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### Impact of movement breaks on student focus

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Impact of Movement Breaks on Student Focus

A Master's Project

In Partial Fulfillment of the Requirements for the

Degree Master of Science in Teaching

State University of New York College at

Cortland SUNY Cortland

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### **Abstract**

This action research study focused on the impacts that movement breaks had on student focus during math lessons. This was a mixed-methods study with data collection occurring over a time period of three weeks while in a third grade classroom. Students were given 60-180 second movement breaks during math lessons over the course of the study. Movement breaks were classified in this study as any activity that required movement of one or more parts of the body. Data was collected in the form of observational analysis as well as through the use of student surveys. The findings of this study display an increase in student engagement and focus after implementation occurred. This was seen through a decrease in verbal reminders given to students on an individual basis as well as the whole group. It was also seen through student responses given on surveys. This paper will offer insight into how to effectively implement movement breaks during lessons in order to increase student focus.

### **Impact of Movement Breaks on Student Focus**

Education is a major part of life. It begins at a young age and can continue well into adulthood. Due to this major presence of education, it is important to make the most of the time that students are in the classroom. This means that the teacher is making sure that they are doing everything possible to fully engage students in order to reach their highest learning potential. As mentioned previously, school takes up a tremendous amount of time for students. This means that children can typically be at school for seven hours a day, five days a week, totaling to 35 hours. For adults that is nearly a full time job, which should give teachers some perspective on how grueling this time may be for students. I think that a major challenge for the educational community is finding the balance between engaging and overwhelming. Students are at school to learn, but at a certain point students may lose focus, and understandably so. Finding ways to allow students to have even small breaks, especially during longer lessons, may seem like it is wasting time, but giving the students that small time to recharge can make a big difference in their focus. There are many different ways to give students breaks, but the end goal should be to allow some time for students to take a break from continuous academic content. Otherwise, students will lack the ability to stay focused and in turn not learn and their full potential.

I have gained a lot of insight through my various observations in this program, specifically insight about teaching and student behavior. Viewing student behavior as communication is an important key in being an effective teacher. An example of student behavior that I have noticed often is when students lose focus. Instead of blaming the student, I think that the teacher needs to assess what they are doing themselves that could cause the

student to become unengaged. I have seen this especially during longer lessons like in math and ELA classes. These lessons tend to be at least an hour long and may not always contain the most engaging content. During these lessons I have noticed many students display off-task behavior like playing with pencils on their desk, flipping through their books or folders, looking around the room, and others. I tried to think about what could be changed to help the students be more engaged. I thought about how an hour is a very long time for anyone to be sitting still, especially for students that are 8 and 9 years old. Implementing some type of movement during longer lessons such as math I think could help students remain more focused and break up the time that they are expected to sit still and learn. This led to my focus on researching how movement can impact students' focus. I think that using movement breaks before and during the lessons will lead to an increase in focus and on-task behavior of students which will in turn improve academic performance.

## Literature Review

Observing in multiple classrooms, I have noticed a constant issue of children losing focus during longer lessons. There is a lot of research that supports that students will lose focus the longer the lesson goes on, especially if there is no change happening. Yet continuously I have seen that longer lessons are implemented without being broken up, especially in mathematics lessons. Often students will go through over an hour of instruction without having a break. This led to my interest in finding a solution to increase student focus, starting around these longer lessons. Due to some experience in physical education courses and love for movement myself, I immediately started thinking about how to incorporate movement into the classroom, especially with the goal of increasing student focus. The goal of this paper is to review the literature on this topic in an effort to answer the question: Can students focus be impacted by implementing different strategies in the classroom?

After extensive research on the topic, I was able to find six studies related to my topic. When reviewing these articles, I found I was able to sort the studies' findings into three categories. The first section highlights the positive impacts of implementing movement breaks. The second section highlights studies that do not show any significant results from the implementation of movement breaks. The third and last section focuses on teacher involvement in movement breaks. I will use these three main ideas as the structure for my analysis of this paper. All of these contribute to the overall understanding of movement breaks and how effective they could be when used in the classroom.

