

**A Case Study Exploring the Implementation of Classroom Physical Activity Time During
Instruction in an Elementary Setting**

by

Janet Mae O'Rourke

Bachelor of Science in Education, California University of Pennsylvania, 1989

Master's Degree in Education, California University of Pennsylvania, 1992

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This dissertation was presented

by

Janet Mae O'Rourke

It was defended on

July 1, 2019

and approved by

Mrs. Nancy Aloï, Superintendent (Retired), Bethel Park School District

Dr. Bethany Gibbs, Associate Professor, Health and Physical Activity Department

Dr. Randall Lutz, Superintendent, Baldwin-Whitehall School District

Dissertation Advisor: Dr. Cynthia Tananis, Associate Professor, Administrative and Policy
Studies

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“In order for man to succeed in life, God provided him with two means, education and physical activity. Not separately, one for the soul and the other for the body, but for the two together. With these two means, man can attain perfection” -----Plato

When you move more, you learn more because healthy students learn better. Research shows that physical activity affects the brain in ways that allow students to be more engaged and more ready to learn (Castelli, et al, 2007). The purpose of this study is to explore how one school addressed this idea and learn from their experience. Through this case study approach, the decision-making process undertaken by the case school building was reviewed and reported. The perspectives of administrators, teachers, and students were explored and analyzed. And finally, recommendations were collected to influence and inform any school that may be implementing physical activity breaks in their classrooms.

The sample population of this study consisted of 2 administrators, 32 teachers, and 25 students in grades 2-5. The case school is in suburban Pittsburgh, Pennsylvania. The evidence yielded many positive perspectives of incorporating “brain” breaks into the instructional flow of the classroom from all participant categories. This study did not analyze type of break nor was degree of activity necessary for inclusion. The results can inform others who are looking at creative ways to engage students and ignite learning using activity breaks in the classroom.

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Preface

This dissertation is dedicated to my parents, Jackie and Alex O'Rourke, for without their support, belief in me, and consistent push, this accomplishment would not have been possible. Through their encouragement and pride, I was able to realize my dream.

I also want to thank my family and friends, who never once, discouraged me in pursuing this endeavor. They were always positive and supportive and provided ongoing motivation, support, and the extra push when I felt like giving up to complete this benchmark.

I am truly thankful to the Baldwin Whitehall School District and especially Whitehall Elementary School, under the leadership of Mrs. Jennifer Marsteller, for being so open and welcoming as I gained knowledge and learned from the strategies they use to provide the best learning environment for children.

I'd also like to thank my advisor, Dr. Cynthia Tananis, for her direction and support throughout this process. I truly appreciate the way she pushed me to be a better writer, better educator, and a better scholar.

To Mrs. Nancy Aloï, Dr. Bethany Gibbs, and Dr. Randall Lutz, and the many others not listed specifically by name, I thank you and appreciate all you have done to join and support me on this educational journey.

If a task is once begun, never leave it till it's done.

Be the labor great or small, do it well or not at all. ----unknown

1.0 Introduction

Providing the best educational environment for learning and the tools for every child to be successful are the focus of my professional career. I have always been interested in seeing what other schools are doing in ways that can impact the learning and overall well-being of my own students. About eight years ago I found a book by Eric Hagerman and John J. Ratey called *Spark: The Revolutionary New Science of Exercise and the Brain* (2008). This book documents evidence and case study detail about how exercise can remodel our brain for peak performance.

As a result of my own experience as an elementary teacher and principal, I challenged my staff to provide activity breaks prior to and during instruction to help each student's brain reach peak performance (Hagerman & Ratey, 2008). However, there was no expectation of consistency, nor were any data collected to determine what if any these activity breaks had. However, the premise and idea continued to resonate for me. Using a case study approach in a neighboring school district that has implemented physical activity breaks during instruction, I will study the process, benefits, and lessons learned that may inform planning for my own school district.

1.1 Statement of the Problem

As an educational leader in a school district in southwestern Pennsylvania, I often question if we are doing the best in preparing our students for the future. I wonder if there are strategies and interventions that could impact students in a more positive manner. Text book retailers and student intervention companies will sometimes profess to have an intervention to resolve a reading or math

deficit; however, I question whether adding more content focus in a student's area of weakness is always the best option. While we have supported research-based content interventions and realized some achievement gains for some students, in recent years, between 12%-19% of my school district's students have scored below proficient on the Pennsylvania State Assessment Tests (PSSA) in math, reading and science. I am concerned about this indicator and deeply interested in how we are influencing our students to become advocates for their own learning. While considering this dilemma, I developed an interest in how students learn, how to create the best environment for learning, and strategies to help students engage more fully in growth and learning. Therefore, learning from another school district that has addressed similar achievement concerns will benefit my growth as an educational leader.

1.2 Problem of Practice

The purpose of this study was to explore and understand the process of decision-making and outcomes in a neighboring school district that implemented physical activity breaks during instruction. This inquiry was designed to inform and generate further knowledge about the influence of physical activity breaks in the classroom from administrators', teachers', and students' perspectives. The following research questions focused this inquiry:

1.3 Inquiry Questions

IQ1. How was the decision and planning process for physical activity breaks conducted in the case district?

IQ2. What were the challenges encountered and how were they addressed in implementation?

IQ3. What are the perceptions of administrators, teachers and students regarding activity breaks in classes in the case district?

IQ4. What are the recommendations derived from the case district that would apply to mt home district.?

2.0 Review of Literature

The intent of this chapter is to meaningfully situate this study on how physical activity breaks may impact the brain and influence learning in elementary aged children. A summary of the literature on school change will set the stage for this inquiry. This chapter then synthesizes literature on physical activity's impact on the brain including the impact of physical activity on executive functioning, and finally, summarizes the impact of physical activity on achievement. The proposed study aims to gather information to inform decision-making.

2.1 Implementing Change in Schools

Based on the objectives, needs and processes of a given situation, change has been categorized differently by various researchers. For example, Levy and Merry (1986) classified change into first-order and second-order changes. First-order change involves improvement in organizations without changing their core values, beliefs, and systems, whereas second-order change includes multi-dimensional, qualitative and radical change involving paradigm shift. Alternately, Anderson (as cited in Anderson and Anderson, 2001) categorized changes into the following three types: developmental change involving improvement of current knowledge, skills, practices and performance; transactional change based on redesigning current systems, structures, strategies, processes and works; and transformational change consisting of an overhaul of strategies, systems, structures, processes, works, cultures, behaviors and mind-sets.

Transformation in school settings can entail a paradigm shift in beliefs, behaviors and mind-sets of the school members, including teachers, staff, leaders and parents. It is a constructive and long-term change embraced internally through shared ownership of the consequences (Zmuda et al., 2004). Of the factors and characteristics that are essential for school transformation, researchers have identified certain external factors that initiate the process of change in school setting. External factors influence a school's ability to remain in a competitive position. Strong proponents of educational change, Ghavifekr et al. (2013) stipulated that educational organizations must "harvest a culture of change and innovation" to maintain their dynamic and competitive position.

It is not only external factors that are critical to school transformation, however, internal factors can be considered as facilitating and instrumental as well. For example, for Fullan (2003), grouping together schools, districts, and state levels of education departments is essential for school transformation, where each level must bear the responsibility for increasing interaction and collaboration at their own level and beyond. According to Zmuda et al. (2004), without maintaining focus on the performance of the students, achieving this essential sort of systems thinking—as well as collective planning and implementation, collegiality and collective accountability—transformation is nearly impossible.

School transformation is a complex and multi-dimensional process (Urick & Bowers, 2013). It embodies the alteration of the status quo, which subsequently changes many aspects of school life. These changes can be observed in school settings, current thinking, structures, rules and regulations, processes, long-held traditions, curriculum and instruction, school infrastructure and school design, students' academic and non-academic achievements, community interactions, administration and leadership (Sammons et al., 1995; Zmuda et al., 2004; Shannon & Bylsma,

2007; Leiringer & Cardellino, 2011; Hsiao et al., 2012; Starr, 2014). However, the criteria for identifying transformed schools in the current literature is generally based on the academic performance of the students. For example, for Caldwell and Spinks (2008), “a school has been transformed if there has been significant, systematic and sustained change that secures success for all of its students” (p. 28).

The need for organizations to adapt nimbly in a fast-paced global society is a given. John Kotter, the Konosuke Matsushita professor of leadership emeritus at Harvard Business School and author of some 15 books on leadership and change, is intimately familiar with the problem of change in schools. Kotter developed an eight-step model in his book *Leading Change* (2012) that will provide background structure for the present study. This eight-step model consists of:

- Step 1 – Increasing a sense of Urgency: People start telling each other, “Let’s go, we need to change things!”
- Step 2 - Building the Guiding Team: A group powerful enough to guide a significant change is formed starts to working together well.
- Step 3 - Getting the Vision: The right guiding team develops the right vision and a strategy for the change effort.
- Step 4 - Communicating for Buy In: People begin to buy into the change, which shows in their behavior.
- Step 5 - Empowering Action: More people feel able to act, and thus do act, on the vision.
- Step 6 - Creating short-term wins: Momentum builds as people try to fulfill the vision, while fewer and fewer resist change.
- Step 7 - Not Letting Up: People make wave after wave of change until the vision is fulfilled.
- Step 8 - Making Change Stick: New and winning behavior continues despite the pull of tradition, turnover of change leaders (p.23).

