

5-2015

The Effects of Physical Activity on Reading and Mathematics Achievement in an Elementary Classroom

Chelsey Earney
St. Catherine University

Emily A. Berg
St. Catherine University

Jill M. Wallert
St. Catherine University

Follow this and additional works at: <https://sophia.stkate.edu/maed>

 Part of the [Education Commons](#)

Recommended Citation

Earney, Chelsey; Berg, Emily A.; and Wallert, Jill M.. (2015). The Effects of Physical Activity on Reading and Mathematics Achievement in an Elementary Classroom. Retrieved from Sophia, the St. Catherine University repository website: <https://sophia.stkate.edu/maed/102>

This Action Research Project is brought to you for free and open access by the Education at SOPHIA. It has been accepted for inclusion in Masters of Arts in Education Action Research Papers by an authorized administrator of SOPHIA. For more information, please contact amshaw@stkate.edu.

The Effects of Physical Activity on Reading and Mathematics Achievement in an Elementary Classroom

An Action Research Report
By Emily Berg, Chelsey Earney and Jill Wallert

The Effects of Physical Activity on Reading and Mathematics
Achievement in an Elementary Classroom

Submitted on May 22, 2015

in fulfillment of final requirements for the MAED degree

By Emily Berg, Chelsey Earney and Jill Wallert

Saint Catherine University

St. Paul, Minnesota

Advisor _____

Date _____

Abstract

The purpose of this action research was to determine the effects of physical activity on reading and mathematics achievement on two first grade classrooms. The intervention took place over a period of four weeks in a public school setting with 38 students. Data was collected using teacher feedback, student self-assessment, a teacher log, and weekly reading and mathematics probes. Our results show that reading scores slightly improved after the intervention while mathematics scores stayed fairly consistent. Both first-grade teachers reported that they would continue to use physical activity prior to academic instruction in their classrooms because it helped students to focus and get their bodies and brains ready to learn. The student self-assessment revealed most first graders enjoyed the activity breaks and thought the breaks helped them to focus.

Altogether, it appears physical activity before academic instruction had a positive impact on student achievement. Looking ahead, students will have more input on the types of activity breaks used within their classroom. Teachers can also educate their students and other colleagues on how physical activity can help students achieve greater outcomes.

Further research topics include determining what type of breaks, calming compared to cardiovascular; have the greatest impact on student achievement.

As teachers in an early elementary school setting, we have noticed an increased focus placed upon reading and mathematics. In our school setting, students have 120 minutes of reading and 90 minutes of mathematics everyday. With rising pressures on teachers and the success of their students, due to common core state standards being implemented, teachers understand why these two subjects are essential. Reading and mathematics are taught without giving students a chance to re-energize their bodies. Students need to get their brains ready to absorb new material and process the data they have just learned. According to Jensen (2000), brain research has identified physical activity enhances the learning process for students. When providing exercise breaks throughout the day and just prior to learning, students will have the time to move, stretch, and re-focus their body for instruction. Knowing a link exists between brain research and physical activity, we wanted to find out if there were changes in academic performance if teachers provided physical activity prior to learning.

Physical activity in school-aged children has an impact on health and wellness as well as academic growth. Studies have shown that exercise increases students' brainpower, overall health and also promotes learning (Hernandez, 2007). By ignoring physical activity as a link to student achievement, educators could miss the correlation between physical activity and academics.

Schools need to consider other options for students to be physically active during the school day. Since movement is essential for the brain to function, there may be a concern with the potential reduction in physical education if districts decide to cut or reduce those classes. According to The Centers for Disease Control and Prevention, only 31% of students attended a physical education class in 2011 (DeNisco, 2013). The

answer to increasing physical activity within the school day may be for teachers to include physical activity within their classrooms. Students can use their bodies to demonstrate concepts they are learning throughout the day. Educators can collaborate to identify how to use physical movement in the classrooms and not just in physical education.

Understanding the science behind active learning, teachers can identify what the brain needs in order to achieve academic success. Physical activity has many benefits including improved circulation, increase in blood flow to the brain, and a raise in levels of particular feel good hormones, which can improve achievement (Taras, 2005). When educators allow students time to move throughout their day, students can grasp and learn new information (Lengel & Kuczala, 2010). Movement is a vital aspect of the brain's ability to cognitively function (Tremarche, Robinson, & Graham 2007). Research shows that when students have more time to play, they do better on academic outcome measures than if they spend more time in direct academic instruction (Diamond, 2014).

