (2018) discovered important implications of movement on academic achievement. Ultimately, the benefits of integrated movement can only be provided to students if teachers are knowledgeable about the connection between movement and learning and are willing to provide opportunities to students.

Teacher Pedagogy

Educators have a large responsibility for incorporating movement into teaching practices to support student achievement and nurture students' desire to learn. McGregor, Swabey & Pullen stated, "It is estimated that 85 percent of students in school are natural kinesthetic learners... these particular learners are not being catered to through traditional teaching practices" (2015, p. 6). According to McGregor et al. (2015), teachers often validate the conviction that young children need more movement in school settings; however a teacher's willingness and capability to provide purposeful movement varies drastically. Through a qualitative study, McGregor et al. (2015) interviewed and observed teachers and found that there was a noteworthy difference between a teacher's perception of integrated movement versus movement breaks. McGregor et al. (2015) concluded that the teachers who accurately used integrated movements reported greater student focus during academic learning time. Additionally, McGregor et al. (2015) noted that the increased learning potential through incorporating integrated movement into one's pedagogy is substantial and advocated that

teachers should have specific training and professional development devoted to implementation of integrated and purposeful movements into the curriculum. Training teachers to implement integrated movement into pedagogy can increase academic achievement and support the development of young children.

The role of the teacher and the teacher's pedagogical approach in creating an optimal learning environment cannot be overlooked. "Teacher pedagogical practice is key to fostering links between play and learning... they are complex concepts that may be easily dismissed as separate, when rather they are deeply intertwined" (Theobald, Danby, Einarsdóttir, Bourne, Jones, Ross, Knaggs & Carter-Jones, 2015, p. 359). Theobald et al. (2015) explored the differences and similarities of perspectives regarding play between teachers and children through a qualitative study. To study both the teachers' and the children's varying perspectives on play and learning, the teachers were considered active researchers in the study. The teachers watched video recordings of teaching and interactions with students. The teachers then reflected on teaching practices and answered a set of semi-formal questions. The children were interviewed by the researchers with set questions and flexibility as to where the organic conversations led the discussion. Theobald et al. (2015) hypothesized that the children and teachers would have different perspectives on what constitutes play and learning and found that the hypothesis was correct.

Theobald et al. (2015) found that children associated learning with the teacher's voice and directed activities. The children did not think learning was happening simultaneously when playing with items such as blocks and art materials. In contrast, the teachers associated block play and art with learning (Theobald et al., 2015). Theobald et al. (2015) advised that there should be a unification of the perspectives to teach children that learning and playing are

interwoven and both can take place simultaneously. Theobald et al. (2015) suggested that to maximize learning and playing, teachers ought to guide children through the learning process by engaging in reflective questioning regarding what skills are being learned as the children are in play. Children's engagement was higher in activities deemed as play and children were expressive in with opinions that play was more enjoyable than learning (Theobald et al., 2015). Theobald et al. (2015) found children could sustain time spent in play longer than learning activities and recommended that teachers use these findings to integrate the curriculum and learning objectives to increase academic learning as well as student engagement. Theobald et al. (2015) stated that teacher pedagogy was a crucial indicator on how effective play could be in supporting academic growth and asserted that teacher training programs and professional development should focus on the integration of play and overt learning.

Fisher, Hirsh-Pasek, Newcombe, & Golinkoff (2013) further examined the relationship between teacher pedagogy and learning outcomes among early childhood educators and students. Fisher et al. (2013) focused on three different teaching pedagogies: didactic instruction, guided play, and free play. The participants in the study were 70 four-and five-year olds who were randomly assigned to one of the three instructional pedagogical groups. Fisher et al. (2013) noted that a limitation in the study was that the children were predominantly white and lived in a suburb of Philadelphia. Future studies should include urban areas with a more diverse participant population.