Educational organizations evolve over time due to the influence of external and internal pressures. It is essential to maintain school stability and to allow education to be driven by evolution of wants and needs within a school building. Attempts to change in schools leads to different responses in organizations. A common thread through the literature categorizes change in as first-order and second-order change, as suggested by Levy and Merry (1986). While first-order change does not

change the core beliefs of a system, second-order change does affect core values and leads to a paradigm shift. Kotter (2012) provides a fundamental step method for leaders to support effective change in schools. As I explore this inquiry, I will use these two ideas relating to school change as I look at the case school's decision to include physical activity in their classrooms.

2.2 Physical Activity and the Brain

Experts have focused on the influence of physical activity on the brain in relation to learning including in school settings. The benefits of physical activity on cognitive performance in children have been recognized (Burton & VanHeest, 2007). Nevertheless, to boost academic performance, some school districts have implemented policies that restrict opportunities for physical activity during the school day in favor of extra time in the classroom (Institute of Medicine, 2013). Unfortunately, these policies have contributed to an increase in rates of sedentary behavior and obesity, and a decrease in aerobic fitness in school aged children, all of which may have a negative impact on classroom performance, as lower aerobic fitness and overweight status are associated with poorer scholastic achievement (Castelli, et al. 2016). In light of this, the process of eliminating or reducing physical activity time seems counterintuitive to helping students reach their highest potential.

Common sedentary behaviors include TV viewing, video game playing, computer use (collectively termed "screen time"); driving automobiles; and reading (Tremblay, et.al, 2017). A systematic review of the literature indicates that sedentary behavior and the diagnosis of certain diseases such as childhood diabetes have increased among children, and the implications of long-term health issues caused by sedentary behavior are expected to multiply (Tremblay et al., 2017).

The 2010 Healthy People Guidelines, which states children should engage in at least sixty minutes of physical activity daily, was used as an indicator. Students who had performed some or met healthy people 2010 guidelines for vigorous activity had higher grades (Howie & Pate, 2012). Higher grades were associated with vigorous physical activity, particularly activity meeting recommended healthy people 2010 levels (Coe et al., 2006). Classroom-based physical activity provides a varied approach to improving fitness, body mass index, cognitive function and ultimately academic achievement (Donnelly, et al. 2011). The impact of physically active academic lessons of higher intensity may provide larger benefits for body mass index and academic achievement.

As the focus of academic achievement has increased, physical activity opportunities in schools have decreased in the United States (Taras, 2005). A meta study of 125 articles stated that the majority of articles show a positive effect of physical activity on constructs related to academic achievement (Howie & Pate, 2012). Physical activity positively related to both mathematics and reading achievement in boys and girls however, physical education participation was not significantly related to achievement (Stevens, et al. 2008). Researchers conducted a detailed analysis of the relationship between the components of physical fitness (aerobic capacity, muscle fitness, and body composition) and academic achievement (mathematics and reading) within schools that were selected based on several sociocultural variables. This study hypothesized that aerobic fitness would be most associated with academic achievement. The findings suggested that physical fitness was related to academic performance in third and fifth grade children (Castelli, et al. 2007).

Some studies have concluded that there is no significant academic achievement difference between overall physical activity levels and performance on academic achievement tests (Moses

2011). A study conducted in 2015 concluded that participants in the control group outperformed those in the study group. However, both groups improved their scores. In another study, students identified as Title I fifth-graders were found to have no significant change in achievement when the intervention of physical activity was introduced in reading; however, the researcher found that there was a significant difference in mathematics (Stewart 2015).

2.3 Physical Activity and Executive Functioning

Executive function (EF) skills are an array of cognitive processes that support problem solving efforts and self-regulation (Blair & Ursache, 2011; Hofmann, Schmeichel, & Baddeley, 2012). Although numerous cognitive processes have been described as EF (Barkley, 2012), inhibitory control, working memory, and cognitive flexibility are the three core domains of EF that are most often studied in early childhood (Garon, Bryson, & Smith, 2008). There is widespread interest in EF skills both because they contribute to interpersonal, academic, educational, and occupational success and because they are malleable through interventions (Diamond, 2012; Hsu, Novick, & Jaeggi, 2014; Zelazo, Blair, & Willoughby, 2016).

Although comparatively more research relating PA to EF skills has come from studies involving adults, a growing body of literature has extended this to school-aged child samples. In a meta-analysis of 44 studies involving school-aged children, Sibley and Etnier (2003) reported significant effects for both the acute ($d = .37$) and chronic ($d = .29$) effects of physical activity on children's cognitive and academic outcomes. More recent narrative reviews have also concluded that increased PA is associated with beneficial cognitive and academic outcomes in school-aged children (Donnelly et al., 2016; Poitras et al., 2016). Although much of this research is based on

cross-sectional and passive longitudinal studies, multiple recent randomized controlled trials provide stronger evidence that increased PA may be causally related to improved brain structure and function as well as EF skills in school-aged children (Hillman, Khan, & Kao, 2015).

Scientists now believe that it is necessary to achieve maximum potential of the mature brain stimulation in the form of movement and sensory experiences during the early developing years (Basch, 2011). These experiences appear to strengthen the bonding synapses, the connections that are made between neurons in the brain. If the neurons are stimulated memory, critical thinking, and comprehension improve (Geake, 2006).

2.4 Achievement

Under *Every Student Succeeds Act* of 2015, states and school districts are required to develop strong systems of accountability based upon student performance. One component of the *Every Student Succeeds Act* is that evidence must be given for increased student achievement and growth for **all** students. *The Every Student Succeeds Act* also sets new mandates on expectations and requirements for students with disabilities. Most students with disabilities are required to take the same assessments and will be held to the same standards as other students (US Department of Education, n.d.). The issue of closing the achievement gap continues to linger as student achievement grows in accountability yet a trend of low achievement in certain disaggregated groups lingers. Response to Intervention and Instruction (RTII), differentiated instruction, ability grouping, and many other examples of how to meet the needs of children have been explored and documented. The critical importance of literacy has been brought to the forefront by society, lawmakers, researchers, and educators who have struggled to include everyone into the world of

literacy. According to Nevills and Wolf stated, “the expectation for today’s society is that 100% of the population will be able to read and comprehend” (2009).

Expectation of all children being able to read by grade 3 was established by the *No Child Left Behind Act* and then reinforced by the *Every Student Succeeds Act of 2015*. Literacy is a critical component of future success. Since literacy has been on the national education agenda, efforts to keep it as the focus have led to understanding that literacy entails continuous learning which enables individuals to achieve their goals, to develop their knowledge and potential, and to participate fully in their community and wider society. Yet, educators have faced an enormous task to reform curricula and instruction to improve academic achievement so that all children can become literate (Symons, Cinelli, James, and Groff, 1997). Federal and state officials have placed pressure on school districts to include literacy achievement by developing goals and grading schools performance. An outcry from parents, concerned citizens, and business owners are pushing schools to make the necessary changes to improve their local schools reading and mathematics scores.

Learning to read successfully means understanding what has been read in order to comprehend the whole text. Research has shown that students’ future academic success can be predicted with reasonable accuracy by their reading level by the end of third grade. Students who are not able to read at the basic level by fourth grade may struggle with reading and eventually become so frustrated with school that they often drop out of school altogether (Slavin,1994).

Learning to read is particularly difficult for some children. According to Shaywitz et al (1999), “Speaking is natural, and reading is not.” Some 20% to 30% of children struggle with learning to read. With growing alarm that too many children were not achieving success with reading text of any kind, the national reading panel was established in 1997 to assess the status of

research-based knowledge and the effectiveness of various approaches to teaching children to read (NICHD, 2000). A number of things such as reading to your child everyday, having children tell stories, play rhyming games, and making reading a regular activity in the home, can be done to encourage the beginning of reading in children's lives early on (Shanahan, 2010).

The majority of children who are at risk of reading failure rarely catch up to their peers if they are not reading fluently by third grade (Blaunstein & Lyon, 2006). Some children need to be explicitly taught to read, while others learn to read more easily and without difficulties. Children from impoverished backgrounds are the most at risk (Blaunstein & Lyon, 2006).

Research has shown that children who are poor readers at the end of first grade almost never acquire an average level of reading by the end of the elementary grades (Frances, Shaywitz, Stuebing, & Fletcher, 1996; Juel, 1998; Torgesen & Burgess 1998).

Often when children struggle in reading we give them more reading texts. However, findings suggest that the brain is more attuned to learning when physical activity is incorporated into learning (Castelli, Hillman, Buck, & Erwin, 2007).

The following chapter presents specific information on the approach, data collection and data analysis for the conduct of my inquiry.