One study in Naperville, Illinois identified that exercise has positive effects on students academically. When looking at the district's 19,000 students, scientists were intrigued when they discovered low obesity rates and high-test scores (Ratey 2008). The physical education department implemented a program called Zero Hour, a class for ninth-grade students to participate in physical activity before school. Immediately following Zero Hour, students proceed to their most difficult class of the day, wide-awake, with their brain ready to learn. The experimental class started when there was a group of students struggling with freshman reading. After one semester, students in Zero Hour showed a 17% increase in reading and comprehension while their classmates that

opted to sleep in only improved 10.5% (Ratey, 2008). Scientists believe it is the effects of exercise that is helping these students to be more awake and on task in school (Ratey, 2008). Neuroscientists are learning more about how exercise is a stimulus, which creates the environment that allows the brain to be ready to learn (Ratey, 2008). Like Naperville, Illinois, schools can benefit from the effects of exercise on learning by incorporating brain breaks and movement before periods of instruction.

Classroom teachers within our school are experimenting with how exercise breaks affects their student's ability to learn and focus prior to academic learning. Brain breaks allow the mind to take a break from learning – just as the name implies (Wells, 2012). Teachers use stretching, yoga, dance and singing to re-energize their students to help get their brain ready for the next activity of the day. In Wells study, movement allows the student's brains to think actively and build connections. Since our brains are designed to learn information in short bursts, brain breaks enable students to process information they have just learned (Wells, 2012).

Evidence has shown students, who are more physically active during learning, have an advantage over their inactive peers. According to Jensen (2000), Japanese and Taiwanese schools spend more time on regimented breaks, recess, and formal play than receiving new content, resulting in the brains ability to process information taught in smaller bursts. Educators, who understand the link between movement and learning, can provide a greater learning environment for their students by integrating lessons with movement (Stevens-Smith, 2004).

Physical activity is one-way teachers may be able to increase academic achievement in the classroom. Advantages of utilizing movement while learning come in

the forms of more on-task behavior, better attendance, age appropriate activities, better retention, increased alertness and more fun while learning. Movement breaks are also engaging for all learning styles and make learning more enjoyable. With the use of YouTube, Smartboards, and other Internet resources, there are endless possibilities to the variety of physical activities teachers can provide their students. Physical activity is already encouraged, beneficial, and enjoyed by students. Therefore, it is wise for educators to understand the link between physical activity and academic achievement. This has led us to our research question: What are the effects of physical activity on reading and mathematics achievement in the elementary classroom? In order to find out how physical activity affects achievement in the classroom, we were able to look at two first grade classrooms to help us better identify the correlation.

Description of the Research Process

There were 38 students from two first grade classrooms who participated in daily brain breaks prior to reading and mathematics instruction. Each classroom contained 19 students, both of which had 11 boys and 8 girls. Each break was approximately four minutes in length and included various exercises determined by the two first grade classroom teachers involved in our action research. We hope that these movement breaks will show academic achievement within those areas in both classrooms.

Our research was completed using the following data sources: teacher feedback regarding physical activity and academic outcomes, a teacher log detailing the type and length of each physical activity performed in their classroom, weekly reading and mathematics assessments to monitor progress, and a collection of student and teacher

feedback at the end of the intervention. These were completed chronologically over the course of six weeks.

Before the project, we chose two first grade classroom teachers within our school to participate in our research. Both first grade teachers completed the pre-intervention teacher feedback, which asked them about their previous use and opinions of activity breaks within their classrooms (Appendix A). This allowed us to identify each teacher's specific background knowledge and feelings towards physical activity in relation to academic achievement. This information has provided us with insight on each teacher's opinions and thoughts prior to the project commencing as well as comparing it to their final thoughts at the end of the intervention.

Throughout the project, the two first grade classroom teachers collected weekly reading and mathematics data from their students. The weekly reading results collected by the teachers included a first grade reading passage at grade level. This allowed the first grade teachers to assess reading fluency over one minute with each student in their classroom (Appendix B). The weekly mathematics results collected by the two first grade teachers included a variety of basic computational skills, which was comprised of both single and double-digit addition and subtraction equations (Appendix C). Students were allowed eight minutes to complete this assessment and it was given as a whole class. After each assessment was completed for the week, we compiled all of the assessment scores into a spreadsheet for analysis.

During the two-weeks prior to interventions being implemented, teachers did not commence any physical activity within their classrooms prior to academic instruction. The reading and mathematics assessment data collected was used as a baseline for our

project. The four weeks following the baseline, teachers were asked to implement a physical activity break with their students prior to academic instruction. Each break needed to be four to five minutes in length. Teachers were given the freedom to choose the daily activities such as yoga, dance videos, and a variety of cardiovascular exercises. The teachers then recorded all activities used each day into the teacher log (Appendix D). Other information the teachers recorded into the log included: the date, a check box for completing an activity break prior to reading and mathematics, the duration of each break, and the type of activity students engaged in. The teacher log provided us with information detailing exactly what activities teachers completed on a daily basis with their class. Information gathered from the teacher log will be used to help us make a connection between physical activity and academic achievement. Specifically, we may find out certain activities have a greater effect on academic performance than others.