### ***Positive Benefits of Movement***

There are many different types of movement breaks that could be implemented in the classroom. Fedewa et al. (2018) focused on two specific types in their research, and whether one was better than the other for improving impacts on academic achievement. The first type of movement break that was focused on was *aerobic-only*, which included only the movement without any academic content. The goal of this research was to determine if one would provide more benefits than the other when implemented in the classroom. While there were mixed results about which type could be more beneficial, a significant finding was that both types of movement breaks led to improvements in academic achievements. Similarly, Beckham et al. (2019) focused on implementing physically active academic lessons in 2<sup>nd</sup> and 3<sup>rd</sup> grade classrooms. In this study there was a control group that did not participate in physically active lessons, and an experimental group that participated in the physically active lessons. The results showed that the physically active lessons could be implemented in the classroom and improved the academic achievements of those that participated in them.

A third study introduced a physical activity intervention to 243 students during school. The students that took more steps during school also increased their on-task behavior and showed statistical significance compared to the control group. Even the least on-task students were able to improve their on-task behavior by 20% (Mullender-Wijnsma et al., 2015). The overall results supported the physical activity based program which also increased on task behavior. All of these studies supported that movement breaks can lead to many positive impacts, even though there are different types of movement breaks that could be implemented. Their findings are important in supporting the positive benefits that implementing movement breaks could provide.

### ***Varying Results***

Although the previous studies have shown positive impacts of movement breaks, there are also studies that show no significant results from movement breaks. Chinipaw et al. (2016) studied 3 types of exercises that were classroom based. Before and after completing the exercises they performed cognitive tests that measured information processing speed and selective attention. The results showed no significant improvement on cognitive function after exercising. It is important to note that analyzing the effectiveness of movement breaks can be challenging, and so can looking at the research. Due to many different research experiments, but not many of the same parameters for each experiment, results can be hard to interpret. This is because there is a lot of data that can come from these experiments, but not all of it can be viewed the same way if the experiments were not done in the same way as well. This is important to note for future research to try and keep results as consistent as possible.

### ***Teacher Impact***

An aspect about this topic that I did not think about until I was researching articles was the impact that teachers can have on the effectiveness of movement breaks in the classroom. I was mainly focusing on the types of breaks or when they are given, but after finding some articles on teacher involvement I realized just how important that could be. The teacher plays a very critical role in the success of implementing movement breaks for various reasons. One study focused on teacher behavior when implementing the breaks and how this impacted students (Fedewa et al., 2018). One finding of the study was that when teachers were using verbal encouragement to move during aerobic-only breaks, it negatively impacted the students math scores, but when the teachers encouraged students during academic based movement

breaks the students math scores improved. This supports that teachers should give encouragement during academic movement breaks which could improve math scores.

In another study, Dinkel et al. (2016) placed the focus on looking at the zone of proximal development for the teachers to implement the breaks in the first place. This study used a survey to analyze teachers' knowledge and attitudes towards implementing movement breaks in their own classrooms. The results showed that there was an overall positive attitude towards implementing these breaks in the classroom and that teachers want to learn more about it. Yet the gap needs to be bridged in creating a consistent delivery throughout the schools. The article suggests using the teachers that may already be experts in implementing their movement breaks to also inform those that want to be. Both of these articles focus on how important that the teacher is in implementing the movement breaks in both effectiveness and engagement. This is also important for my research to know how big of a role that the teacher can have when implementing the lesson.

### *Summary*

The research has helped to guide me in my inquiry about whether adding movement breaks in the classroom will increase focus. Throughout my research articles, I was able to focus on three main ideas about this topic. The first being the positive impacts that including movement breaks has shown. These studies displayed that although there are different types of movement breaks that could be implemented, there is an overall positive impact on academic achievement from including these in the classroom. These articles also showed that implementing a physical activity intervention increased on-task behaviors of everyone that took part in the intervention. These are promising findings that show we should continue the research on this topic.

