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Relationship Between Movement and Student Behaviors

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An Action Research Project Presented

in Fulfillment of the Requirements

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Table of Contents

Abstract.....	3
Introduction.....	4
Review of the Literature.....	6
Methods.....	17
Participants.....	18
Data Collection.....	18
Results.....	20
Data Analysis.....	20
Discussion.....	24
Summary of Major Findings.....	24
Limitation of the Study.....	24
Further Study.....	25
Conclusion.....	26
References.....	29

Abstract

The purpose of this action research project was to determine the relationship between movement opportunities and student behaviors, specifically off-task behaviors. Participants were twenty-five, four and five-year-olds in a public, inclusive, half-day preschool setting. Data was collected through observation during a ten-minute end of the day large group meeting for six weeks.

Various movement opportunities were provided ranging from no breaks, ten-minute in-classroom brain breaks, and fifteen-minute gross-motor recess breaks. Any reminders given to attend to the large group meeting were recorded and later analyzed to suggest that movement opportunities affect student behaviors in a positive manner.

Relationship Between Movement and Student Behaviors

Early childhood presents a period of substantial growth for young children. Not only are they growing rapidly physically, but also their brains are acting like sponges, noticing everything they hear, see, and experience. Much research has been done in the field of early childhood to help educators maximize this crucial period of development. This research has outlined and detailed many different recommendations, such as the best ways to expose children to language and literacy, the benefits of play and how it should be incorporated into a daily schedule, which activities are considered developmentally appropriate at which ages, and on and on. All of this research can be helpful to early childhood educators working to better classroom communities.

For the purpose of this project, the researcher has chosen to focus on early childhood research pertaining to movement and its effects on student behaviors, specifically on- and off-task behaviors. Developmentally appropriate expectations for students should be set, but it is important to note that early childhood students should be expected to act and behave differently than elder elementary students. Specifically, early childhood students have shorter attention spans than elder students. Each child is still developing their ability to cope with different emotions and being exposed to new social experiences through play in the classroom. Time spent on-task may vary from student to student, within a developmentally appropriate range. There are varieties of strategies that may be incorporated into the classroom to help maximize time-spent on-task.

One strategy early childhood educators may try in order to decrease off-task behaviors is the use of movement. There are many different ways that children can move their bodies inside and outside of the classroom. Typically, students prefer this type of activity, as they have an innate need to move, and use some type of movement throughout their entire day (Gehris,

Gooze, & Whitaker, 2015). Teachers can harness this energy by providing adequate blocks of time dedicated to gross-motor movements, such as recess. When recess is not an option, or such a large block of time is not necessary, shorter movement breaks, commonly termed brain breaks, may be incorporated inside of the classroom. Songs paired with dance, yoga poses, stretching, experimentation with different movements around the room, such as balancing, skipping, hopping on one foot, galloping, etc. and breathing exercises can all be used during everyday transition times or during lessons that may be more sedentary. Early childhood educators should plan movement into their curriculum whenever possible.

What the researcher is seeking to find out is if these breaks of movement have an effect on on-task and off-task behaviors. Typically by the end of the preschool day, students have a harder time keeping their attention on the teacher for the final group meeting time. They have been more sedentary in the classroom than they are most likely used to remaining at home. They have sat long enough, took turns raising their hand enough times, and stayed quiet for much longer than they are used to. Using recommendations from the research, as well as findings from this research project, the researcher's goal is to find out if restructuring the daily schedule used in her classroom can increase the effectiveness of this final group meeting time by decreasing off-task behaviors. By incorporating and restructuring recess times and movement breaks, the researcher hopes to determine movements effect on off-task behaviors and better her classroom schedule to make the routine the best that it can be for her students now and for years to come.

Review of the Literature

Recommended early childhood practices have experienced many changes throughout the years and still vary widely, as preschool programs are set up differently across the country from state to state, from district to district, and even from classroom to classroom. A great deal of research has been conducted on children during this crucial stage of development, much of which was carried out inside of preschool classrooms. It has been found that not all children learn the same way, but there are some similarities between children in this age range. For example, young developing children are unable to sit and attend to a task for long periods of time. Young children also learn best through experiences, which they can build further knowledge upon. Because of these similarities, there should also be some commonalities throughout their day. For example, children should be exposed to hands-on learning experiences and have breaks built into their daily schedule. These breaks could include songs, which allow for movement, downtime with lessened expectations, or time spent on the playground. With increased movement, engagement may also be found to increase.