After the intervention was completed, students provided us with feedback regarding their own thoughts and feelings towards physical activity breaks within their classrooms (Appendix E). The data collected from student feedback were kept anonymous. Students specifically identified whether or not they enjoyed the breaks, if the breaks helped them focus, how they felt after each break, and what their favorite activity break was. The student feedback has provided us with knowledge on how students valued the breaks and how to move forward with the use of physical activity within the classroom prior to academic instruction.

In concluding our research, we asked teachers to provide us with feedback, once again, regarding their opinions on physical activity in relation to academic achievement. This included their final thoughts on the physical activity that had taken place within their

classrooms. Teachers answered questions relating to the outcome of the project and how they felt physical activity affected their student's focus and achievement in reading and mathematics (Appendix F).

The results from the data we collected from teachers and students throughout our research are shared below. Included is our analysis of each piece of data and the possible factors that could have influenced the outcomes.

Analysis of Data

Data was collected using the teacher pre-intervention and post-intervention feedback. This allowed the two first grade teachers to identify for us a compilation of their thoughts and beliefs surrounding physical activity within the classroom. The first question asked on the pre-intervention feedback was whether or not brain breaks would help students focus and learn. The second question asked whether they already used brain breaks in their classroom. Both of the first grade teachers replied "yes" to both questions. We also wanted to find out why they started to use brain breaks. Teacher A started to implement brain breaks to give students adequate time to move their bodies so they could maximize their learning, while Teacher B started to implement brain breaks to allow students an energy release in a structured way that would allow for the students to focus on the learning target they were to be taught. Teacher A identified using brain breaks two times per day and Teacher B used brain breaks four times each day. Through their feedback we found each teacher used brain breaks for different reasons. We believe this is due to teacher preference from activities they have used in past experiences. Teacher A uses brain breaks prior to instructional times and Teacher B uses brain breaks as a transition. Between the two classrooms, the teachers used a variety of breaks

including; yoga, Just Dance videos, and quick movement activities such as jumping jacks, wall squats, push-ups, and burpees.

The teacher feedback post-intervention included questions pertained to how the teachers felt their students responded to the brain breaks as well as if they will continue to utilize the breaks. Teacher A and Teacher B felt the brain breaks did in fact help their students by allowing them to focus on the instruction that followed. The breaks allowed for students to get their energy out in order to learn. Both of the teachers will continue to utilize the breaks because both the students and the teachers enjoyed them.

Teacher A and Teacher B also completed a log containing the information on each daily brain break that was conducted. Both teachers directed breaks prior to reading and mathematics instruction over the course of four weeks. The break durations lasted from a minimum of two minutes to a maximum of seven minutes. Teacher A conducted the majority of the breaks using Just Dance videos as well as doing yoga with students. Teacher B used dance videos in the morning but more often used “stick grab” in the afternoon. “Stick grab” allows students to take turns grabbing a stick out of the container and then performing the specified movement written on the stick. We identified the specific activity each teacher chose to use the majority of the time over the four weeks. Teacher A used dance videos most often and at times combined yoga and a dance video together. Teacher B tended to use “stick grab” most often with short bursts of activity lasting two minutes instead of combining one activity with another. The activities provided for the students were different within each classroom because we allowed for teacher creativity. From the data collected, we were not able to conclude the type of activity affected student results overall.

The reading and mathematics graphs (*Figures 1 and 2*) below show the arithmetic mean assessment scores for all six weeks of our data collection. Week one and week two for both reading and mathematics show baseline data prior to any physical activity interventions taking place within the classroom. Starting at week three, both first-grade classroom teachers began providing a variety of physical activity breaks to their students, on a daily basis, prior to beginning a reading or mathematics lesson.

While analyzing the reading data, we found there was a slight increase from week one to week six in the mean reading scores throughout the six-week period. The students in Class A made a 23% increase from the beginning of week one to the end of week six. The students in Class B made a 31% increase from the beginning of week one to the end of week six. Students have a reading goal for the end of the year, which is 52 words read correctly, although the passages range in word count from 200-300 words. Student reading mean for Class A and B can be found in *Figure 1*.