3.0 Methods

This qualitative case study is defined as a quest in understanding a phenomenon and coming to understand its activity within important circumstances (Stake, 1995). Since I am interested in identifying and exploring the phenomenon of physical activity breaks in the classroom from the perspectives of administrators, teachers, and students, a case study approach informed this inquiry. The process of this inquiry included interviewing administrators about the process of the decision of implementing physical activity breaks, surveying teachers on their perspectives on how they incorporated the breaks into their day, their opinions of the breaks, and any recommendations they have for other educators. Students of the case study school were surveyed to gain insight into their perspectives on activity breaks during instructional time. Interviews of volunteer teachers were conducted to further gain knowledge of the activity breaks. Focus groups were held with students of the case school to dive deeper into their perspectives related to physical activity breaks. This chapter begins with a review of the problem statement and research questions. The research questions are situated in the conceptual space of learning from those who are directly integrated into the physical activity routine. This chapter describes the study's design and how the data was collected and analyzed.

3.1 Problem of Practice

The Carnegie Project on the Education Doctorate (CPED) (2014) defines a problem of practice as “a persistent, contextualized, and specific issue embedded in the work of a professional

practitioner, the addressing of which has the potential to result in improved understanding, experience, and outcomes.” As an educational leader in a school district in southwestern Pennsylvania, I often question if we are doing the best for our students in preparing them. I wonder if there are strategies and interventions that could impact students in a more positive manner. Book and curriculum retailers will sometimes profess to have the intervention that will resolve a reading or math deficit however, I question sometimes if adding more content focus in the area of weakness is always the best option. While we have supported research-based content interventions and realized some achievement gains for some students, in my school district, 12%-19% of students consistently perform below the proficient level on the Pennsylvania State Assessment Tests (PSSA) in math, reading and science. I am concerned about this indicator and deeply interested in how we are influencing our students to become advocates for their own learning. While considering this dilemma, I developed an interest in how students learn, how to create the best environment for learning, and strategies to help students engage more fully in growth and learning. The literature makes it clear that physical activity does have a positive influence on the brain however, it is important to clarify the decision-making process to implement physical activity breaks in classrooms. These insights could influence how other schools make similar decisions in the future. Research suggests that there is a positive influence on the brain in the areas of comprehension, problem solving, and overall well-being when physical activity is a part of the student’s routine. Through the interview and focus group events, I was able to question adults and children about whether they see these influences occurring. The focus of this study was to learn from other educators and students who have been incorporating physical activity into their instructional routine, by addressing the inquiry questions defined earlier (p. 14).

3.2 Rationale

A school district neighboring my own has implemented classroom based physical activity breaks. The literature related to how physical activity breaks influence the brain to impact executive functioning, cognition, mood and learning, coupled with my concerns from practice, compelled me to further explore and learn more from others on how they address movement and activity breaks during instruction. As Stake (1995) contends, each interviewee has a unique story to tell; an interview protocol and open-ended survey questions insured that participants were able to fully describe their experiences and tell their story relevant to these phenomena. The product of this study provided meaningful information as goals were set and decisions were made in my own school district.

3.3 Inquiry Setting

The setting for this case study was an elementary school located in the suburbs of Pittsburgh, Pennsylvania. This school is part of a larger school district that educates more than 4200 students in kindergarten through grade 12. The case school served students grades two through five and comprised of 744 students. There is a sister school that educates the kindergarten and first graders that feed into the case school. The remainder of the elementary students in the school district attend another elementary school that houses grades K-5. There was a total of 51 teachers that are assigned to the case school either full time or as a part-time traveling teacher. There were thirty homerooms, two learning support classrooms, one emotional support classroom, a gifted support classroom, two reading support classrooms, one ESL classroom, and one speech and

language classroom in the case school. The demographic information detailed through the PA Future Ready Index (Future Ready PA Index - Find a School, 2019) for 2018 for the case school listed 72.4% white, 16.1% Asian, 5.2% Black or African American, 4.2% multi-racial, and 1.9% Hispanic students. 41.3% percent of the school's student population was economically disadvantaged as determined by the number of students who qualify for free or reduced lunches. 7.9% percent of the students were categorized as English Language Learners and 12.9% received special education services. 52.3% of the student population was male and 47.7% was female.

This school has implemented physical activity breaks in some classrooms since 2012 using a program called GoNoodle, activity cards made by the administration or other movement options developed by the teachers. The activity cards were adapted from an online resource that was made available through the Colorado Education Initiative. GoNoodle is a free online classroom movement tool. GoNoodle helps teachers and parents get kids moving with short interactive activities. As stated on their website, desk-side movement helps kids achieve more by keeping them engaged and motivated throughout the day (www.gonoodle.com). GoNoodle was designed with K-5 classrooms in mind. The activities are researched based and focus on a healthy body, engaging for the attention and beneficial to the brain in specific ways. GoNoodle takes no time to set up, has content of a variety of lengths (from 1 minute to 20 minutes), and just requires you to press play. GoNoodle makes earning minutes of healthy activity a game that kids play together. Each class chooses a Champ -a virtual mascot- who grows as the class earns the points needed to advance to the next level (www.support.gonoodle.com).

3.4 Recruitment

3.4.1 Recruitment of Administrators for Interviews

The assistant superintendent and principal of the case school were identified by one of the teachers as participants through personal conversation related to activity breaks during instruction prior to the study proposal. The principal investigator reached out and received a positive response from both administrators to conduct this case study. They also agreed to be interviewed for this study. The superintendent of the School District gave permission for this inquiry.

3.4.2 Recruitment of Teachers/Staff Members for Surveys and Interviews

The teacher participants were recruited using personal solicitation by the principal investigator, through electronic and in-person communication. I presented the overview of this study to the entire staff of the case school during a faculty meeting. An initial online survey was distributed to all staff members via a secure link of the case school after the faculty meeting presentation. The principal investigator asked for volunteers to participate in a 20-minute interview to gain a deeper understanding of their perspectives. Adult participants received an informed consent letter and only participated in the interviews once that consent was signed.

3.4.3 Recruitment of Students

A letter was sent home in the manner in which typical school letters are sent home (electronically or paper copy) to the parents of all students in the case school describing the inquiry

and asking for parental permission. The students who returned the permission to participate letter received the student survey. All students who completed a survey participated in the focus group.

Student participants were required to have a signed consent form to participate in any aspect of this study.

3.5 Stakeholders

The stakeholders of this study included the administration, teachers and students of the case district. Data were collected from all of these groups. These stakeholders were chosen to specifically address how building and classroom integration occurred, benefits, and recommendations for policy and practice. I understand that other stakeholders, such as parents and school board members, may be able to inform further, but I chose to focus specifically on the school/classroom impact. The information shared informed goals and decisions of the case district as well as my own district as we move forward in providing a more effective environment for learning.

3.6 Data Collection Protocols

Interview and survey data were collected and aligned to the research questions of this inquiry. The questions were developed through a collaborative approach with school administrators and teachers. The interview questions and survey questions were piloted in my own district to inform on the caliber of question and what type of data it elicited. The concept driving

the process were based on what we wanted to know about physical activity breaks (Table 1). Survey questions were informed by concepts based on the literature concerning executive functioning and learning. The open-ended questions provided the opportunity for participants to tell their perspectives, beliefs and the value of physical activity breaks.

Interviews were conducted in person on a one-to-one basis with the assistant superintendent of the case school district and the principal of the case school. The assistant superintendent and the principal were the initial contact for this inquiry. I informed the teachers of the study through personal contact during a faculty meeting and a follow-up email. Within that follow-up email the teacher survey was disseminated through a secure link using Qualtrics through the University of Pittsburgh. Thirty-two teachers (63%) completed the survey. Those that completed the survey consisted of eight 2nd grade teachers, five 3rd grade teachers, seven 4th grade teachers, and twelve 5th grade teachers. I asked for teacher volunteers to be interviewed. There were seven teachers (14%) who volunteered to be interviewed. Those interviewed consisted of two 2nd grade teachers, one 3rd grade teacher, one 4th grade teacher, two 5th grade teachers, and a teacher of the deaf or hard of hearing. Interviews began with demographic questions in order to gather comprehensive data and build rapport with participants. Data from these questions were helpful in exploring correlations between experience, position, and background. The participant group consisted of teachers who taught one or more of the core academic courses (ELA, Math, Science, Social Studies), a speech and language teacher, a special education teacher, a teacher of the deaf or hard of hearing, 2 building substitute teachers, a physical education teacher, a music teacher, a librarian, and a technology teacher. A letter was sent to the parents/guardians of all students in the case school explaining the inquiry and requesting permission for the student's participation. Twenty-five students returned the parent permission form and completed the survey. The survey

was distributed to the students to complete in a paper format. The surveys were collected, tabulated and stored in a locked file accessible only to the principal investigator. Student focus groups were created by student volunteer and parental permission. All twenty-five students who completed the survey participated in the focus groups. They consisted of seven 3rd graders, eleven 4th graders and seven 5th graders.

The interview protocol for the administrators (Appendix C) focused on the story of how the decision was made to implement physical activity breaks in the classroom. The open-ended structure provided the interviewee with the ability to share their perspective and lessons learned through the interview process. The participants signed a permission form. The interviews were recorded on a personal digital recorder and transcribed using www.rev.com.