Recommended Early Childhood Practices

Although preschool programs are set up very different from one another, there are some basic components that are typically incorporated into the daily schedule of all early childhood programs. A commonly used curriculum, Creative Curriculum, gives the following suggestions: group meetings, a minimum of one hour of free choice time, meal time, outdoor choice time, read-aloud, music and movement, and a final group meeting (Dodge, 2012). These, along with the amount of time devoted to each, vary based on the length of the program. Other components, such as rest time, may also be added to or removed from the schedule depending on whether or

not the program serves children for half days or full days. Teachers then organize these events into a daily schedule so that students may learn the routine and what to expect next.

The Creative Curriculum recommends organizing these events into a daily schedule in which there is “a good balance of active and quiet times as well as a range of child-initiated experiences and teacher-planned activities” (Dodge, 2010, p. 72). Once the early childhood educator has determined this balance by following more structured activities with student-choice activities, the children should be made aware of the structure. When children know when things are going to happen, the consistency tends to make children feel more secure and become increasingly independent (Dodge, 2010). The Creative Curriculum provides guidelines on what should be incorporated into each of the daily components, as well as how each should be conducted. For example, the 60 minutes of free choice time are at the heart of the curriculum to teach social-emotional skills, as well as literacy, mathematics, science, and language skills through different play scenarios. A family-style is recommended for snack time, with students sitting around one table passing around bowls and pitchers. For the purpose of this research project, only the recommendations related to movement, such as at outdoor choice time and music and movement time, will be explored.

Music in the early childhood classroom.

Falling under the music component is Frimpong and Adu’s (2018) recommendations for including songs and rhymes. The idea of using songs and rhymes is not new, as children have long loved to hear, recite, and sing them. Songs and rhymes are interesting to listen to and naturally draw and sustain the attention of children for instruction. With such limited attention spans, songs and rhymes accompanied by a catchy or well-known melody are great for gaining attention, as well as rapid retention. For this reason, songs and rhymes are often woven into other

parts of the preschool day, especially as children transition from playing to learning. For example, a clean up song, line up song, manners song, or greeting song may be sang daily to help students catch on to everyday transitions. Not only that, but many songs and rhymes include phonological awareness elements, such as rhyming and alliteration. This makes learning through rhyming and singing a key element in building a good foundation for learning to read (Frimpong & Adu, 2018). According to Palmer (2001), teachers should choose songs that encourage active involvement and get students up and out of their seats. This will help educators to embrace Howard Gardner's theory of multiple intelligences and reach students who learn best in the areas of musical-rhythmic, visual-spatial, and bodily-kinesthetic. Students who learn best in the areas of interpersonal, intrapersonal, social-linguistic, logical-mathematical, and naturalistic, Gardner's other multiple intelligences, are often reached throughout other daily activities.

Parents can also take part in teaching their child songs and rhymes. Nursery rhymes before bed are a common way for families to take part in their child's development of phonological awareness. Singing in the car and dancing in the living room are more ways for parents, siblings, and other family members to get involved in a positive manner. Educators should encourage these behaviors at home by offering families ideas and ensuring they have access to the resources necessary to carry them out. Families should be informed of nursery rhymes and songs that are being focused on at school and encouraged to practice them with their child at home to reinforce their basic foundation for learning to read.

Movement in the early childhood classroom.

An important addition to the music component is movement. Preschool movement and dance can bring a multi-layered experience to inclusive preschool settings. This allows children of all abilities to benefit from the creative and complex movement experience (Lorenzo-Lasa,

Ideishi, & Ideishi, 2007). Quite often, teachers must differentiate academic content to fit the various needs of their students. Dance is one element that requires minimal differentiation and can be made available to all young children.

Just as the idea of using songs and rhymes is not new, the integration of physical activity into other areas of the curriculum has been around for some time, as well. No longer is movement the sole responsibility of the physical education teacher. Many teachers are incorporating physical activity and movement into their general and special education classrooms in order to reap its many benefits. For example, movement can positively affect the learning environment by increasing focus and motivation to learn (Hruska & Clancy, 2008). Movement also provides a sensory experience, which all students can benefit from, especially those who are visual, auditory, or kinesthetic learners (Lorenzo-Lasa et al., 2007). Sensory activities are growing in popularity and necessity in early childhood classrooms, and movement should not be overlooked. Whitmer (2014) has also found that movement helps children get the wiggles out so they are ready to go back to work. For these reasons, many educators incorporate movement into multiple parts of their school day.