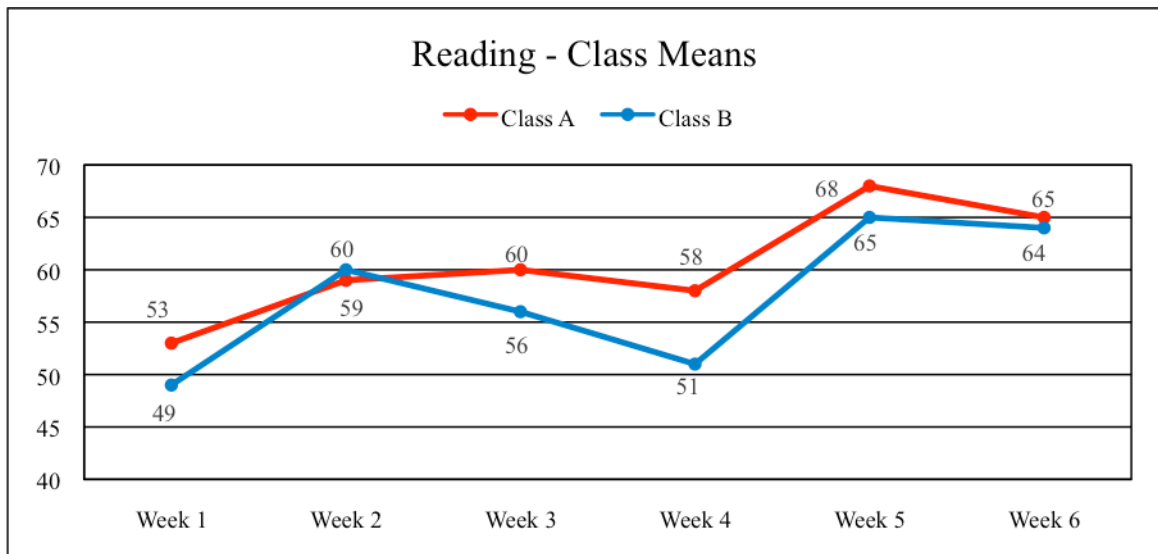


Figure 1. Reading score mean from Class A and Class B.

After finding the mean increase from each class, we discussed a few possible factors regarding this increase in score. We would hope that the physical activity before academic learning would be the sole factor for score increases, but we know there are other factors that affect a student's learning as well. The reading assessment passages fluctuate in leveled readability from week to week and are not as consistent as one would anticipate. This could be a reason as to why there was a decrease in the week four mean scores. Between classrooms, the amount of time devoted to activity breaks prior to academic instruction was consistent throughout the four weeks.

While analyzing the mathematics data, we found there was little to no change in average class assessment scores from the beginning of week one to the end of week six. The students in Class A showed the exact same mean score from the beginning of week one to the end of week six. The students in Class B showed a 5% increase from the beginning of week one to the end of week six. The student goal for first grade on the mathematics assessment is 37, although there are 48 possible points for each math assessment. Student mathematics mean for Class A and B can be found in *Figure 2*.

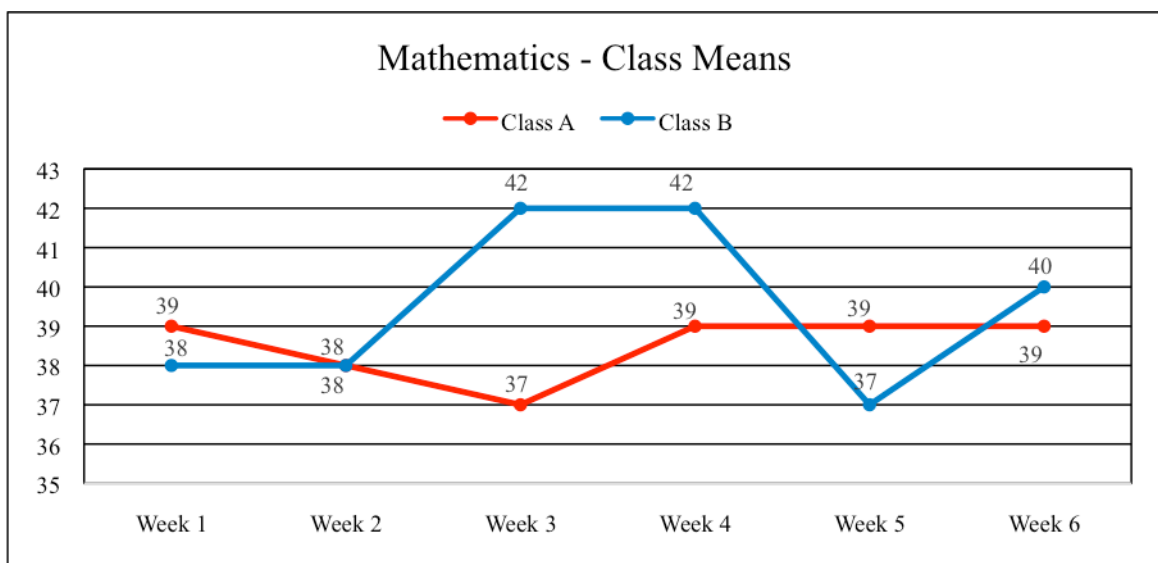


Figure 2. Mathematics score mean from Class A and Class B.