Table 1 Detailed concepts that are the foundation of the interview and survey question development

Inquiry Question	Interview/Survey item to inform inquiry question
1. How was the decision and planning process for activity breaks conducted in the case district?	<ul style="list-style-type: none"> • Tell me about how your district came to the decision to implement physical activity breaks in your schools and classrooms at the elementary level. 2.What was the purpose? • What was your rationale or problem that saw physical activity breaks as a solution? • What was the process you used to make make this decision? • Who was involved? • How long did it take? • What resources were considered to inform your decision? • What does the implementation look like in your district/school? • What are the costs associated with implementation? • Were there policy implications? • Were there any contractual concerns that needed to be addressed? • Is there an expectation of how much time each teacher should give to physical activity breaks? If so how was this determined? • How are the activity breaks scheduled? When? By whom? • What content was affected by using this time for activity breaks?

Table 1 Detailed concepts that are the foundation of the interview and survey question development

(continued)

	<ul style="list-style-type: none"> • Are the activity breaks consistent from classroom to classroom? • Who designs the activities? • How often do you incorporate physical activity into your instruction? • When do you incorporate physical activity into your day? • How do students engage in the activities? • Are their options for students to opt out? • Are students given choices on how to use their activity break? • Are you offered physical activity breaks during class? (student question) • Do you participate in activity breaks during class? (student question)
<p>2. What were the challenges encountered and how were they addressed in implementation?</p>	<ul style="list-style-type: none"> • What challenges have you overcome with this implementation? • How did you address those challenges? • Are there any issues still occurring? If yes, what are they?
<p>3. What are the perceptions of administrators, teachers and students regarding activity breaks in classes in the case district?</p>	<ul style="list-style-type: none"> • How beneficial do you feel the activity breaks are for student learning and student behavior? • What positives for kids, teachers, and the school do you see with the implementation of physical activity breaks during instruction? • What negatives for kids, teachers, and the school do you see with the implementation of physical activity breaks during instruction? • Please provide any additional information that you would like to share concerning activity breaks in your classroom? • How do you feel about activity breaks during classroom time? (student question) • Do you think activity breaks help you learn? (student question) • Do you think activity breaks help you behave better in class? (student question)
<p>4. What are the recommendations derived from the case district that would apply for my home district?</p>	<ul style="list-style-type: none"> • What would you do differently if you were to implement it over? • What advice or recommendation can you give concerning activity breaks in classrooms? • What recommendations would you give to another school that is thinking about including activity breaks in classroom instruction?

3.7 Data Analysis Procedures

3.7.1 Interview of Administrators

Interview responses concerning the change that occurred were classified into first-order improvement in the organization that yielded no change in value or beliefs and second-order improvement which caused a change in beliefs and values which lead to a paradigm shift in the culture of the school (Levy and Merry, 1986). Then the interviews were reviewed in order to spot evidences of the 8 steps of Kotter's *Leading Change* (2012); increasing urgency, building a team, getting the vision, communicating for buy-in, empowering action, creating short-term wins, not letting up, and making change stick (see section 2.1). This data provided insight into the story of how this school came to include physical activity breaks in their classrooms and provided insight for other schools on making such a decision. The interview took one hour per interviewee.

3.7.2 Survey of the Teaching Staff

All teachers/staff of the inquiry school received the survey. The survey for the teachers/staff (Appendix A) focused on the story of how the teachers/staff perceive physical activity breaks in the classroom. The questions elicited details about the teacher and the class they teach. The survey collected the teachers room number only. This data was used to connect the students to the teacher. The open-ended structure of the survey provided each participant with the opportunity to tell their story about activity breaks. Once the survey data was collected, I categorized the data based on question response through the use of a spreadsheet to determine themes, teachers experiences, gender of students, time and place of activity breaks during the day,

effects on executive functioning, how the breaks help students, insights on what the break looks like, and common positives and negatives for students and staff. The survey took 20 minutes.

3.7.3 Interview of the Teaching Staff

The interview protocol for the teachers (Appendix D) focused on the story of how the teacher felt about physical activity breaks in the classroom. The open-ended structure provided the interviewee with the ability to share their perspective and lessons learned through the interview process. The participants signed a permission form. The interviews were recorded on a personal digital recorder and transcribed using www.rev.com. Themes were identified focusing on the responses generated categorized and analyzed based on perception, implementation, and the role they played in decision-making and implementation. These data provided insight into the story of how this school came to include physical activity breaks in their classrooms and provided insight for other schools on making such a decision. The interview took 35 minutes.

3.7.4 Survey of Students

All parents/guardians of the students at the case inquiry school received an informational letter/consent prior to any participation of the students (Appendix E). For the students who had given consent, the survey was then distributed. The survey focused the inquiry on the story of how the students perceived physical activity breaks in the classroom (Appendix B). The survey did not collect any identifiable data. Once the survey data was collected, I categorized the data based on question-response through the use of a spreadsheet to determine themes based on gender of students, time and place of activity breaks during the day, effects on executive functioning, how

the breaks help students, insights on what the break looks like, and common likes and dislikes of students pertaining to activity breaks. The survey took 15 minutes.

3.7.5 Focus Group of Students

Students who had permission completed the student survey and participated in the focus group. The five-question protocol (Appendix F) focused on the student's perception of physical activity breaks in their classroom. Their input helped develop a picture of what the activity break looked like as well as what they liked, disliked about the breaks, how they would improve them, and if they felt the activity break helped them in any way. Once collected, the data were categorized into themes which provided a descriptive story of the activity break from a child's perspective.

4.0 Inquiry Findings

4.1 Inquiry Question#1 How was the decision and planning process for activity breaks conducted in the case district?

The work of Levy and Merry (1986) discusses the improvement of an organization through planned or managed change. Planned and deliberate change transforms an organization. Levy and Merry (1986) describe two distinct facets of organized change that affect a system. First-order change is classified as those changes that improve the system without changing the core values of the system or the core values of the people within the system. Second-order change is defined as the change of beliefs and values that cause a paradigm shift in the system. The initial implementation of “brain breaks” was a planned change. The school principal was concerned that the students were seated too long. The principal directed the teachers to find time and ways to provide physical movement for students during their instructional process, “It really came from my passion with special-ed students and the needs of behavior management.” The school principal and assistant principal, observed students sitting too long. They “planted the seed” first with teachers who taught second grade. Professional development regarding the impact of physical activity and brain breaks was conducted for all staff in the building. The process moved forward as the building principal shared the Colorado Education Initiative “Take a Break!” with teachers during a professional development session.

The administration revamped the school schedule to include longer periods of time to focus on the core content areas. The school departmentalized, provided 90-minute blocks of time for English/Language Arts and Math. This instructional change provided more focused time on certain

content for longer periods of time without scheduled breaks. However, 90-minutes is a long time for an 8-year old to sit and be able to maintain focus and not feel fatigue. Administrators, during their walk-throughs and observations noticed and increase in students being off task, fidgeting and not focused. These observations provided further rationale for “brain breaks.” Physical activity breaks help students to rejuvenate and provide them with the opportunity to rest and regroup as they approach further learning.

The implementation then took a shift to a second order change per the work of Levy and Merry (1986). The culture in the school changed as the teachers took ownership of and implemented the “brain breaks.” The school leaders presented their thoughts related to activity breaks and the research that supported the benefits. They first shared “brain break” cards which are a resource found online through the Colorado Education Initiative. The “cards” listed different activities a teacher could do in the classroom to provide movement. Building-wide professional development and distribution of the “brain breaks” cards were completed. The “brain break” cards were not as fully accepted and implemented as the administration would have liked; therefore, they continued to explore resources to increase teacher buy-in and ultimately to further engage the students. When Go Noodle was introduced to the staff, more teachers did begin incorporating the “brain breaks” into their instruction. The ease of use of Go Noodle was noted as a beneficial. The student reaction to Go Noodle was very positive as well.

To implement this new initiative, the administration focused first on the 2nd and 3rd grades. The principal stated that these grades were chosen because the urgent need for movement at these early grades was obvious with the block-schedule change. Teachers who volunteered for the task were asked to try the GoNoodle resources and then to share their thoughts during faculty meetings. This initiative seemed to be changing the values and beliefs of the teachers involved. Teachers

began to share resources, support one another with implementation, and saw continued benefits in the quality of student learning, which appeared to be influenced by the “brain breaks.” Teacher leaders explored different possibilities, researched types of activities, experimented, and then shared their findings with the other teachers via email or in their meeting time each morning. These key teachers discovered a free web-based site that was easy to use, required little planning, and was very student centered, GoNoodle.com. More teachers began to utilize physical activity breaks in their classrooms with children, they saw value, and incorporated the breaks into their daily routine.

The school administrators reinforced the implementation of the brain breaks by including activity in their discussions with teachers during their formal supervision conferences. A common question during this process was, “How are you implementing movement into your class?” Teachers were given strategies and opportunities by the administration and other teachers to engage the students with activity breaks and were encouraged to plan and implement the breaks that they felt best met the needs of their own students. Teachers were empowered to choose activities, when to incorporate them, how often, and by what means. It became a part of their day, their beliefs, and their values. As one teacher reported, “If we don’t have a break, I feel it and make sure we stop and get rid of the ‘wiggles.’” All students are required to stand and move during the break in some fashion, but they do not need to participate in what the class is doing. Students often choose for themselves what activities they would like to engage in.