Brain breaks. An easy way to incorporate movement into multiple parts of the daily schedule and to reap the benefits found to be connected to movement is through brain breaks. Whitmer (2014) defines brain breaks as kinesthetic intermissions typically lasting less than 10 minutes that allow students to perk up or calm down, depending on the situation. The key is to keep the breaks short so that teachers can easily incorporate them into their busy school days. The key for teachers is to learn to recognize when and what kind of break students need. For example, Zumba or jumping jacks may be used when students appear to be getting antsy, while yoga or meditation may help students to calm down and start focusing (Whitmer, 2014).

As teachers practice identifying and becoming more familiar with the signs of a needed break, they may notice multiple students fidgeting or yawning. Educators then must ask themselves, “Do my students need active instruction to wake-up their brains? Or are their brains over-activated? Do they need some quiet stretching to calm and refocus the brain?” (Lorenzo-Lasa et al., 2007). When students are needing a wake-up call, such as after long periods of sitting, kid-friendly music can be played as students move and dance freely about the room. Not only will this give them a break from the content being taught, but it will also help them to return to the learning process more focused and attentive. When refocusing is what is needed, such as after difficult content has been presented, simple neck rolls, deep breathing, and even yoga poses may be a better option. In fact, yoga helps the mind and body to work together, creating a balance. With all of the amped up rigor and testing in schools today, yoga is a great option for relieving stress and calming the body (Yoga at School, 2017).

Many brain breaks can be found online or created by the teacher and implemented seamlessly during transitions or as the need arises during a lesson. Others can be purchased as a program. One school district, the Lawndale Elementary School District, purchased a program called Activity Works and began implementing it four or more times per week. Seventy seven percent of teachers said that after implementing the brain breaks in their classroom, most of their students showed more focus and ability to attend to instruction. More than half of teachers said most of their students got better grades. To add to the list of benefits, Gonzalez, who teaches at the Mark Twain Elementary School in the Lawndale Elementary School District, stated, “I have less misbehavior than before” (Whitmer, 2014, p. 51-52).

Because children in the early childhood classrooms have limited attention spans, brain breaks of all different varieties should be offered often in order to keep students happy and

achieving in the classroom (Frimpong & Adu, 2018). Students can even choose their brain breaks at times. When teachers offer music and movement activities for students to choose from, they are promoting ownership of the learning process, even at such a young age (Whitmer, 2014). This may also encourage reluctant students to participate in the movements and actions. Movement activities written on craft sticks or a differentiated instruction cube allow for quickness and ease of use in an always-busy classroom.

Recess. Besides incorporating movement inside of the classroom, the most commonly thought of place for movement at school is the playground. The amount of time kindergarteners, and all elementary students, spend at recess varies widely across the United States and seems to be changing all the time. Surprisingly, Zubrzycki (2012) found in her study that this variation in recess length does not seem to affect reading achievement. What did seem to affect reading achievement in her study was the combination of recess and instructional time. Certain combinations, such as more than one recess held throughout the day adding up to 45 or more minutes, were more optimal than others were. She did note, however, that more research and discussion is required on the topic.

The Creative Curriculum devotes a minimum of 30 minutes to outdoor choice time, more typically termed recess. At this time, students have opportunities to climb, run, ride, etc. as they connect with nature (Dodge, 2010). This time is important for early-education providers, as one in five children is overweight or obese by age six (Whitmer, 2014). Not only will this time raise their heart rate and encourage healthy exercise habits, but it will also improve their limited attention span when the schedule proceeds into the classroom, as they will have gotten their wiggles out on the playground (Frimpong & Adu, 2018). When outdoor choice time is not

permitted due to weather or safety reasons, other gross-motor movements should be allowed in a safe place indoors, such as a gym.

Behaviors in the Early Childhood Classroom

Although brain breaks, recess time, and the incorporation of music and movement are important parts of the preschool day and can bring about many benefits, it is important to note that early childhood is a crucial time of development for young children. The development of self-control is a hallmark of the toddler and preschool periods; thus, students may be at different levels of maturity or development within the same early childhood classroom (Wakschlag, Leventhal, Briggs-Gowan, Danis, Keenan, Hill, & Carter, 2005). For this reason, comparison to peers should not be an educator's only cause for concern. It is important for early childhood educators to realize that some of this disruptive behavior is typical and should be expected. The difficult task is deciding how to differentiate which behaviors are typical and which are not.

Types of behavior disorders.