This study focused on lessons regarding the acquisition of geometric knowledge (Fisher et al., 2013). The researchers chose four distinct shape groups: rectangles, triangles, pentagons, and hexagons; the children learned about each groups' properties (number of sides and vertices). The learning target was to find out what makes these shapes similar to one another and 'real'

(straight sides and vertices) using the three different pedagogies. The final assessment tested to see if children could accurately identify 'real' and 'fake' shapes for each of the distinct shape groups. The children in the guided play instructional group were taught about the attributes of the various shapes through purposeful questioning and scaffolding by the researcher. The children were able to physically manipulate the shapes and move with the shapes while having a discussion with the researcher. The researcher helped the children trace the shapes and physically demonstrated how to feel each edge of a shape. The children were able to talk about what made each of the shown shapes 'real' (having closed edges and straight edges). At the end of the guided play lesson, the children had to create two new shapes with wax sticks that were similar to the shapes that had been previously taught for each of the shape groups.

In contrast, the researcher in the didactic instructional group traced and manipulated the various shapes. The researcher discussed the attributes of the shapes and used the same wording as with the guided play group; however, the children were sedentary and could only watch and listen to the lesson. At the end of the lesson, the researcher created two new shapes using the wax sticks while the children remained sedentary. The free play group experienced no instruction other than the shapes being sorted by attributes done by a researcher before the children came in to play.

Fisher et al. (2013) found that teacher pedagogy had a significant effect on children's knowledge of shapes and understanding of what makes a shape 'real' in terms of edges and vertices. The children in the guided play instructional group did significantly better in identifying 'real' and 'fake' shapes compared to the didactic instructional group and the free play group in the immediate post-test. However, the children in the didactic instructional group performed better on the post assessment compared to the free play group. A delayed post-test was also

given one week after the immediate post-test and Fisher et al. (2013) found that retention of information was consistent with the immediate post-test results. Fisher et al. (2013) remarked, “This research takes an initial step in discovering the potential mechanisms underlying the effectiveness of guided play... free play alone does not provide sufficient information to help children form specific shape concepts” (p. 1876). Fisher et al. (2013) discussed the correlation between the children’s levels of engagement and the children’s ability to physically explore the environment compared with the overall impact on learning outcomes. This research suggests a positive impact on student academic achievement based on teacher pedagogy, and specifically implicated the importance of guided play on student achievement.

Other researchers have examined the impact of teacher pedagogy on student achievement. Vogt, Hauser, Stebler, Rechsteiner & Urech (2018) used a mixed methods approach to study the effect of teacher pedagogy on mathematical learning in kindergarten. This study examined 324 children in kindergarten (six years old) and 35 kindergarten teachers. The children were given a pre-test prior to the study in which Vogt et al. (2018) found no statistical difference in mathematical competencies among the children. The children were then randomly assigned to one of three groups: a training program, play-based learning, or the control group for a duration of eight weeks. The children in the training program were taught math as usual with additional time during the week devoted to playing math games. The children in the play-based learning group learned mathematical skills through guided play and exploration of mathematical manipulatives, while the control group followed a didactic approach to learning with paper and pencil (Vogt et al. 2018). Vogt et al. (2018) examined the post-tests and found a positive statistical improvement in the children who were in the play-based learning group versus the other two groups. Vogt et al. (2018) did not find any statistical differences between the training

program and the control group. In addition, Vogt et al. (2018) used qualitative data to measure enjoyment level amongst the children in each of the groups and found that children's overall enjoyment was highest in the play-based learning group in addition to the overall increased mathematical scores this group produced. The findings of Vogt et al. (2018) suggested a positive impact between the use of guided play as a pedagogical approach and academic achievement, in addition to accounting for positive student engagement and enjoyment of learning.

Teacher pedagogy, and specifically what teachers are willing to try in the classroom, has an impact on students, learning, and overall mindsets. Bauml et al. (2020) presented a qualitative study using "semi-structured" interviews of 17 elementary school teachers regarding the changes in time and duration for free play based on the teachers' findings and observations. The participating teachers implemented four free play breaks throughout the day that each lasted 15 minutes, opposed to the one scheduled recess/free play opportunity that lasted approximately 20 minutes. One of the teachers said to the interviewer, "We (teachers) were all concerned, thinking, 'How are we supposed to get all of our curriculum in?'" (Bauml et al, 2020, p. 513). Bauml et al. (2020) found that although most of the teachers expressed initial concerns over the increased time spent in play and the decreased academic time, all of the teachers later reported that academic achievement did not decrease. Bauml et al. (2020) reported that 88% of teachers identified an increase in student focus during academic time. In addition, more than half of the teachers observed an increase in students' overall creativity as well as improvements to students' overall demeanor and problem-solving skills (Bauml et al., 2020). Changes to a teacher's pedagogical approach or structure of the daily schedule can positively impact academic achievement and improve students' attitudes.