Activity breaks became a vital part of the school’s Positive Behavior Intervention System (PBIS) for all students. According to the building principal, “We had a ‘time-out’ room that was available for our special needs students, but I believe it should be available to all students, so we made it an option for all of our kids.” The “time-out” room was renamed the “activity room” and

has yoga balls, a swing, steppers, and other activity equipment in it. The students are encouraged to use their “voice and make a choice.” When students are off task, the teachers ask the student, “Do you need a break?” The students are also empowered to say, “I need to take a ‘brain break.’” The physical aspects of the classrooms have evolved, and many of the teachers are using “flexible seating and space” to further develop movement into their daily routine. For example, one classroom has no traditional desks in it. In this room, the students can choose where they sit and even how they learn best. Tables that change height are used, and floor space with mats, bean-bag chairs, and movable tables and chairs make up the physical space.

Through this six-year process from initial conversation about activity breaks during instruction to the present day, the implementation of activity breaks has caused what Levy and Merry (1986) would categorize as a second-order change, causing a paradigm shift for the case school. During the process of analyzing the decision through the lens of Kotter’s (2012) work in *Leading Change*, the leadership of this initiative addressed all eight steps. A sense of urgency was created through the accountability process of achievement and growth through the demands of state assessment. The school leadership began to implement changes to increase achievement, an important part of which were the activity breaks. Although neither the principal nor the assistant superintendent has determined that the activity breaks definitely caused the increase in achievement and growth, both nevertheless stated that they believe it has made a very positive impact. caused the increase in achievement and growth, but both stated they believe it has made a very positive impact.

The vision was well established and supported by the expectation of movement in the classrooms during formal supervision and conversations. The teachers became the driving force for this change and eventually formed a team approach based on common language and goals.

Movement has become an agenda item at teacher meetings, in which teachers are encouraged to share their ideas and experiences. The building celebrates wins on a regular basis, and they have continued to stick with the initiative.

The use of physical activity breaks in the classroom can vary by teacher. Each teacher has ownership of the process. The school administration does not require or monitor physical activity breaks by every teacher; however, the administration is under the assumption that most teachers are implementing some sort of movement into their instructional day. Teacher responses varied to the question of when physical activity was incorporated into their schedule; however, the responses predominantly focused on what was happening in instruction: Thirty-two percent responded that it was when the students seemed to be unfocused, 11 % said that it was before a difficult concept, and 19% said that it was after a difficult lesson. Some teachers chose to do it at the same time daily (9.52%). Only four of the respondents chose to do it first thing in the morning.

The activity can also vary from classroom to classroom. Although the initial implementation of physical activity breaks used the tool GoNoodle, about half of the respondents noted that they currently use other resources. Teacher-generated brain breaks, yoga stretches, and deep-breathing exercises have become a part of the routine throughout the school. Students are also empowered in the classroom to take a break when needed or to choose how they use a break once initiated by the teacher.

4.2 Inquiry Question #2 What were the challenges encountered, and how were they addressed in implementation?

When asked specifically about challenges during the survey and interview process, no participants mentioned any. However, the principal stated that she continues to ask certain teachers about how they are incorporating movement into their day when she doesn't see it during her walk-throughs. Her belief is that what gets monitored gets done until it becomes habit. Therefore, she continues to observe and ask about physical activity breaks when she doesn't see it in classrooms; she also makes it a part of the faculty meeting agenda as well as her evaluations during formal supervision. This consistent process of observation and discussion of movement in the classroom supports the ongoing culture shift in the building.

When asked about concerns that parents and community members may have about loss of instructional time, the building principal explained that information was shared with the parents concerning changes in the school, which included the block scheduling, positive behavior support, and the use of activity in the classroom. She spoke further about these initiatives at parent nights and answered all questions and concerns raised. She stated that the greatest reassurance was the positive stories kids were sharing at home about the activity breaks in their classrooms.

An additional challenge that I asked about was if there were any contractual or policy implications that occurred due to the implementation of activity breaks. She stated that she did not know of any but that implementing the activity breaks as a volunteer and teacher choice essentially removed contractual concerns. She also stated that her staff has always been open to trying new things if they feel it benefits children. While policy was not impacted in this particular

school, a review of policy and contracts should be considered when there is an impact on instructional time.

Although contractual issues were not noted by the case school administration, the issue of contractual considerations can be a real challenge for some in certain environments. There could be concern about the physical activity break being used and then eliminating or limiting physical education time or recess time. Collaboration and discussion prior to implementing any change with teachers and other stakeholders may eliminate this concern. Based on the influence of activity on the brain, this researcher recommends that physical activity breaks during instruction should be considered in addition to physical education class and recess. The more active one is the better the working of the brain for learning.

Policy review and potential policy implications should be addressed prior to implementation of physical activity breaks in the classroom. The case school did not see any issues with policy, however some school districts require a certain number of minutes on instruction or a certain amount of time related to breaks. Implications of the district Wellness Policy could include a statement addressing the activity breaks. New processes or procedures gain value when they are addressed through policy.

4.3 Inquiry Question #3 What are the perceptions of administrators, teachers and students regarding activity breaks in classes in the case district?

The perceptions of the study participants collected through administrative interviews (n=2), teacher survey (n=32), teacher interview (n=7), student survey (n=25), and student focus

groups (n=25) about physical activity breaks in the classroom were mostly positive. The school principal noted that achievement has “increased drastically” in recent years based on achievement on the Pennsylvania School System of Assessment for grades 3, 4 and 5. These tests are the standard-based assessment that all public schools are required to conduct in grades 3-8 in Reading and Mathematics. She stated that the improvement had been due to a huge group effort of different initiatives but that the activity breaks were definitely a part of the improvement. The assistant superintendent, who is certified in health and physical activity, noted that providing personalized learning for each student is a district initiative and that when the district moved to drop six-week classes with courses such as art, music and physical education, parents became concerned because their students were not getting physical education two times per week. This prompted a review of other schools’ practices to increase student physical activity in schools without requiring physical education classes. Online searches yielded resources, and data supported physical-activity break programming, which set the foundation for this initiative.

The school and district administration feel that the students are more focused and the students are able to pay attention longer as the result of physical activity breaks in the classroom. The assistant superintendent stated that she could attest to a change in the building culture, stating that students who need the sensory or activity break are getting it and that it is a positive rather than a negative process.

When children have opportunities to develop executive function and self-regulation skills, they experience lifelong benefits (Diamond, 2012). These skills are crucial for learning and development. They also enable positive behavior and allow individuals to make healthy choices for themselves. Executive function begins to develop in infancy and involves an array of processes, such as attention, inhibition, working memory, and cognitive flexibility, which provide the means

by which individuals control their own behavior, work toward goals, and manage complex cognitive processes. Thus, executive function plays a critical role in the development of academic skills. Impressions of executive functioning skills were used to determine how the teachers perceived the impact of physical activity on the students. When teachers were asked if they found physical activity breaks useful, 87.1% (n=27) stated “Yes.” Teachers who responded “No” (n=4) noted that they did not include physical activity in their instruction or do not find the physical activity breaks useful. When the dissenting teachers were asked to give further detail, they noted that they see the children for only 30 minutes and the kids walk to their class and feel the students are getting the activity break elsewhere. Another teacher stated that they “don’t give breaks because activity is a part of their instruction and is not really a break, but imbedded into the learning.” Teachers were asked if they found physical activity breaks useful, 87.1% (n=27) stated “Yes”. The teachers that responded “No” (n=4) noted that they did not include physical activity into their daily lessons. When asked about the benefits of physical activity on executive functioning skills, the teachers responded:

Table 2 Teacher perceptions of benefits to student executive function?

	Very Beneficial	Moderately Beneficial	A little beneficial	Not beneficial at all
Helping students’ complete tasks	40% (n=12)	43.6% (n=14)	13.3% (n=4)	0
Helping students with prioritizing	6.6% (n=2)	26.6% (n=8)	43.3% (n=13)	23.3% (n=7)
Helping students remember things	17.2% (n=5)	31.0% (n=8)	34.4% (n=10)	17.2% (n=5)
Helping students follow directions	27.5% (n=8)	44.8% (n=13)	17.2% (n=5)	10.3% (n=3)

Helping students adapt and be flexible when change occurs	35.7% (n=10)	43.4% (n=13)	17.8% (n=5)	0
Helping students switch from one activity to another easily	51.7% (n=15)	41.3% (n=12)	3.4% (n=1)	3.4% (n=1)
Helping students regulate their emotions	24.1% (n=7)	48.2% (n=14)	24.1% (n=7)	3.4% (n=1)
Helping students better organize	6.9% (n=2)	31.0% (n=9)	31.0% (n=9)	31.0% (n=9)
Helping students feel confident in asking for help	6.9% (n=2)	27.5% (n=8)	31.0% (n=9)	34.4% (n=10)
Helping students persist when faced with failure	17.2% (n=5)	27.5% (n=8)	24.1% (n=7)	31.03% (n=9)
Helping students manage time	13.8% (n=4)	13.8% (n=4)	48.3% (n=14)	24.1% (n=7)
Helping students be prepared for learning	48.3% (n=14)	27.6% (n=8)	20.7% (n=6)	3.5% (n=1)
Helping students maintain their focus on tasks	51.3% (n=15)	34.5% (n=10)	10.3% (n=3)	3.5% (n=1)
Helping students get along with others	17.2% (n=5)	37.9% (n=11)	34.5% (n=10)	0
Helping students manage their own behavior	20.7% (n=6)	48.3% (n=14)	27.6% (n=8)	3.5% (n=1)

Table 2 Teacher perceptions of benefits to student executive function? (continued)

A cumulative frequency percent (CFP) was obtained by adding the number of “very beneficial” and “moderately beneficial” responses. An analysis of the data reveals that according to teachers, the top five ways in which physical activity benefited executive functioning are: Helping students switch from one activity to another (93% CFP); Helping students maintain their focus on tasks (85.8% CFP); Helping students complete tasks (83.% CFP); Helping students adapt and be flexible when change occurs (79.1% CFP); and Helping students be prepared for learning (75.9% CFP). Teachers’ positive perceptions of the benefits of physical activity to executive functioning are critical in establishing why physical activity may be a potential influencer for future success for all students.