According to Wakschlag et al. (2005), "Disruptive behavior problems are the most common reason for mental health referral of preschool children" (p. 183). However, most preschoolers exhibit at least some of the behaviors that fall under the rubric of disruptive behavior. As they are still learning to control their actions and emotions, it is not uncommon for preschoolers to react impulsively in different social situations based on how they are feeling. This can make diagnosing disruptive behavior disorders difficult for professionals working with the child. The three core areas for understanding disruptive behavior disorders in young children are: (1) behavioral control, (2) emotion modulation, and (3) social orientation (Wakschlag et al., 2005).

Behavioral control. Behavioral control reflects the child's ability to regulate his or her behavior in response to social and emotional experiences. Problems in behavioral control may include responding aggressively when the child feels anger. In contrast, competencies in behavioral control may include the use of coping strategies when feelings of anger arise (Wakschlag et al., 2005). Preschool students may be at either end of the spectrum or somewhere in the middle as they practice and develop the skills necessary to reach competency. Experiences should be provided daily for children to practice these skills in a safe environment and with a trusted adult.

Emotion modulation. Emotion modulation is how the child reacts in intensity, duration, and appropriateness to emotionally arousing situations. Problems in emotion modulation may include rapid escalation or intense frustration. Children experiencing problems in emotion modulation may also have difficulty recovering from such moods, lengthening the duration of escalated emotions. On the other end of the spectrum, competencies in emotion modulation would include the ability to maintain emotional equilibrium in the face of frustration (Wakschlag et al., 2005). Again, children should have multiple opportunities each day to practice developing these skills in order to move towards competency.

Social orientation. Lastly, children with disruptive behavior disorders often have problems in social orientation. Social orientation reflects how responsive or concerned a child is for his or her social environment. Problems in this area may include a lack of empathy or a display of antisocial behaviors. Competencies in social orientation include prosocial behaviors (Wakschlag et al., 2005). Preschoolers in the same classroom may display a variety of these skills as they develop and progress towards competency in each area.

Unfortunately, the preschool children at greatest risk for serious and stable behavior problems are those who have externalizing behavior patterns. These can include aggression or

hyperactivity, social skills deficits, and early adverse family contexts. Children with these behavior patterns are displaying a deficit in socially desirable behavior and are not likely to have appropriate and consistent support for behavior change in their family environments (Stormont, Lewis, & Covington Smith, 2017). This makes early and effective intervention at school not only necessary but, more importantly, crucial. If the emotional or behavioral disorders are not addressed, much larger issues, including school dropout, academic difficulties, incarceration, and numerous other negative developmental outcomes could become a reality (Bellone, Dufrene, Tingstrom, Olmi, & Barry, 2014).

Addressing Behaviors

This puts the daunting task of distinguishing typical from atypical behavior during this developmental period on early childhood educators. As noted earlier, early intervention is especially helpful. Still, it may take some time and experimentation to determine the cause of the behavior and what may help to change or alter it to make it more desirable. Different behavior charts or rewards may be used or tried, as well as altering the schedule to make it more developmentally appropriate and fitting to the needs of the students. However, at times, greater measures must be taken. When this happens, there are a variety of options for teachers to turn to.

Functional assessment. To help with the significant diagnostic and methodologic challenge, educators must systematically observe a range of behaviors and their qualitative features. This also requires interpretation of behaviors observed within developmental context (Wakschlag et al., 2005). One way that this is done and behavior problems are addressed in the classroom is using a functional assessment. A functional assessment identifies the antecedents and the consequences of the behavior to help determine its function or purpose. Then, an individualized intervention can be developed that matches the behavioral function. Bellone et al.

(2014) found that this is often the most effective method for reducing disruptive classroom behaviors, as it is individualized for each student and each behavior; however, they did report there were mixed results. More testing and research should be done in this area in order to make results more conclusive.

Positive behavior support strategies. Another way that problem behaviors are often addressed in the classroom is through the use of positive behavior support (PBS) strategies. “PBS is an effective and widespread behavior management principle that emphasizes the use of nonaversive, reinforcing caregiver-child interactions, and involves the use of specific strategies such as proactively structuring the child’s environment and reinforcing positive behaviors” (Smith, St. George, & Prado, 2017, p. 428). Sometimes what appears to be a simple PBS strategy is enough to change an undesirable behavior in typically behaving, age-appropriate students. Thus, PBS should be some of the first strategies tried when experiencing difficulties with a student. When we look at proactively structuring the child’s environment, we can link back to the developmentally appropriate method of arranging a daily schedule for young children.