After finding the average scores from each class, we discussed a few possible factors regarding this consistency in score. Both classes of first graders had already achieved their benchmark goal in the school-wide AIMSweb assessment. Having already achieved the goal for this assessment, students did not have much flexibility in growth. Therefore physical activity before learning did not greatly affect their mathematic scores positively or negatively.

After four weeks of interventions, both classes gave student feedback with four questions asking their opinion on brain breaks in the classroom. Each class, containing 19 students, provided us with feedback. Two questions had responses, which required students to circle a smiley, straight, or sad face that represented their feelings. For the remaining two questions, students answered them with a short answer response. By using a smiley, straight, and sad face as possible answers, we felt the questions were developmentally appropriate for lower elementary students to understand and express their feelings. Each paper was filled out anonymously and given by the classroom teacher.

The first question asked if the students liked participating in brain breaks. A majority of the students circled the happy face, which indicated positive feelings for movement before academic instruction. The complete comparison of responses can be seen in *Figure 3*.

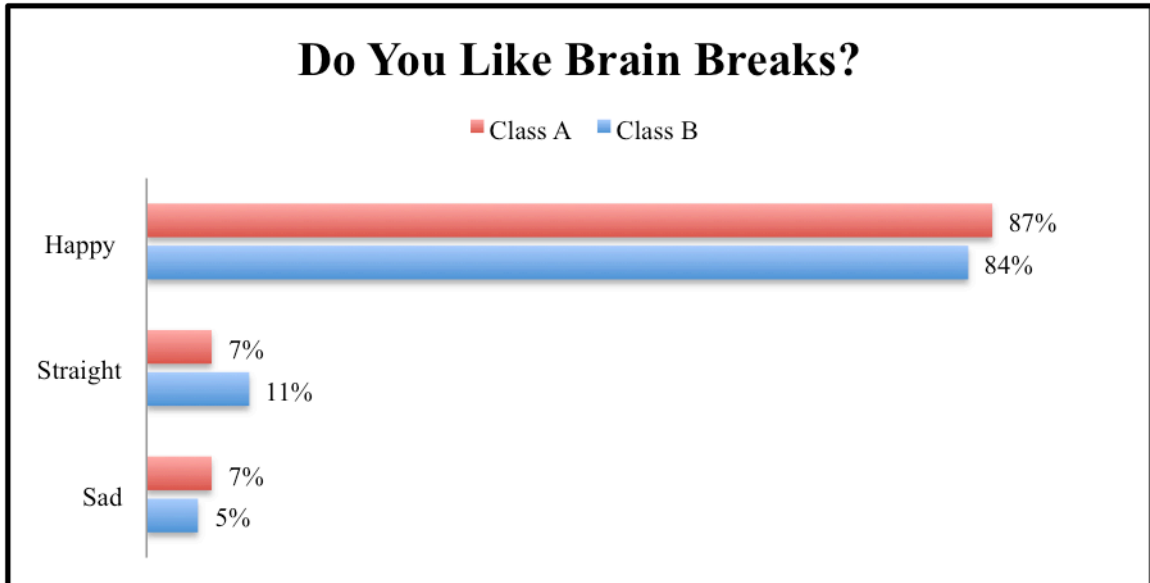


Figure 3. Student responses to Student Feedback Question 1.

This question was very subjective in nature because both classroom teachers had the choice of which brain breaks their students participated in. Depending on the student's preferences, students may or may not have answered differently if they were given more choice as to which brain breaks they were able to complete. An example is some students may enjoy more relaxing activities like yoga, while others enjoy dancing to a video.

The second question received more varied response from students. Students had to show whether or not brain breaks helped them to focus for academic instruction that followed each activity break. Although students may enjoy a brain break as a difference in routine, it does not necessarily make the student feel conscious of being more focused for learning. Also, different from *Figure 3*, *Figure 4* shows more differentiation in the answers students provided between Class A and Class B.