The second main finding were the articles that did not show significant results. Looking at research that shows how it did not work can give insight into how to implement the movement breaks. This study had students perform physical activity and gave cognitive function assessments before and after. The results suggested no positive impacts from the physical activity. My takeaway from this could be the timing of the physical activity in the day and that what they were being assessed on was not curriculum content. The last main idea involved the impact of the teacher. This is not something I thought of when I came up with my question so I am happy I was able to find research on it. These studies found that the teacher's engagement and encouragement during the movement break can impact student academic achievement, specifically with math scores. In conclusion, this review has helped guide me to answers on my original question that I can apply to my own research. Movement breaks have been seen to increase focus of students as well as increase their academic achievements and on-task time.

### **Methods**

The setting in which the research took place was an intermediate school that includes grades 3 through 5. It was located in a suburb but the surrounding community was rural. The town's population is roughly 6,500 and is 98% White, .41% Black, .22% Native American, and .85% Hispanic. The median income per household is \$41,321. There are 6.3% of families below the poverty line. The town is close to major highways as well as another larger college town nearby. During the winter, activities such as skiing and snowmobiling are popular with many snowmobiling trails through the town as well as ski resorts within 20 minutes away. Both the high school and elementary school are located within 5 miles of the intermediate building. The school is located next to a large field and there is also a playground outside. During the entire school year students will have recess outside as long as it is above 20 degrees and not raining.

The intermediate school is connected to a junior high school. There is an auditorium in the school as well as a gymnasium. There are plays that occur throughout the year as well as various clubs and activities. There are 399 students total, with 52% male and 48% female. The school is 91% White, 1% Black, 4% Hispanic, 4% Biracial, and 1% Asian. 49% of students are economically disadvantaged. In my own classroom there are 19 students, 10 girls and 9 boys. There is a wide range of socioeconomic status. The students are in rows with desks individually placed. They all face towards the front of the class. Seating arrangements have changed many times due to COVID regulations. In the classroom there is a book area that students can choose books from with various genres. There are various different posters and images on the walls. There are large windows in the room that allow for natural light to come in during the day. Student materials are mostly kept inside their desks. The desks open and close for storage. The teacher's desk is located at the front of the room in the left corner. There is a table on the right side of the room that allows for small group meetings. There are multiple students that go in and out of the class for educational purposes such as additional math and reading assistance. Most of the rest of the space in the classroom is used for teacher materials and storage (NYSED, 2021).

### **Participants**

The participants of this study included the entire class, 19 students. There are 10 girls and 9 boys. There is a wide range of development amongst students. Four of the boys in the class are especially outspoken and talkative. While their enthusiasm in class is great to see, the comments can often lead to off task behavior from other students that want to join into the conversation. This causes an issue when the other students were previously focused but now distracted because of the student. An additional two boys are often found getting off task more often than any other

students. They both perform well academically, yet the constant reminders to stay on task during lessons can be distracting for other students as well as take the teacher off topic. If the teacher does not give a reminder to these students, they will often not finish, or even start, what they were working on initially. There are two girls that are outspoken as well and need reminders to stay on task. If seated next to each other they often try to get each other's attention which causes off task behavior from themselves and those around them.

My host teacher was another participant. She has been teaching for over 20 years in grades 2 and 3. She is the head of a committee in her grade level and also has many other responsibilities in the school.

### **Materials**

**Survey:** Students were given two different types of surveys during my research project and can be found in Appendix A. One type of survey involved questions with written responses and multiple choice answers. This type of survey was given pre intervention and post intervention. The next type of survey was a Likert scale and can be found in Appendix B. This was also given pre and post intervention. These surveys helped me learn about student opinion and helped me gauge if it has changed after the intervention.

**Field Notes:** Field notes were an important data collection tool as well. I wrote detailed notes on observations that I made during the intervention. These were important to look at to analyze how the intervention went day by day and give ideas for future improvement.