The one response that did not find the activity breaks beneficial in the specific areas of executive functioning noted that the content taught did not provide opportunity to observe these areas specifically. How in further analysis of this participants responses, the participant notes that the physical activity breaks help with fatigue of her students, are just as beneficial for the teacher as the student’s, and did not note any negative factors in the use of the activity breaks.

We now see how teachers perceive physical activity’s impact on executive functioning, but how is this connected to how the students perceive their own executive functioning skills. Students were asked during the survey and then further questioned during the focus group to self-reflect on whether the statement related to executive functioning described them:

Table 3 Student perceptions of executive function skill

	Yes	No
I complete tasks	100% (n=25)	0
I can prioritize	92% (n=23)	8% (n=2)
I remember things easily	68% (n=17)	32% (n=8)
I follow directions	100% (n=25)	0
I get upset when the schedule of my routine changes	12% (n=3)	88% (n=22)

It's easy for me to switch from one task to another	88% (n=22)	12% (n=3)
I get angry a lot	8% (n=2)	92% (n=23)
I am organized	88% (n=22)	12% (n=3)
I ask for help	80% (n=20)	20% (n=5)
I give up easily	4% (n=1)	96% (n=24)
I finish what I start	100% (n=25)	0
I run out of time when doing my school work	28% (n=7)	72% (n=18)
I lose things	32% (n=8)	68% (n=17)
I always have my books, paper, and pencil ready for class	88% (n=22)	12% (n=3)
My desk/locker is messy	20% (n=5)	80% (n=20)

The students were asked during the focus groups whether they felt that physical activity helped in these executive functioning skills. The response was mixed and did not yield a direct connection. However, further analysis of the data suggests that a connection may be made between students' self-perceptions and teachers' perceptions of how physical activity can benefit executive functioning skills. For example, 12% of the students stated that they get upset when their schedule or routine changes, while 80.1% of the teachers feel that this area is benefited by physical activity. Therefore, there is potential to further develop coping skills with physical activity. While there are other interventions that can support a child in coping with stress, physical activity may be one beneficial avenue. Similarly, 12% of the students stated that they do not find it easy to switch from one task to another, and 90.3% of the teachers stated that physical activity is beneficial to this area. Therefore, practice can support those students who are struggling in this executive functioning area. Time management is an area in which students perceive themselves in a less positive light. Seventy five percent of the teachers noted that physical activity breaks benefit time management at least a little bit. Therefore, based on the data, physical activity breaks can be beneficial to executive functioning, and executive functioning can impact future success.

Table 4 Comparison of teacher perception of benefits of executive functioning and student's perception of themselves related to executive functioning.

Area of Executive Functioning	Percentage of teachers who report benefits of physical activity on this executive function	Percentage of students who see themselves as already possessing this executive function
Completion of tasks	100%	100%
Prioritizing	76.7%	92%
Remembering	82.8%	68%
Following Directions	89.66%	100%
Adapting to change	96.6%	88%
Switch from one activity to another	96.6%	88%
Regulation of emotion	96.6%	92%
Organization	69%	88%
Asking for help	65.5%	80%
Persistence	69%	96%
Time management	76%	72%
Being prepared	96.6%	88%

A comparison of how the teachers perceived benefits and students' self-perceptions in the different executive functioning skills yielded some interesting results. In most cases, the students say that they see themselves positively in the executive functioning area and the teachers state that physical activity is beneficial in that area. Eighty-eight percent of the students stated that they are organized, and 69% of the teachers said that physical activity benefited organization. While 80% of students stated that they ask for help, 65.5% of the teachers said this area was benefited by physical activity. Ninety-six percent of the students said they were persistent, and 69% of the teachers noted that physical activity benefited this area. In conclusion, the data suggest that the development of executive functioning skills enhances learning, and physical activity is deemed a benefit for many of the executive functioning skills.

When teachers were asked during interviews how physical activity breaks help students, certain themes emerged: reduction of stress, time to regroup and refocus, outlet for excess energy

and for getting the “sillies” out, and the idea of making learning fun. Throughout the interview process with teachers, they shared their beliefs related to the activity breaks. One teacher stated, “the more active you keep the kids, the less disruptions you have.” He went on to say that if the students are actively engaged and involved in the lesson, they don’t have time to be off task.

Another teacher reported that flexible seating in her classroom developed around the physical activity breaks. She believes that giving the students a choice of where and how they learn will help them achieve more. She no longer has traditional desks in her classroom, but rather yoga balls, adjustable tables, bean-bag chairs, and an area to stand or lie down. She develops her lessons to incorporate activity throughout and stated that she feels the kids are better off socially, academically, and physically. She concluded that the “break rejuvenates them, and you can see it.”

A teacher who works with students with different disabilities stated that she “loves” the opportunity for the activity breaks and the students love them, too. She explained that she works with a child with multiple special needs for a 90-minute block. The teacher explained that the student gets excited when she knows a physical activity break is coming up. The student gets to dance around. “It’s huge; it gives her that relief, that break to just relax, and then she comes back and is ready to learn again.”

This same teacher stated that prior to giving the breaks, instruction was a struggle. She believes the students’ academic performance increased when the breaks were implemented in the school. She feels that the activity gets the blood moving and that the students are able to focus better and get the work done.

One teacher noted that she is a firm believer in the physical activity breaks, not just for children, but for adults as well. She sees great value in movement and recognizes that when you’re an English teacher, the opportunities don’t naturally come as easily as they may in science or

math. Therefore, the teacher has to make sure that they plan the physical activity break throughout the lesson. She made the connection between mental health and movement. She finds in her own life that when she is feeling anxious or upset, she will take a walk or do some physical activity and then feels better. She believes that she has the obligation to offer as much to the students she teaches. She stated that the increase of anxiety in children frightens her as a teacher. Therefore, if she can offer anything throughout the day that can lessen some of that, she believes in it.

The students who participated in the survey and the focus groups consisted of 7 third graders, 11 fourth graders, and 7 fifth graders. Of those participating, 12 were male and 13 were female. 78.3% of the students who responded like the physical activity breaks in their classrooms. The reasons they gave for liking the activity breaks focused on similar perceptions as the teachers. They stated that the physical activity breaks help them to get focused. Students stated that it helps them relax if they are struggling. The movement was seen as a positive attribute of the breaks, which allowed the kids to have fun and act silly, and served as an opportunity to connect with peers.

During the focus groups, the students also reported some reasons why they do not like the physical activity breaks. These included themes such as feeling embarrassed, activities not being fun or taking too much time, or possibly causing them to lose focus if they are in the middle of something.

The perceptions of the student participants were positive in most cases. They spoke of the value of physical activity breaks for refocusing, generating motivation, and the opportunity to release frustration. The administration believes that the physical activity breaks as well as other initiatives impacted student achievement in a positive way. Furthermore, teachers feel the breaks help them, too, noting that the breaks allow the students to see the teachers in a different light and

helps to build relationships. As stated by one teacher, “Physical activity breaks send that message that learning can be hard and we all need to take a break.”

During the focus group sessions, students easily shared their perceptions of the breaks. Many students mentioned that the breaks are fun, reduce stress, aid in getting the learner focused, and provide relaxation when the student is struggling with mastery. One student noted that when she sits too long she gets really tired and the break wakes up her brain again.

Students and teachers both agreed that taking the break does not concern them about losing that academic time. In fact, both groups stated that the physical activity break time makes the learning time seem more productive. There was also agreement that the physical activity breaks give students and teachers the opportunity to build rapport. A few teachers shared times when the activity was silly and everyone was laughing and having a good time.

4.4 Inquiry Question#4 What are the recommendations derived from the case district would apply to my home district?

The recommendations were collected through surveying teachers and students and interviewing administration and teachers. Student focus groups were conducted to further explore the recommendations that children had for others relating to the activity breaks in the classroom.

4.4.1 Recommendations from the Administration

The principal from the case school stated that the most important recommendation that she could make would be to start small with your “go-to” people who you think will buy in and then

let them lead the charge. The assistant superintendent supported that recommendation stating, “Let the teachers run with it.” She continued to say, “Give them opportunities to see it, and then let them design it for their own buildings and their classrooms because everything looks different from one classroom to another, one building to another.” Replicating exactly what another school is doing may not work in another setting. She went on to state, “I think that individual, personal perspective is important to recognize and honor.” The district administrator recommended that communication with parents and guardians would be helpful, as many may not understand the importance of the activity break to learning.