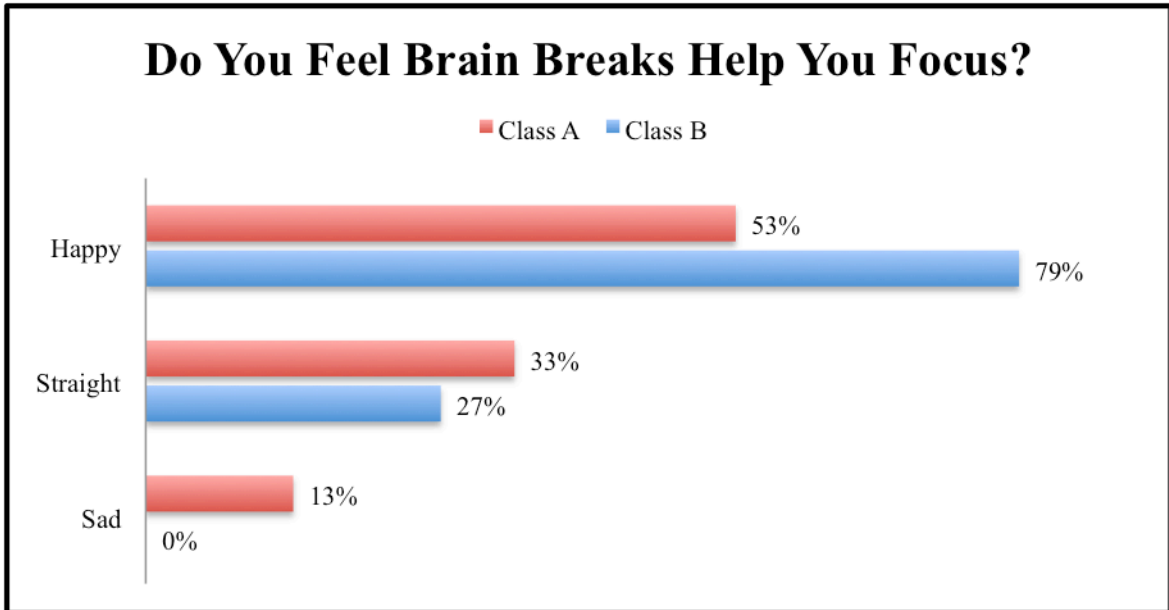


Figure 4. Student Responses to Student Feedback Question 2.

Our third question asked students how they felt after participating in the brain break. The questions were open-ended which lead to many diverse responses. Therefore, the answers we received from students were varied and difficult to report. Many students drew a smiley or straight face on the paper for their answer while others answered “happy” or “good.” Out of all of the data collected in the Student Feedback Form, only one student from Class A drew a sad face reflecting how they felt after a brain break.

Question 4 was open-ended and asked students to fill in their favorite type of brain break. This particular question showed 97% of students identified dance and video related activities as their favorite. This was not a surprise because Just Dance videos shown on YouTube can be found featuring many popular songs students hear on the radio and like to sing along to. Many students also responded that they enjoyed yoga as a brain break. As recorded in the classroom teacher’s log, there was not a large amount of variation between brain breaks offered to the students before reading and mathematics

learning. This would affect the variety of responses we received from students in their feedback form.

The data itself showed that activity breaks in the classroom prior to academic instruction had a positive effect on student achievement. Although reading scores increased slightly and mathematics scores stayed relatively the same, scores did not decrease overall. Teachers and students enjoyed participating in the breaks and thought they helped prepare their brain and body to focus for learning. Moving forward, we hope to share this information with students and teachers to make a positive impact on learning within our school. In our action plan, we discuss ways we can further implement activity in all classrooms.

Action Plan

Following six weeks of action research, we were able to identify how physical activity in the classroom prior to reading and mathematics instruction affect academic achievement. Reading scores increased slightly, which means students responded positively to the breaks in learning the teachers provided in their classroom. Some of the breaks were stimulating while others were calming. Both activities seemed to help students learn in the classroom. Mathematics scores remained consistent within both classes of first graders because they had already achieved their benchmark goal in the school-wide mathematics AIMSweb assessment. Having already achieved the goal for this assessment, students did not have much flexibility in growth.

Within our school, many teachers currently use activity breaks in their classrooms but not because they know how the breaks can benefit their students. Teachers may use the breaks because they look fun and want their students to move. With our research, we

would like to educate our colleagues on the benefits of movement breaks in the classroom and the positive effect it can have on learning. We can enhance our teaching instruction and the practices within our own building by sharing our research with our colleagues.

We can share this information through our staff development meetings as well as by assisting colleagues with ideas that will develop their understanding of movement within their classrooms. When teachers are able to read about the benefits and see the outcomes it has had on two first grade classrooms in their own building, they can utilize this research and further student learning outcomes.

Once our teachers have been exposed to and have more information on the importance and purpose of brain breaks, the classroom teachers may decide on implementing this type of learning in their own classrooms. Teachers can also put more thought into the type, variety, and length of the breaks they use. The two first grade teachers who took part in this research, identified they would change a few pieces of the process such as gathering student input on the type of activities students would engage in as well as identifying how students feel physically, mentally, and emotionally after each break.

An additional change to further the practices within our school in utilizing brain breaks is to educate our students on these benefits. Teachers can talk with their students regarding the purpose behind the breaks and how it can help their mind and bodies.

Teacher A and Teacher B wanted to ensure their students understand the reason why they are using brain breaks within the classroom. Both teachers stated they told their students a break is a chance to get their “wiggles out,” although the conversations were not consistent in how the breaks would benefit them. Teacher A also stated she wanted

to make sure the students understood how yoga was beneficial in calming their bodies and clearing their minds to be successful for the next classroom activity.