Developmentally appropriate scheduling. Recall that the authors of Creative Curriculum recommend organizing the daily schedule in which there is “a good balance of active and quiet times as well as a range of child-initiated experiences and teacher-planned activities” (Dodge, 2010, p. 72). In other words, vary activities which require a great deal of sitting and listening with experiences that get students up and moving out of their seats. Many public health professionals believe that an especially urgent need exists to plan for and embed brief bouts of age-appropriate moderate to vigorous physical activity for children throughout their preschool day (Brown, Googe, McIver, & Rathel, 2009). This supports the research-based curriculum, but goes against what many school systems are practicing. Due to growing pressure to increase

academic scores in recent years, many school systems have reduced or removed recess and/or physical education from their curriculum (Tompkins, Hopkins, Goddard, & Brock, 2012). This is because when compared with children in other developed countries, US children rank low on academic performance. Not only has this resulted in a lack of movement throughout the school day, but it has also put a greater emphasis in early childhood education programs on building children's academic skills (Gehris et al., 2015).

One result of this recent push has been to use more structured learning experiences in which young children are asked to sit still and listen rather than being permitted to move around (Gehris et al., 2015). This structure of elementary education is contradictory to children's need to move and is not considered developmentally appropriate. Rather, to increase the academic performance and test scores of children in the United States, movement should be used in optimal combinations with structured time, so as to best take advantage of their attention spans, focus, and motivation to learn. The question is, what is the optimal combination? Current research is mixed; meaning teachers must experiment and conduct research in their own classrooms to determine the needs of each student.

Connection Between Movement and Learning

Elementary children sitting at desks all day while being drilled on academic content is not a developmentally appropriate picture. Doing so prevents young students from linking movement and learning. It goes against their innate need to move, and it does not support how young children learn best, which is through movement and hands-on contact with their environment. Thus, teachers ought to use movement experiences to prepare children for learning. For example, teachers of young children may choose to start each day with some gross motor movement to help children release excess energy so they are able to focus during more sedentary classroom

activities. Whenever classroom activities and the teaching of academic concepts can incorporate movement, a positive association is made and children are able to learn in their preferred method (Gehris et al., 2015).

Early childhood educators who are passionate about making a difference for their students should listen to them as individuals. Work with them as the whole child, including their physical and motor development (Brown et al., 2009). Listen to their ideas and interests and plan them into the curriculum (Palmer, 2001). Remember how their preferred method of learning and the ways in which they learn best: by moving and having hands-on contact with their environment. Incorporate kinesthetic activities, breaks, and blocks of time throughout the entire school day, in order to make the link between movement and content.

There appears to be a positive association between physical activity and academic performance and behavior (Tompkins et al., 2012). Early childhood students, and all children, will benefit from educators that use this knowledge to their advantage when designing their class schedules and lessons. Realize, however, that further research and discussion is required, especially to delineate the ideal duration and intensity of physical activity warranted particularly in elementary school children. Conduct research in your own classroom to determine which structure and which schedule work best for you and your students. Also realize that this ideal structure and schedule may change just as children change, so research should be ongoing.

Methods

To determine the relationship between movement and student behaviors, specifically off-task behaviors, the question that guided this research and data collection was: Do brain breaks impact student off-task behaviors in end of the day large group activities? Typically, this is a time when students have the greatest difficulty focusing their attention. Further, because there

are multiple types of brain breaks, including dancing, yoga, stretching, outdoor recess, etc., the researcher also sought to discover if length or type of brain break impacted student off-task behaviors. The independent variable in this action research project was the movement opportunities including brain breaks and recess that were or were not provided on specific dates. The dependent variable was the student off-task behaviors. These were observed and recorded with the assistance of a classroom associate while the teacher researcher lead the meeting time. Other variables impacting this research but out of human-control included interruptions such as fire drills, phone calls, severe student behaviors requiring adult assistance, and weather which limited the ability to have outdoor recess and use gross-motor movements. Each of these additional variables was also recorded.

Participants

This action research project was conducted in a half-day inclusive preschool classroom in Northwest Iowa. The data collection took place in both the morning and afternoon sessions, which includes 25 students total, ranging in age from young four year olds to young five year olds. In the morning class, there are eight boys and five girls, four of whom are on an individualized education plan and are receiving speech services in the classroom. In the afternoon session, there are seven boys and five girls, three of whom are on an individualized education plan and are receiving speech services in the classroom. All students receive instruction in the English language, and no ELL services are used. In both classes, the students' demographics are predominately Caucasian, with approximately one quarter of the students qualifying for free and reduced lunch. Throughout the school day, two classroom associates are present providing assistance to the students receiving special education services.