Teacher pedagogy also factors into account the amount of recess and free play allotted to children during a regular school day. According to Erwin, Fedewa, Wilson, & Ahn (2019), a longer duration and higher frequency of recess is shown to enhance mathematical learning. Erwin et al. (2019) examined the effects that the duration and frequency of recess had on academic achievement over the span of two years. The participants included 728 children in elementary school (kindergarten through fifth grade). The participants were randomly selected to be in one of two groups: the control group which had the standard 15 minutes of recess once a day, and the experimental group which had recess doubled. This meant the children in the experimental group had recess twice each day for 15 minutes each time, totaling 30 minutes of movement each day.

Erwin et al. (2019) measured academic progress using the Reading and Math Inventory and the Measure of Academic Progress to compare and contrast the participants. In addition, student disciplinary referrals were also measured and examined. Erwin et al. (2019) found that academic achievement increased in math in the experimental group. Erwin et al. (2019) found no statistical difference amongst reading achievement and the duration and frequency of recess. Erwin et al. (2019) reported that disciplinary referrals nominally increased with the added recess. Erwin et al. (2019) noted that the findings of the study were surprising and somewhat conflicting with other studies regarding additional recess and behavior. Erwin et al. (2019) speculated that recess was not always staffed by licensed personnel, which could contribute to the conflicting finding regarding student behavior. Measuring student behavior and engagement in relation to movement and play can offer greater perspective on the overall impact of movement.

Student Engagement

Research found teacher pedagogy is not the only important factor that impacts achievement; children's mindset and unique perspectives have proved to be impactful on engagement and learning as well. Breathnach, Danby, & O'Gorman (2017) examined children's perspectives on various school activities and the correlation between perspectives and engagement levels in the different activities. Breathnach et al. (2017) took an ethnographic approach that included formal and informal observations, interviews, and data collection. This study examined 25 children between the ages of four and half years old to five and half years old. There were 13 girls and 12 boys in the study. Over a span of five months Breathnach et al. (2017) collected 65 hours of video recordings, 40 hours of audio, written observations, and the drawings and writings from the children. The children were encouraged to express self-perspectives through an array of developmentally appropriate medium, such as drawing pictures.

Breathnach et al. (2017) found that children exhibited decreased focus time for activities that were teacher-directed or forced, such as sitting at a table during small group time to practice writing. However, during play time, the children frequently chose to engage in the very activities that had previously described as less favorable, or "work." If given free choice, researchers found that children would frequently choose to write and would stay engaged for a sustained amount of time. Breathnach et al. (2017) discussed the findings and offered suggestions to improve engagement and motivation among young children with learning goals in mind. Breathnach et al. (2017) stated that educators should collaborate with children when developing lessons and classroom opportunities to increase engagement. Breathnach et al. (2017) found that when children were encouraged to be autonomous and were governed by interests that engagement increased. In addition, during play children frequently engaged in the same tasks

that the children previously stated were not enjoyable and considered those activities “work” (Breathnach et al., 2017).

Further studies evaluated “work” versus “play” in relation to academic learning and engagement among young children. Whitebread, Coltman, Jameson, & Lander (2009) presented a mixed method analysis that consisted of one observational and two experimental studies focused on what children learn and what skills are developed while engaged in play activities. The participants in the studies consisted of children between the ages of three and five years old. The observational study included the inquiry of over 500 videos in which play and displays of self-regulation were described, counted and compared. Whitebread et al. (2009) duplicated a previous study for the two experimental studies and separated the children into a group that focused on play and a group that focused on didactic teaching methods. Whitebread et al. (2009) found that children in all studies displayed a higher rate of self-regulation and metacognitive skills when play was involved. Whitebread et al. (2009) further discussed that these self-regulation skills drive the ability to learn academics in the later schooling years. The findings of this study advocated for the implementation of play and movement in all settings that involve young children.