Teacher A and Teacher B felt the amount of brain breaks provided to their students was sufficient. They were both interested in modifying the breaks to use them throughout reading and mathematics lessons instead of just prior to each lesson. Teacher A shared that using yoga allowed her students a calming time prior to a reading activity, therefore felt the same activity would be beneficial prior to giving her students an assessment. Teacher B also stated her students had the opportunity to earn more brain breaks across the school day based on positive behavior.

When students know how exercise helps their body to learn, they will hopefully be more willing to participate. Teachers should allow students to choose the type of movement breaks used in their classroom. From our research, the teacher from Class A noticed a few of her students refused to participate based on the type of break. If the students did not like the song or the dance moves they chose to sit out. In order to get full participation it would be important to ask students what movements and exercises they prefer and to include a variety of activities. Students can get bored quickly, especially at the lower elementary level. If all students know why brain breaks are important and are motivated to participate, increases in academic achievement will hopefully occur.

If our whole school was on board with the benefits of brain breaks, students may enjoy a school wide break featuring dancing or yoga during certain times of the day.

This could be a great way to bring students and colleagues together across grade levels.

It also reinforces the importance our school places on moving in order to help our brain get ready for learning.

Based on our specific research results, we would like to further explore how physical activity affects students based on student participation, activity duration and intensity, calming compared to cardiovascular activities. It would also be interesting to identify whether the age and grade level of the students has any impact on student growth. The time of the school year could also play a critical role in growth depending on student goals and curriculum being taught. Also, the assessment being used to track student growth should be directly related to the content being taught within the classroom. The full impact on movement breaks in the classroom is yet to be seen. With additional research on the impact of exercise in a school environment, students of the 21st century will continue to advance.

References

- DeNisco, A. (2013, September). Health update report: A body in motion gets better grades. Retrieved from <https://www.districtadministration.com/article/report-body-motion-gets-better-grades>
- Diamond, A. (2014, August). The science of attention [Audio Podcast]. *On Being*. Retrieved from <http://www.onbeing.org/program/adele-diamond-the-science-of-attention/121>
- Hernandez, A. (2007, May 7). The P.E. Push. *San Antonio Express-News*, pp. B1, B6.
- Howie, E.K. (2013). *Classroom Exercise Breaks and Education Outcomes in Elementary School Students*. Retrieved from <http://scholarcommons.sc.edu/etd.1208>
- Jensen, E. (2000). Moving with the brain in mind. *Educational Leadership*, 58(3), 34-37. Retrieved from <http://www.districtadministration.com/article/report-body-motion-gets-better-grades>
- Lengel, T., & Kuczala, M. (2010). *The Kinesthetic Classroom: Teaching and Learning through Movement*. Thousand Oaks, CA US: Corwin Press
- Let's Move. (2014). *America's move to raise a healthier generation of kids*. Retrieved from <http://www.letsmove.gov/active-schools>
- Ratey, John J., Hagerman, E. (2008). *Spark: The revolutionary new science of exercise and the brain*. New York: Little, Brown
- Stevens-Smith, D. (2004). Movement and learning: A valuable connection. *Strategies*, 18(1), 10-11. Retrieved from <http://search.proquest.com/docview/214569540?accountid=26879>

Taras, H. (2005). Physical activity and student performance at school. *The Journal of School Health*, 75(6), 214-8. Retrieved from

<http://search.proquest.com/docview/215672235?accountid=26879>

Tremarche, P. V., Robinson, E. M., & Graham, L. B. (2007). Physical education and its effect on elementary testing results. *Physical Educator*, 64(2), 58-64. Retrieved

from <http://search.proquest.com/docview/232999836?accountid=26879>

Wells, Stefanie L. (2012). Moving Through the Curriculum: The Effect of Movement on Student Learning, Behavior, and Attitude. Retrieved from