4.4.2 Recommendations from the Teachers

The recommendations from the teachers were gained through a survey (n=32) and during the interview process (n=7). The overwhelming message of those involved in the inquiry was to try physical activity breaks in one’s own classroom. One teacher stated, “Absolutely go for it; do not make it a requirement as everyone learns and teaches in a different way, but it is 100% worth a try.” Numerous teachers (n=19) recommended making sure that there is a model of expectation and guidelines for the students to follow: “I would make sure to establish some ground rules for the breaks. This will hopefully eliminate some of the stress that may come when trying something new;” “Practice what you expect physical breaks to look and sound like will set expectations and make the time more successful,” one third-grade teacher suggested.

When asked about the concern for loss of academic time, one teacher responded, “You will find that more breaks actually allow more learning since the attention is more focused, allowing learning to happen quicker.” A fourth-grade teacher elaborated by saying, “I would highly

recommend allowing brain/activity breaks in classrooms. I believe it is highly beneficial and that the positives outweigh the negatives.”

Resources and activities were discussed during the interview process. Many teachers recommended starting with Go Noodle.com: “Use GoNoodle.com, especially for the primary grade levels. The students love it, and it helps me from getting stuck in a 'brain break rut.” Different resources are available. One teacher stated, “There are many different ideas out there concerning how to use the activity breaks. Find one that you are comfortable implementing and you will be more likely to stick with it.” Recommendations concerning when is the best time to incorporate physical activity breaks into the day varied: “Start by incorporating it into transition times, or times when you notice the most distractions/talking happening in the class”, one 2nd grade teacher noted. Maybe start by just implementing them as you see fit. “Teachers typically have a good sense to know when ‘it's time’ for movement.” “Include Go Noodle and Simon Says first and then later you can begin to add physical activity embedded directly into a lesson without even stopping the instruction. It can be something simple like stand up if you think the noun is common’ and ‘Do your favorite dance move if you think the noun is proper.”

4.4.3 Recommendations from the Students

The students provided recommendations during the focus group discussions. The students (n=25) all believed that the activity breaks were a good thing in their classrooms and felt that other classrooms and schools should implement them. A few students (n=3) mentioned that it is important for the teacher to be aware that other kids may make fun of someone while they danced or moved around. Five students recommended letting the kids choose when and how they take their activity break. The students involved in the focus groups recommended that other schools

“do it because you can have fun with it.” The students also noted that having a break during learning “is good and helps you get back to work with more energy.” The students also spoke of the benefit of the activity breaks enhancing rapport with the teacher and also other students. One third-grade boy noted, “It takes your mind off of things and you get to know people.” The notion of physical well-being was also addressed by one female student, “If I sit too long, my legs hurt, so moving helps me.”

The summary of the recommendations by students was overwhelmingly positive. All students involved said all schools should try it. They did, however, caution teachers to make sure that they watch for students who may make fun of others, allow the students to choose when and what the activity breaks looks like, and encouraged teachers to participate along with the activity breaks, as this is fun to see the teachers do “the stuff” too.

5.0 Conclusions, Discussions, and Suggestions

The purpose of this chapter is to discuss conclusions that can be drawn from the findings and to make suggestions for future research or action. This chapter is segmented into four sections which include conclusions, discussion, suggestions, deliverable product, and timeline.

5.1 Conclusions

Physical activity breaks are a positive part of the school culture in the case school. The benefits mentioned by administrators, teachers, and students demonstrate that exploring how to implement activity breaks in any classroom is a worthwhile endeavor.

The case school administrative staff's decision-making process over whether and how to include activity breaks in the classroom started by introducing the benefits of movement during professional development time. The school principal gave strategies to incorporate movement into the classroom to try using "brain break" cards (The Colorado Education Project, 2019). Teachers then further developed the initiative by exploring different options available, which led to the use of GoNoodle.com. The work of Kotter (2012) was evident throughout the decision-making process. Urgency for change happened because the school's relatively low achievement levels were a concern. Interventions that included physical activity in the classroom were implemented and improvement was shown. The administration further developed the idea of having activity in the classroom by making movement a part of the critical conversations held with teachers during

their formal evaluations. Physical activity breaks subsequently became a part of the school culture and a vital part of the building's Positive Behavioral Support Plan.

Although potential challenges to this initiative such as contract, policy, and parental concerns may occur outside of this school district, they were not noted by the participants of this study. Being from another school district, the researcher recommends looking into those issues and being proactive whenever implementing any new initiative. Communication is key to understanding the implications and the value of physical activity for learning.

The perceptions of the participants of the study were mostly positive. Executive functioning skills, which teachers felt were enhanced by the increased physical activity, has been noted as leading to future academic success. Students reported that they felt the activity breaks benefited them in different ways. No one stated that the physical activity breaks were a bad thing or should not be done in this case school. Although a few teachers did note that they did not see a benefit in the breaks. These teachers noted that they also did not try the breaks often or their class was an active class, like physical education.

The recommendations of all participants related to a few key factors. The school administrators, the teachers, and the students recommended that schools try activity breaks during instruction. Teachers should have a "voice and choice" on what is done in their classrooms regarding movement. Students should have a "voice and choice" on the activities and their degree of participation. The terms voice and choice were common language shared by the administration, teachers and students. It speaks to the collaborative culture of the school. Teachers are given flexibility on when, where, how, and what they use as an activity break. Students want to be able to decide how they use this break, what activity they engage in and to have choice in different options during that time. Making classroom movement a part of the pedagogical discussion is

important in setting school expectations for success. Communication with parents/guardians may benefit children even further by making activity a part of their routine outside of the classroom.

5.2 Discussion

Physical activity has a positive impact on learning and the workings of the brain. I hypothesized this to be true prior to the data collection. While in this study neither the type of physical activity nor intensity level was explored, nevertheless, the benefits of physical activity were still noted. The children themselves expressed the benefits in their own words: “They calm me down,” “get me focused,” “[give] me a break,” “[help] me with stress,” and “are fun.” From these few excerpts from children, it appears that physical activity breaks may be a golden ticket to more productive learning in the classroom.

Given the limited number of participants in this inquiry, it may be inaccurate to generalize the findings to all schools or all districts. Also, the volunteer participants were positive about the activity breaks, including those that said they didn’t use them in their classroom, but thought movement was important.

The case school had a “champion”, the principal, who paved the way for the implementation of the activity breaks. However, individual teachers can guide their classrooms without a full building initiative. The benefits are worth any type of initiation of activity breaks and others can “champion” the introduction and implementation.

The case school started with activity cards and GoNoodle.com as resources for activities. However, as benefits were seen by staff and teachers buy-in to the initiative continued to grow activities were developed and shared internally between teachers. Ownership and teacher

autonomy over how, when, and where seems to be an essential part of the success of the program. Administration expectations and ties to teacher evaluation appear to have provided the impetus for implementing and valuing the initiative in the school.

Throughout this case study, I was impressed with the common language shared by the teachers related to the supports given to children and how activity breaks were a part of that dialogue. This school treats physical activity as another intervention that some children need on a regular basis to remove barriers of their learning. As one teacher noted, “Movement breaks can’t hurt, but they sure as heck can help many children.”

5.3 Suggestions

The following suggestions for further study are based upon the discussion and interpretation of the data in this study:

1. *A study that explores what type of physical activity most benefits students learning would be beneficial.* This study did not investigate the activities used.
2. *A comparative study between a class that does the activity breaks and one that does not would benefit future research.* This study explored only one school, in which all students engaged in classroom physical activity breaks throughout the day.
3. *A study to include alternative grade structures may warrant different learning.* This study was focused solely on students and teachers in grades 2-5.

4. *A study to include activity trackers and/or heart rate monitors to further define the degree of physical activity that impacts learning would strengthen further research.* This study did not explore the degree of impact the physical activity has on the body.

5.4 Deliverable Product

In addition to a dissertation, the product of my inquiry consisted of a presentation to my home teachers, administrators, and staff for consideration for future goal setting and planning on June 7, 2019. I distributed the findings to the case district to inform their process and planned a presentation for their school board in the early fall 2019. I am approved to present at the 2019 PA Educational Leadership Summit in August 2019. The title of this presentation is “Classroom Brain Breaks to Enhance Memory, Attitude, and Alertness for All Students.” The results from this study served to inform the plan of implementing physical activity breaks in the classroom in my own district. The study was a catalyst for further professional development in the area of physical activity breaks and their impact on learning for my district.

Appendix A Teacher Survey

**Physical Activity Breaks During Instruction-
Teacher Survey**

You are invited to participate in an inquiry study to gain more information about activity breaks during instruction. I hope to gain insight into "your" story. Because of your role as teacher you have valuable information that can inform this inquiry. Please answer the following questions about physical activity breaks in your classrooms. I am collecting your classroom number so I can connect students to teachers. That information will be deleted after that connection is made. All other information will be anonymous and all data will be held confidential and reported in unidentifiable ways. There are no foreseeable risks to participating in this research. You may opt-out at any time. Thank you.

Q2 Teacher room number

Q3 What grade do you teach? Click all that apply

2

3

4

5

Q4 What content area(s) do you teach or what position do you hold, i.e. nurse, social worker, etc.)?