**Checklists:** I used checklists to note on-task and off-task behavior in students. These can be found in Appendix C. Reminders given to both the whole group and to individual students were

recorded during math lessons using these checklists. This was recorded pre-intervention as well as post-intervention.

### **Procedures**

Student surveys were given before the implementation as well as after. I also kept observations in a log and recorded student behavior with a revised checklist. I implemented a movement break once a day. The movement break occurred halfway through the math lesson of the day. The movement breaks were between 1 minute and 3 minutes depending on available time and/or the ability to incorporate academic content with the movement breaks. They were played on the board in front of the classroom with volume and subtitles. If I was able to use the movement breaks to also teach content, I had more time to implement them. Student behavior was analyzed specifically before and after the implementation of the movement break. I would tell students to pause, stand up, and they would all participate in the break. After the break I gave students about 30 seconds to focus on the content again. The breaks ranged from dancing, to exercise movements, to free choice of movement but they all required standing up and moving some part of the body. Data was collected in various ways through observations as well as analysis of daily exit tickets. Post intervention surveys were given after the intervention was completed. Pre and post intervention surveys were examined to view any changes in student thoughts.

### ***Type of research conducted***

This was a mixed methods research study. This is due to both qualitative and quantitative data being used. The qualitative data was the observations I made as well as the use and analysis of

student surveys. The quantitative data was used with student checklists in determining the percent of students on or off task.

### ***Phases/timeline***

Students were observed before the implementation to establish a baseline of on-task and off-task behavior. One week was allotted for this pre-assessment. Conducting the research occurred over a 14 day period and two to three days were allotted for final data collection and post-implementation surveys.

Date	Week	Activity
February 1- February 9	Phase 1	Pre-intervention observations, take notes and make observations during math lessons for this week.
February 10- February 18	Phase 2	Implementation week 1, start to implement the intervention. Allow time for students to adjust to the intervention.
February 28- March 8	Phase 3	Implementation week 2, continue with intervention. Students should be familiar with interventions at this point.
March 9-11	Phase 4	Collect post-implementation survey data

### **Limitations**

There were a few limitations that were a part of this study. The first was COVID. COVID impacted how close the students could be and the ability to group them. It also impacted students' attendance due to quarantining and illnesses. Another limitation of the study was the time. Time was very limited so that also means that the data collection was limited. This could mean that the results could have been different if more time was given for the study.

Additionally, although I am studying if movement breaks would impact on-task behavior, there are other variables happening in students' lives that could impact their on-task behavior. These could have been reasons such as amount of sleep, home life, interactions with peers, and many others. This made it hard to establish if students behavior was solely based on my intervention or off of unrelated variables. Lastly a limitation of this study is that as a graduate student, this was my first experience of implementing an action research study which was a learning experience.

### **Analysis**

The analysis of student data helped me establish a baseline of students' attitudes towards learning. This was done through a qualitative analysis of the pre-intervention and post-intervention surveys. The pre-intervention surveys showed that the majority of students (17 out of 19) found math to be the most difficult time to focus. Analyzing this data before and after the implementation allowed me to determine if students' attitudes changed after the implementation or remained the same. The post-intervention survey showed that all of the students found the movement breaks to be enjoyable while the majority of students identified that the movement breaks helped them focus more in class. Quantitative analysis was also done on students'

behavior during lessons through recording of the number of reminders for students to stay on task individually and as a whole group. Using the average of reminders given pre-intervention and during the intervention, conclusions were able to be drawn based on these comparisons. These findings showed that on average, students were given less reminders as the intervention was implemented.

## **Findings**

### ***Students gained focus during the implementation of movement breaks***

After the implementation of movement breaks during math lessons, students increased focus and decreased reminders given to stay on task. This was found through two different types of data collection. The first type was through an observational analysis by which I would keep track of reminders given to students both as a whole group and individually. Collecting data from before the intervention and during the intervention provided insight into a decrease of reminders given during the implementation. The second finding was the result of a post implementation survey given to students. The questions asked on this survey determined whether students enjoyed movement breaks and whether they thought they helped them increase their focus during math lessons. 19 out of 19 students found the movement breaks enjoyable and 16 out of 19 found them to be helpful in staying focused during math.