<http://smcmweb.smcm.edu/educationstudies/pdf/rising-tide/volume-5/Wells.pdf>

Appendix A

Teacher Feedback: Pre-Intervention

Brain Breaks

1. Do you think brain breaks help students to focus and learn?

___ Yes

___ No

2. Do you use brain breaks?

___ Yes

___ No

3. If yes, why did you start using brain breaks?

4. How often (frequency) do you use brain breaks?

5. When do you use brain breaks?

6. What type of brain breaks have you used in the past or are currently using in your classroom?

Appendix B

A boy named Tom was at the bus stop. He was waiting for	13
the school bus. There was no one there but him. The bus was	26
late.	27
Tom began to talk to himself. "Maybe the bus forgot me,"	38
he said.	40
Then Tom heard a dog barking. He looked up and saw his	52
dog, Spot, running down the road. Spot ran to Tom. He was	64
so happy to see Tom that he jumped into Tom's arms.	75
Just then, Tom heard the bus coming. He didn't have time	86
to take Spot home. There was no time to think. Tom grabbed	98
Spot and hid him under his coat.	105
The bus pulled up to Tom's bus stop. Tom got on the bus	118
and went to the back. His friend Jack had saved a seat for him.	132
Just as Tom sat down, a little yelp came from under his	144
coat.	145
"What do you have under there, Tom?" asked Jack.	154
"If I tell you, do you promise not to tell?" replied Tom.	166
"You bet. I'm your best friend, aren't I?" asked Jack.	176
Tom told Jack what had happened. He asked his friend	186
what he should do. Jack had an idea.	194
"You can tell the teacher you have something very cool for	205
show and tell. Then you could call your mom and have her	217
come and pick up Spot."	222
Tom decided that's what he would do. His teacher was	232
surprised. His mom was mad, but Spot was very happy.	242

Appendix C

Student:	Teacher:	Date:
1 $\begin{array}{r} 7 \\ + 0 \\ \hline \end{array}$	2 $\begin{array}{r} 5 \\ + 3 \\ \hline \end{array}$	3 $\begin{array}{r} 4 \\ + 9 \\ \hline \end{array}$
4 $\begin{array}{r} 2 \\ + 6 \\ \hline \end{array}$	5 $\begin{array}{r} 1 \\ - 0 \\ \hline \end{array}$	6 $\begin{array}{r} 1 \\ + 4 \\ \hline \end{array}$
7 $\begin{array}{r} 10 \\ + 6 \\ \hline \end{array}$	8 $\begin{array}{r} 6 \\ + 8 \\ \hline \end{array}$	9 $\begin{array}{r} 10 \\ + 3 \\ \hline \end{array}$
10 $\begin{array}{r} 4 \\ + 7 \\ \hline \end{array}$	11 $\begin{array}{r} 5 \\ + 5 \\ \hline \end{array}$	12 $\begin{array}{r} 6 \\ - 0 \\ \hline \end{array}$
13 $\begin{array}{r} 9 \\ - 8 \\ \hline \end{array}$	14 $\begin{array}{r} 0 \\ + 3 \\ \hline \end{array}$	15 $\begin{array}{r} 30 \\ + 14 \\ \hline \end{array}$

Student:	Teacher:	Date:
<p>16</p> $\begin{array}{r} 8 \\ - 7 \\ \hline \end{array}$	<p>17</p> $\begin{array}{r} 4 \\ 2 \\ + 1 \\ \hline \end{array}$	<p>18</p> $\begin{array}{r} 3 \\ - 2 \\ \hline \end{array}$
<p>19</p> $\begin{array}{r} 10 \\ + 1 \\ \hline \end{array}$	<p>20</p> $\begin{array}{r} 9 \\ - 0 \\ \hline \end{array}$	<p>21</p> $\begin{array}{r} 2 \\ 3 \\ + 0 \\ \hline \end{array}$
<p>22</p> $\begin{array}{r} 6 \\ - 4 \\ \hline \end{array}$	<p>23</p> $\begin{array}{r} 25 \\ + 14 \\ \hline \end{array}$	<p>24</p> $\begin{array}{r} 27 \\ - 12 \\ \hline \end{array}$
<p>25</p> $\begin{array}{r} 15 \\ + 10 \\ \hline \end{array}$	<p>26</p> $\begin{array}{r} 5 \\ - 3 \\ \hline \end{array}$	<p>27</p> $\begin{array}{r} 28 \\ - 14 \\ \hline \end{array}$
<p>28</p> $\begin{array}{r} 23 \\ - 13 \\ \hline \end{array}$		

Appendix D

Teacher Log

Teacher _____

Week 1

Date	Reading	Math	Break Duration	Type
			/	
			/	
			/	
			/	
			/	

Week 2

Date	Reading	Math	Break Duration	Type
			/	
			/	
			/	
			/	
			/	

Week 3

Date	Reading	Math	Break Duration	Type
			/	
			/	
			/	
			/	
			/	

Week 4

Date	Reading	Math	Break Duration	Type
			/	
			/	
			/	
			/	
			/	

Appendix E

Student Feedback

1. Do you like brain breaks?



2. Do you feel brain breaks help you focus?



3. How do you feel after a brain break?

4. What is your favorite type of brain break?

Appendix F

Teacher Feedback: Post-Intervention

Brain Breaks

1. Do you feel brain breaks helped your students to focus and learn better?
(Behavior and/or Academic)

Yes

No

2. Why?

3. Will you continue to use brain breaks?

Yes

No

4. Why?

5. If yes, when?

6. Do you feel the frequency in which the breaks were offered was sufficient?

Yes

No

7. If you will continue to use these breaks for students, what type of break will you utilize most often?