Summary of Findings

This chapter sought to answer the relevant question; “How does play and movement promote academic learning in young children?” The literature review examined 15 peer-reviewed studies to examine how play and movement might impact the learning and retention of academic material in children who are beginning formal education. The 15 diverse studies that were reviewed included nine quantitative and three qualitative research studies as well as two mixed methods analyses and one ethnographic study. Five themes emerged from the research

regarding the influence that play and movement had on academic performance including the positive effects of play on cognitive functioning, the role of a teacher's pedagogical approach, the benefits of integrated movement, specified implications regarding mathematics and reading achievement, and the importance of student engagement.

The studies in this chapter revealed that the presence of play and movement positively impact children when learning and retaining academic information. Research indicated that play and movement have a profound and positive impact on brain development and cognitive functioning (Becker et al., 2014; Hillman et al., 2014). The research also indicated that the incorporation of integrated movements during academic lessons promotes learning and the retention of material (Mavilidi et al., 2017). The literature review revealed the implementation of integrated movements positively impacted the overall development of core subjects and concepts such as mathematical and reading skills amongst children (Erwin et al., 2013; Mavilidi et al., 2018; Shoval, 2011; Shoval et al., 2018). Research identified the incorporation (or lack of) of play and movement in the classroom are closely related to teachers' pedagogical views regarding methodology (Bauml et al., 2020; Erwin et al., 2019; Fisher et al., 2013; McGregor et al., 2015; Theobald et al., 2015; Vogt et al., 2018). Furthermore, for children to be successful in the classroom, children must be actively engaged in the learning. Therefore, children's unique perspective must be examined when studying the relationship between play, movement and learning. Student engagement and students' overall mindsets regarding what constitutes play versus academics impacted the learning and retention of academic material. Research showed a positive correlation between higher student engagement with the presence of movement and play (Breathnach et al., 2017; Whitebread et al., 2009). The final chapter of this study will include a

review of the proposed problem, applications based on the literature review, limitations as well as ideas for future studies, and a conclusion.

Chapter Three: Discussion/Application/Future Studies

This chapter will include a review of the proposed problem and specific application examples as to how this research could inform instructional or educational practices. In addition, this chapter will also discuss limitations or gaps in the research. Chapter three will conclude with recommendations for future studies regarding movement and play as well as the conclusion of this study.

Review of the Proposed Problem

In chapter two, 15 research studies were reviewed in an attempt to answer the question: “How might play and movement promote academic learning in young children?” The increasing lack of opportunities to move and play while simultaneously learning for young children is a growing concern amongst educators and health officials (Klein, 2015). Research points to the growing pressure of standardized tests to explain why children spend more time sedentary at school than in previous years (Heidemann & Hewitt, 2010). The educational research presented in this study suggests that incorporating play and movement in academic lessons with children ages four to eight years old can promote learning and has a positive effect on children’s cognitive functioning and student engagement (Becker et al., 2014; Hillman et al., 2014). Research also proposes that teacher pedagogy plays a critical role in the incorporation of movement and play into a child’s school day (Bauml et al., 2020; Fisher et al., 2013; Theobald et al., 2015; Vogt et al., 2018). Effective teachers must use the positive relationship that exists between play, movement, and learning to apply these concepts when creating lessons so that each child can reach her or his full potential.

Applications Based on Literature Review

The literature review in Chapter Two exposed various ways educators can support the developmental need for children to move and play while still fostering academic performance in an engaging manner. The literature suggests that when educators plan purposeful time for children to move and integrates these physical movements into the academic curriculum, children academically outperform others who are not given opportunities to move (Mavilidi et al., 2017). By facilitating opportunities for movement, effective teachers will create a developmentally appropriate learning environment for young children.

Research concluded that effective teachers will give as many opportunities for movement and play during the day as possible in order to support student success. The findings indicated that an effective teacher will not take away recess or play time as a consequence for trivial offenses, such as missing homework or failing to complete an assignment in during class. Recess and play time positively impacted a child's cognitive function, promotes self-regulation, and enhances student engagement. Withholding recess, play, or movement from young children is detrimental (Breathnach et al., 2017; Whitebread et al., 2009). An effective teacher will have a positive mindset and appreciation for the many benefits of movement and play and will support students in participating in these activities as often as possible.