### *Decrease in reminders given during lessons*

Before implementing the survey, I collected data on the number of reminders that were given to students during math lessons. This included a section of reminders given to the whole class, as well as a section given to individual students. Once implementation started I kept the same method of observing reminders given to students. The findings show that during pre-implementation, there were 39 reminders given to the whole group, 82 reminders given to individual students with a total of 121 reminders given over a 7 day period. During the implementation, data was collected over a 14 day period. There were 48 reminders given to the whole group, 136 reminders given to individual students, with a total of 184 reminders over 14 days. The average of the pre-implementation observations was 12 for whole group reminders, 11 for individual and 17 for total reminders given. During implementation averages were 3 for whole group reminders and 10 for individual reminders. The data shows that during implementation, reminders were given less often on average.

*Table 1 Pre-implementation Observation*

Day	Reminders given whole group	Reminders given to individual students	Total
Day 1	5	10	15
Day 2	6	11	17
Day 3	6	12	18
Day 4	5	11	16
Day 5	7	12	19
Day 6	6	13	19
Day 7	4	13	17
	39	82	121

Table 2 Implementation Observation

Day	Reminders given whole group	Reminders given to individual students	Total
Day 1	5	10	15
Day 2	5	10	15
Day 3	4	10	14
Day 4	4	11	15
Day 5	3	10	13
Day 6	2	10	12
Day 7	4	10	14
Days 1-7	27	71	98
Day 8	3	9	12
Day 9	3	9	12
Day 10	4	10	14
Day 11	3	10	13
Day 12	3	9	12
Day 13	2	9	11
Day 14	3	9	12
Days 7-14	21	65	86
Days 1-14	48	136	184

Table 3 Averages of Reminders Given Pre-Intervention and During Intervention

	Pre-Intervention	During Intervention
Average reminders given whole group	12	3
Average reminders given individually	11	10

### ***Student display positive attitudes towards movement breaks***

Pre-intervention and post-intervention surveys were given to students. On the pre-intervention surveys, 17 out of 19 students identified math as the hardest time to focus during school. On the post-intervention survey, 19 out of 19 students identified that they enjoyed doing the movement breaks. 16 out of 19 students identified “yes” when asked if movement breaks helped them stay

more focused during class. Students were also asked why they liked movement breaks if they had previously answered yes to liking them. Below are student responses.

*Table 4 Student responses to "If you liked the movement breaks, why did you like them?"*

"Yes I liked the movement breaks because I got to have a break of math"
"I like the movement because I got all of my energy out of my body"
"I liked the movement breaks because I do not like just sitting"
"I bid because it helped me get my wigs out"
"I liked the movement breaks, because they kind of helped me learn"
"I like movement breaks because they give you a break from work"
"I liked the movement breaks because we got to move around"

## **Discussion**

The findings from this intervention can offer insight into the impact that movement breaks can have on student focus. The quantitative data that was found in this study was gathered through observational records. The number of reminders given to students, individually and whole group, were recorded before the intervention was implemented as well as during the intervention. The findings showed that the number of reminders decreased while implementing the intervention on average. Before the intervention, there was an average of 12 reminders given to the whole group, 11 reminders given individually and 17 total reminders given. During the intervention, there was an average of 3 reminders given to the whole group, 10 reminders given individually and 13 total reminders given. This shows a decrease in reminders given for each category. The correlation between the implementation of the intervention and the decrease in

reminders given may have significance in increasing student focus. The findings in my study were similar to findings of Beckham et al. (2019) where academic achievement increased after implementing physically active academic lessons. Mullender-Wijnsma et al. (2015) also had similar findings where students that took more steps during school increased their on-task behavior.

The post-intervention findings showed students' attitude toward the movement breaks. All of the students found movement breaks enjoyable, while 16 out of 19 students identified “yes” when asked if movement breaks helped increase their focus. Students were also able to write why they liked the movement breaks. Students gave answers that related to not wanting to sit still for a long period of time as well as getting out their energy. These responses were important because they support the research that students lose focus after extended periods of time. Knowing this as well as seeing student responses saying the same thing emphasizes the importance of movement breaks for students.