Data Collection

The focus of this action research project was to determine if added movement would improve on-task behavior in end of the day large group meetings in preschoolers. Data was determined through observation and recorded only during the ten-minute end of the day large group meetings, when attention spans seemed to drop off the greatest. The data collection process lasted for six weeks beginning on September 18 and ending on October 30. Every two weeks, the type of movement opportunities provided to students was altered and recorded, in order to observe its impact, if any. Each change in movement opportunity, along with each behavior reminder was noted on a table and later entered into an Excel spreadsheet.

Beginning on September 15, one of the classroom associates began observing and recording behavior reminders given during the ten-minute end of the day large group meeting. This meeting time takes place directly before recess, and no movement opportunities were offered beforehand during these first two weeks of data collection. Each time a student required a reminder from either the classroom teacher or a classroom associate, the associate recording the data would write the name of the student on a clipboard and the reminder that was needed. The students' names were then recorded into an Excel spreadsheet and placed into the following categories based on the type of reminder that was given: raise your hand if you have something to say, sit crisscross applesauce, hands in your lap, and eyes on the teacher. Student names were used, rather than simple tally marks, so that a difference in special education versus general education students could be analyzed. This data collection process took place for two weeks, and then a change in the independent variable was made.

For two additional weeks, beginning on October 2, a brain break was added directly before the ten-minute end of the day large group meeting. Because there are various types of

brain breaks that vary in length, the type of break, along with the length, was recorded on the table. This was added to the Excel spreadsheet, to analyze the impact of added movement on student on- and off-task behaviors. The classroom associate continued to record the behavior reminders that were needed using the process described above. These were again later recorded into the Excel spreadsheet and totaled to check for any effects.

Finally, for two additional weeks, the outdoor recess time was moved from directly after the end of the day large group meeting to directly before it. This variable was again recorded in the table and later into the Excel spreadsheet. Weather interruptions were also recorded, as they posed interruptions to the research project. The classroom associate continued to record the reminders given in the same process for these final two weeks. This concluded six weeks of data collection, which could now be analyzed in an organized fashion.

This type of data collection is both valid and reliable. The method relates directly to the research question, making it credible. Making it reliable is its ability to be repeated in another similar setting thanks to the careful and specific data recording. Unfortunately, the validity and reliability of the data recording instrument are unknown, as it was created specifically for this group of students. A teacher researcher wanting to adopt this action research project in his or her own classroom may need to make adjustments based on the study's unique participants.

Findings

Data Analysis

The data analysis needed to understand the data collected is mixed. The classroom associate collected qualitative data by marking down the types of reminders given during the ten-minute end of the day large group meetings. These reminders were then totaled, entered into an Excel spreadsheet, and plotted on a line graph to be viewed and analyzed more quantitatively.

Table 1 shows the number of reminders each student received during the first two-week data collection period when no brain break was provided prior to the end of the day large group meeting, the number of reminders each student received during the second two-week data collection period when a short brain break was provided in the classroom, and the number of reminders each student received during the third and final two-week data collection period when a fifteen minute recess was provided directly before the end of the day large group meeting. The total number of reminders during each two-week data collection period is provided at the bottom of the table. The students receiving specialized instruction and speech services are highlighted in grey to more easily compare their results to their typically developing peers.

Table 1

Number of Reminders Given

Student Name	September 18 – October 1 (No brain break provided)	October 2 – October 15 (10 minute brain break provided)	October 16 – October 29 (15 minute recess break provided)
Student A	1	1	1
Student B	5	1	0
Student C	5	1	1
Student D	8	3	0
Student E	10	2	2
Student F	15	7	3
Student G	0	1	0
Student H	0	0	0
Student I	1	0	1

Student J	7	4	3
Student K	0	0	0
Student L	10	9	6
Student M	10	3	1
Afternoon Class			
Student N	2	0	0
Student O	4	0	0
Student P	0	0	0
Student Q	6	1	0
Student R	2	4	1
Student S	6	5	0
Student T	0	0	0
Student U	4	4	3
Student V	8	2	2
Student W	32	33	21
Student X	2	1	0
Student Y	8	6	1
TOTALS	146	88	46

The total number of reminders needed during the end of the day large group meeting during the first two-week data collection period was 146. This number decreased to 88 when a ten-minute brain break was provided prior to the end of the day large group meeting. 16 students required fewer reminders following a ten-minute brain break than when no brain break was

provided. These students displayed gains in attention following the time provided to sing and dance. However, three students required more reminders following a ten-minute brain break than when no break was provided. These students did not display gains in attention following the time provided to sing and dance; rather, these students displayed a difficult time winding back down. Finally, six students required the same number of reminders following a ten-minute brain break as when no break time was provided.