Moreover, teacher pedagogy and mindset emerged as a critical component in incorporating play and movement into teaching. Fisher et al. (2013) found when comparing teacher pedagogy, a child centered/play-based classroom facilitates greater student engagement, which impacts a student's overall success. An effective teacher will implement multiple ways to make play and movement accessible throughout the day and intertwine them into academic lessons, with a focus on mathematics and reading (Erwin et al., 2013; Mavilidi et al., 2018;

McGregor et al., 2015; Shoval, 2011; Shoval et al., 2018). Effective teachers will also reflect and critically examine teaching methodologies, and through a growth mindset, effective teachers will challenge the pressures of didactic teaching in the curriculum (Bauml et al., 2020; Fisher et al., 2013; Theobald et al., 2015; Vogt et al., 2018).

Limitations and Future Studies

This study examined and evaluated 15 peer-reviewed studies to better understand the relationship between play and movement and academic learning among young children. The studies chosen for this literature review provide insight on the positive connection between play, movement, and academic learning. The literature review also emphasized the effectiveness of integrated movement in the classroom and the impact that teacher pedagogy and student engagement on learning, retention, and achievement of academic objectives.

While these studies have provided valuable insight, multiple limitations are included. Many of the studies took place in middle class areas with the majority of the participants identifying as white. Little research was examined on low-income schools and on non-white participants. Future studies should focus on urban and low-income schools to address the increasingly diverse and ever-changing student population in the United States. Additionally, the potential positive impact of play and movement on learning in combination within the culturally responsive teaching framework is worth investigating. With the country's overwhelming achievement gap that exists between white children and children of color, research could address the reality of the institutional racism that exists in our education system and investigate suggestions to restructure the education system so that all children can be successful.

The literature review revealed the effectiveness of integrated movements during teaching lessons and multiple researchers advocated that these practices be incorporated into professional development for educators. Future research should focus on the creation of professional development opportunities for teachers across grade levels to support educators in effectively implementing integrated movements into classrooms. Lastly, research suggests that teacher pedagogy influences the manner in which play and movement are allotted and executed in the classroom (Bauml et al., 2020; Fisher et al., 2013; Theobald et al., 2015; Vogt et al., 2018). From the studies examined, there is a lack of research regarding how school- and/or district-adopted curricula allot for movement and play. Exploring the link between play and movement and various frameworks or curricula could help educators decipher which curriculum to adopt considering developmentally appropriate practice and current research on best practices. Examples of frameworks and curricula to be researched include, but are not limited to Conscious Discipline, Singapore Math, and the Mondo curriculum. Examining the flexibility for incorporating movement into a set curriculum or framework could provide educators with useful strategies to create an optimal learning environment for students.

Conclusion

Research concluded that a learning environment that allows for purposeful physical movements and extended time to play fosters not only physical wellness, but also cognitive development when combined with learning objectives. Findings supported that educators who integrate mindful movements into childcare settings and schools will see improved cognition and overall perceived enjoyment amongst children ages four to eight years old. Vince Gowmon, author of *Let the Fire Burn: Nurturing the Creative Spirit of Children* stated, “You cannot make people learn. You can only provide the right conditions for learning to happen” (2014, p. 1).

Based on the research of this literature review, effective conditions for learning include embedding integrated movements into academic lessons, maximizing time spent in movement and play, as well as an intentional educator committed to a pedagogical approach that incorporates movement and play (Erwin et al., 2013; Mavilidi et al., 2018; McGregor et al., 2015; Shoval, 2011; Shoval et al., 2018). The 15 research studies revealed five overarching themes in regards to answering the question, “How might play and movement promote academic learning in young children?” The themes include positive effects of play on cognitive functioning, the role of a teacher’s pedagogical approach, the benefits of integrated movement, specified implications regarding mathematics and reading achievement, and the importance of student engagement and enjoyment (Bauml et al., 2020; Fisher et al., 2013; Theobald et al., 2015; Vogt et al., 2018). The results of this study demonstrated what learning and teaching looks like to meet the developmental needs of the children so that all can flourish.

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