### **Conclusion**

Staying focused in the classroom can be a challenge, especially with longer classes like math and ELA. Expecting students to sit still and stay focused during classes that can stretch to over an hour long is not feasible, nor should we try to make it so. Research supports that after a certain point in instruction, students will lose focus and the teacher will need to switch gears in instruction somehow. This can vary depending on age level, but typically the time spent on lecturing should be less than 12 minutes, especially for younger students. Noticing that students were expected to sit still for lessons that would be longer than an hour I thought of movement breaks and how they could benefit the students. Through research, I found previous studies that

had shown success using movement breaks to increase student focus. Implementing my own study with my students allowed for a first-hand view on how impactful allowing these breaks can be for students. Through a two week action research study, I was able to find that implementing movement breaks during math class showed an increase in student focus on average. I found these results using both qualitative and quantitative analysis that included student surveys and observations. This study helped provide insight into utilizing more methods to allow students to take a break from instruction which can allow for increase in focus afterwards. Further studies can continue this research to determine how to best use breaks for students.

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## Appendices

### *Appendix A: Pre and Post Surveys*

#### 1. Before Student Survey

I get reminded to work:

0 times

1-2 times

3 or more times

The hardest time for me to focus in school is:

- a. I am always focused
- b. Math
- c. ELA
- d. After specials
- e. After lunch
- f. Other \_\_\_\_\_

What can your teachers do to help you stay more focused?

#### 2. After Student Survey

Did you like doing the movement breaks?

Yes

A little bit

No

Did the movement breaks help you focus more in class?

Yes

A little bit

No

If you enjoyed the movement breaks, why did you like them? If you didn't enjoy the movement breaks, why not?

Do you have any ideas that could help to help you focus even more?

### **Post-Intervention Survey**

Did you like doing the movement breaks? Circle one.

Yes

A little bit

No

Did the movement breaks help you focus more in class? Circle one

Yes

A little bit

No

If you liked the movement breaks, why did you like them? If you didn't like the movement breaks, why not?

What are some ideas that could help you focus even more in class?

**Appendix B: Likert Scale**

How do you feel about coming to school?



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How do you feel about math class?



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How do you feel about PE class?



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Sometimes I have trouble paying attention during class



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**Appendix C: Behavior Checklist**

Pre-Intervention:

Day	Reminders given whole group	Reminders given to individual students	Total
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Day 1			
Day 2			
Day 3			
Day 4			
Day 5			
Day 6			
Day 7			

### During Intervention

Day	Reminders given whole group	Reminders given to individual students	Total
Day 1			
Day 2			
Day 3			
Day 4			
Day 5			
Day 6			
Day 7			
Days 1-7			
Day 8			
Day 9			
Day 10			
Day 11			
Day 12			
Day 13			
Day 14			
Days 7-14			
Days 1-14			

	Pre-Intervention	During Intervention
Average reminders given whole group		
Average reminders given individually		

### *Appendix D: Student Work Samples*

If you liked the movement breaks, why did you like them? If you didn't like the movement breaks, why not?

I liked the movement breaks because I do not like just sitting.

I did because it helped me get my wiggles out.

If you liked the movement breaks, why did you like them? If you didn't like the movement breaks, why not?

I like movement breaks because they give you a break from work.

If you liked the movement breaks, why did you like them? If you didn't like the movement breaks, why not?

I liked the movement breaks, because they kind of helped me learn.

If you liked the movement breaks, why did you like them? If you didn't like the movement breaks, why not?

yes I liked movement breaks because I got to have a break of math.

If you liked the movement breaks, why did you like them? If you didn't like the movement breaks, why not?

I like the movement because I got all of my energy out of my bottle

I Liked the movement breaks because we got to move around.

What are some ideas that could help you focus even more in class?

a few