When a fifteen-minute recess break replaced the ten-minute classroom brain break, the 88 required reminders decreased further to 46. Fourteen students required even fewer reminders following a fifteen-minute recess break than following a ten-minute brain break. These students displayed even greater attention during the end of the day large group meeting. One student did not display greater attention during this time and required more reminders following the recess than following the in-classroom brain break. Ten students required the same number of reminders to attend to the end of the day large group meeting.

Figure 1 displays this data on a line graph. Rather than showing each individual student's data, the blue line represents the entire morning preschool class, and the red line represents the entire afternoon preschool class. The first third of the graph, September 18 – October 1, represents the first two-week data collection period when no brain break was provided prior to the end of the day large group meeting. The second third of the graph, October 2 – October 15, represents the second two-week data collection period when a ten-minute brain break was provided within the classroom for dancing, singing, and stretching. The last third of the graph, October 16 – October 29, represents the final two-week data collection period when a fifteen-minute recess break was provided directly before the end of the day large group meeting.

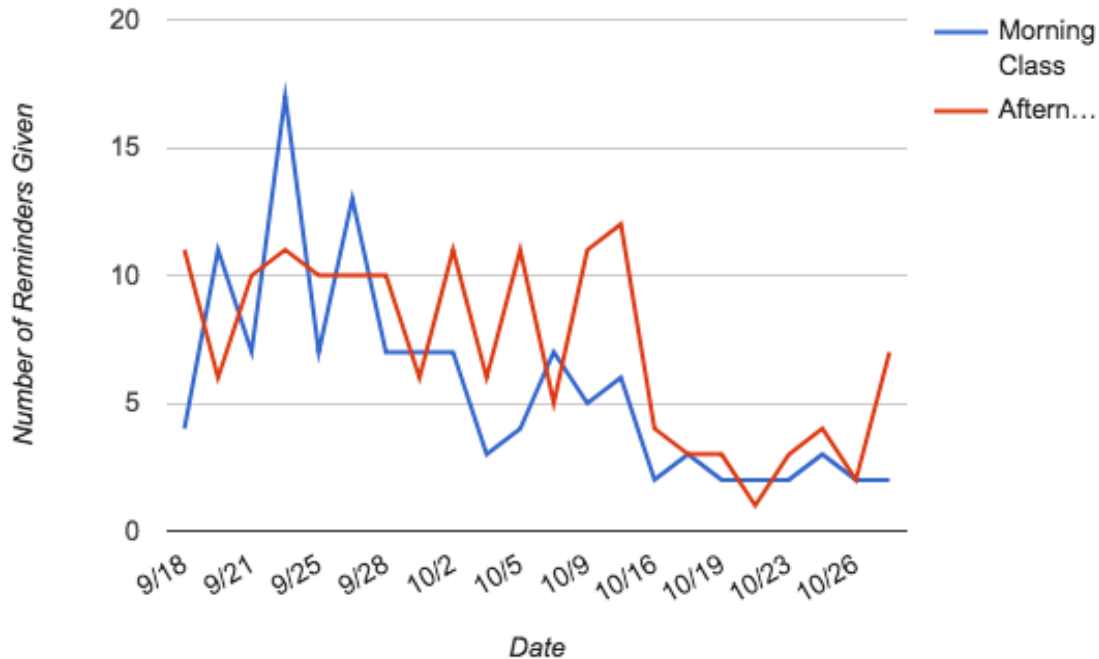


Figure 1. Total number of reminders given during end of the day large group meetings.

Both the blue line representing the morning preschool class and the red line representing the afternoon preschool class show a great deal of variation from day to day and data point to data point. This is partly attributed to a few individual students with more severe behaviors. However, looking at the overall trend of the lines, each appears to have a negative slope. This indicates that as more movement is offered, fewer reminders are required. This also answers the research question by displaying how brain breaks decrease student off-task behaviors during the end of the day large group meeting activities.

Discussion

Summary of Major Findings

The findings of this study indicate that movement opportunities decrease the amount of student off-task behaviors for the majority of students. The data shows that when a brain break was provided directly before the end of the day large group meeting, fewer student behavior

reminders were required. This was also the findings of many schoolteachers at the Lawndale Elementary School District upon their implementation of brain breaks (Whitmer, 2014). The data also shows that even fewer student behavior reminders were required when the in-classroom brain break was replaced with a fifteen-minute gross-motor recess break. Students were still expected to sit and attend to the end of the day large group meeting activities for the same length of time (ten minutes), but they were able to do so with fewer reminders to raise their hand, sit crisscross applesauce, keep their hands in their lap, and have their eyes on the teacher.

Limitations of the Study

One of the limitations of the study was the one, inclusive classroom it was conducted in. Had this study been carried out in multiple preschool classrooms, or multiple elementary classrooms, the results may have varied. This is due to the unique make-up of the inclusive classroom. Students with severe behaviors greatly affected the results of this study. Their responses to the movement breaks differed at times from the responses of their typically developing peers. Their behaviors also took away from the end of the day large group meeting activities and the data collection process when they would become severe and require a time out. When these students were absent, it also strewed the results.

Another limitation of the study was the time of year it was conducted. Towards the beginning of the year, students are still learning the expectations of the classroom, as well as how to control their actions, emotions, and impulses. As the year progresses, this should naturally improve, which may have added to this study's results. During the six weeks the study was conducted, there were also a few interruptions, including a fall festival party, a day of no school for teacher in-service, a fire drill, and a rainy day, which caused us to use the gym rather than the

playground. Each of these interruptions was a new experience for the students, and thus caused them to react in some way.

Lastly, a final limitation of the study may have been the makeup of the end of the day large group meeting. Some activities included during this ten-minute period were more interactive or engaging than other activities. On these particular days, fewer reminders were required, as students were actively engaged rather than passively engaged. This also may have contributed to the variation in each individual data point. More consistency with the activities conducted would produce more reliable results.

Further Study

An area for future study and research would include the impact of movement on students with severe behaviors. Although these students were present in the classroom at the time of the study, their data collection was less consistent than those students who do not display severe behaviors. By collecting data on these students for longer than six weeks, educators may be able to determine a movement pattern that is optimal for these students. Data points may become more consistent or begin to show more trends. These could then be used to help arrange a schedule that is best fit for their behavior needs.

Another area for future study would include multiple time intervals of brain breaks. This study focused on rather long brain breaks, lasting either ten- or fifteen-minutes. A further study could be conducted on the effects of three-, five-, or eight-minute brain breaks. This would be useful for teachers in arranging a schedule to optimize on-task behaviors without giving up too many instructional minutes. This study could also be conducted at multiple grade levels to determine whether or not a difference exists in the optimal amount of movement for different aged children.

Conclusion

As shown in Figure 1, added movement tends to decrease the number of reminders that are required for students to raise their hand if they have something to say, sit crisscross applesauce, keep their hands in their lap, and have their eyes on the teacher. Also shown in Figure 1 is some variation in the number of reminders required from day to day regardless of the movement opportunity provided. As mentioned earlier, this variation is most likely due to the unique makeup of the inclusive preschool classroom used for this study. Still, if we focus on the trend of the data points, the findings of this research project correspond and support those of the teachers at Lawndale Elementary School District and thousands of schoolteachers around the world (Whitmer, 2014). Added movement opportunities are found to increase student engagement, and thus minimize student off-task behaviors. Teachers everywhere can use this knowledge to their advantage when arranging their daily schedules and use movement at appropriate times to minimize student off-task behaviors during the most distracting times of their school day.

In the case of this teacher researcher, the most distracting time of the school day was the end of the day large group meeting. Based on the findings of this action research project, the students will attend and engage better and possibly longer if they are provided a movement opportunity prior to its start. Best for this group of students is a fifteen-minute recess break. However, if this is not an available option, a ten-minute brain break in the classroom will help to minimize student off-task behaviors during the end of the day large group meeting time. One of these options will continue to be used in this particular classroom. Interactive review lessons that also allow for students to use fine and gross motor movements are also beneficial for these students to remain engaged and will be incorporated during the end of the day large group meeting.

Teachers who are interested in minimizing off-task behaviors within their own classrooms may need to conduct their own research similar to the methods used in this study. As each child is unique, each classroom makeup is also unique. This unique classroom makeup may make for a unique combination of movement opportunities or brain breaks that is optimal for their learning and engagement. For example, a kindergarten teacher may find that the students are most distracted or displaying the most off-task behaviors directly after lunch. If this is the case, he or she may try adding a brain break at this time. He or she may also experiment and keep data on different lengths of brain breaks to find the optimal break time for the students in the classroom.

The results from this action research project, as well as the findings included in the literature review, are important for educators to understand. A desire to increase instructional time is a common goal of schoolteachers. Incorporating movement opportunities is one way that has been found to do this. Brain breaks are a great option that can easily be incorporated inside of the classroom. By taking a few minutes of instructional time and devoting it to movement, students require fewer reminders for their off-task behaviors, and are thus spending more time attending to and engaged in your instruction which follows.

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