Q5 How many years have you been working in schools?

Q6 How many female students are in your current class?

Q7 How many male students are in your current class?

Q8 How often do you incorporate physical activity breaks into your instruction?

Every day -When? For how many minutes?

Once a week-When? For how many minutes?

Twice a week-When? For how many minutes?

Three times a week-When? For how many minutes?

Four times a week-When? For how many minutes?

Never

Other _____

Q9 When do you incorporate physical activity into your day? Select all that apply

- First thing in the morning
- Before introducing a difficult concept
- When the students seem to be unfocused
- After a difficult lesson
- The same time everyday
- Before a certain content area (list content area)

- Never
- Other _____

Q10 What are the top three reasons you incorporate physical activity breaks into your instruction?

Q11 Do you find the physical activity breaks useful? Why or Why not?

Yes _____

No _____

Q12 How do you participate in the physical activity breaks?

I do the activities with the kids

I do not do the activities with the kids

Q13 How beneficial do you feel the activity breaks are for students related to the following statements?

	Very Beneficial	Moderately Beneficial	A little Beneficial	Not Beneficial at all	Physical activity breaks create a problem in my classroom
Helping student's complete tasks	<input type="radio"/>				
Helping students with prioritizing	<input type="radio"/>				
Helping students remember things	<input type="radio"/>				
Helping students follow directions	<input type="radio"/>				
Helping students adapt and be flexible when change occurs	<input type="radio"/>				
Helping students switch from one activity to another easily	<input type="radio"/>				
Helping students regulate their emotions	<input type="radio"/>				
Helping students to better organize	<input type="radio"/>				

Helping students feel confident in asking for help

Helping students persist when faced with failure

Helping student manage time

Helping students be prepared for learning

Helping students maintain their focus on tasks

Helping students get along with others

Helping students manage their own behavior

Other-_____



Q14 Please list ways you think physical activity breaks may help students achieve academically and behaviorally in your classroom.

Q15 Describe a typical physical activity break. What does it look like in your classroom?

Q16 What type of activities do you do? Describe the activities, please.

Q17 Do you use GoNoodle for all your activity break time?

Yes

No

Q18 If you answered no to the above question, do you use some other program or protocol? Describe

Q19 What do you think the positive factors are for kids with implementation of physical activity breaks during instruction?

Q20 What do you think the positive factors are for teachers with the implementation of physical activity breaks during instruction?

Q21 What do you think the negative factors are for kids with implementation of physical activity breaks during instruction?

Q22 What do you think the negative factors are for teachers with implementation of physical activity breaks during instruction?

Q23 What recommendations would you give to another school that is thinking about including activity breaks in the classroom instruction?

Q24 Please provide any additional information that you would like to share concerning activity breaks in your classroom.



Table 5 Applied Inquiry Plan

Inquiry Question	Evidence	Method	Analysis and Interpretation
<p>1. How was the decision and planning process for activity breaks conducted in the case district?</p>	<p>School and district administrators will provide input of the process of how the decision was made to establish physical activity breaks in classrooms. The key concepts of who, when, where, what, and how will be explored through semi-structured interviews. Who was involved in the process? Where did the initiative come from? How long did the process take? What steps were taken for implementation? What documents are available to show evidence of the process and planning?</p> <p>Background data of the district and the participants will be collected to inform the demographic information of the district and the disaggregation of responses based on years of experience, grade level, and gender of those interviewed.</p>	<p>Semi structured interviews of principal and assistant superintendent from the case district following the interview format of the Consensual Qualitative Research Method (Hill, et al., 1997). If other key individuals that were a part of the decision and brought forward by the assistant superintendent and/or principal of the case school district the researcher will interview them as well. This is a snowball sample based on their expertise pertaining to the planning and decision of physical activity breaks (Hancock & Gille, 2011).</p> <p>The interviews will be audio recorded and transcripts will be developed.</p> <p>The interview protocol is attached. (Appendix C and Appendix D)</p>	<p>Cycle one deductive coding using 1st order and 2nd order change descriptors (Levy & Merry, 1086). Followed by cycle two, pattern coding of categories based on 8 steps are of Koller’s work (2012). Then cycle three coding to identify overall themes. (Saldana, 2012). The computer program Nvivo will be used through the University of Pittsburgh to organize data so meaning can be made. Transcription services will be used through www.rev.com to document interviews.</p>
<p>2. What were the challenges encountered and how were they addressed in implementation?</p>	<p>Concepts addressed include: What challenges occurred? Who addressed those challenges? When did those challenges come into play? Where were the challenges most prevalent? Why did the challenges come up?</p>	<p>Semi-structured Interviews will be conducted with administrators and volunteer teachers of the school in which physical activity breaks are occurring.</p> <p>The interview protocol is attached.</p>	<p>Cycle one deductive coding using 1st order and 2nd order change descriptors (Levy & Merry, 1086). Followed by cycle two, pattern coding of categories based on 8 steps are of Koller’s work (2012). Then cycle three coding to identify overall themes. (Saldana, 2012). The computer program Nvivo will be used through the University of Pittsburgh to organize data so</p>

Table 5 Applied Inquiry Plan (continued)

			meaning can be made. Transcription services will be used through www.rev.com to document interviews.
3. What are the perceptions of administrators, teachers and students regarding “brain breaks” in classes in the case district?	<p>Students and teachers who are currently participating in classroom activity breaks in the case district/school will be surveyed and interviewed about their perceptions about the physical activity breaks in the classrooms.</p> <p>Major conceptual areas include: Like/Dislike, Time and place of break, are their benefits of physical activity breaks, strengths, weaknesses and recommendations.</p>	<p>“Surveys are commonly used in educational and psychological research,” according to Mertens (p. 215). Mertens discusses the difficulties associated with surveying teenagers (p.192) and provides suggestions related to attitude questions (p. 207). Qualtrics Insight platform through the University of Pittsburgh will be used to administer the survey where appropriate. Paper copies will also be available.</p> <p>See appendix A: Draft Survey-Teachers Appendix B: Draft survey-students</p> <p>Interview/focus group protocols are attached for the students and teachers</p>	<p>Survey data will be collated and analyzed according to the participants role. Survey data will be analyzed based on themes of responses to provide a complete story of the responses.</p> <p>All survey responses will be coded and no identifying information will be collected.</p> <p>Survey questions piloted with each level January 2019</p>
4. What are the recommendations derived from the case district that would apply for my home district?	<p>Recommendations that are made through the survey and interview process of the key people involved in the study</p>	<p>Survey/Interview protocol and responses will inform this inquiry question</p>	<p>Data will be collated, catagorized by position and analyzed to determine recommendations to inform decisions in my own district.</p>

Appendix B Student Survey

Physical Activity Breaks During Instruction- Student Survey

Grade _____Room_____

Are you a:Girl _____Boy_____

You are invited to participate in this survey so we can learn research about activity breaks. We are interested in your thoughts. Please answer the following questions about physical activity breaks in your classrooms. No one will know how you answer, except for the researcher. Teachers, parents, the principal and other kids won't see your answers.

You may opt-out at any time.

Please answer the following questions:

1.Does your class participate in activity breaks during class time?

Yes	No
	

If you answered “no” to the above question skip question #2.

2.If your class participates in activity breaks, how do you feel about them?

I like them a lot	I like them some	I don't like them or dislike them	I don't like them	I dislike them a lot
				

3. Mark “Yes  ” if you agree with the statement, even if just

sometimes or “No  ” if you do not agree with the statement.

In School....	Yes	No
I complete tasks		
I can prioritize things (put things in order of most important to least important)		
I remember things easily		
I follow directions		
I get upset when the schedule or my routine changes		

It's easy for me to switch from one task to another		
I get angry a lot		
	Yes	No
I am organized		
I ask for help		
I give up easily		
I finish what I start		
I run out of time when doing my schoolwork		

I lose things		
I always have my books, pencil, and paper ready for class		
My desk/locker is messy		

4. Draw a picture of yourself during a physical activity break.

5.I like physical activity breaks because:

6.I don't like physical activity breaks because:

Appendix C Interview Protocol for School Administrators

Thank you for participating in this research on implementation of physical activity breaks in the classroom. My name is Janet O'Rourke. I am a doctoral candidate in Educational Leadership at the University of Pittsburgh, and this case study is part of the requirements for my Doctorate in Education. For this 30-minute interview, I'd appreciate any insights you can provide relating to your process and perceptions of including physical activity breaks during instructional time in your (district, building or classroom-depending on the role of the person being interviewed)

Your participation in this interview is voluntary. You can stop the interview at any time or skip any questions. I will be jotting some notes as we speak. I will keep the notes and any transcripts confidential and will not share them. In fact, all data received from you will be given an ID# and kept anonymous. All stored data will have this number on it and not your real name. All your responses are confidential, and data will be kept under lock and key. We will not associate the information you provide with your name in reports, but it may be possible for someone to think they can identify you. If you have any questions or concerns, you can reach me through the different contacts I included on this business card.

Given these conditions, do you agree to participate in today's interview? I would like to audio-record the conversations to check the accuracy of my notes. Do you agree to this?

Do you have any questions before we begin?

By signing below, I am indicating that I have read this consent form and agree to participate in this inquiry activity described above.

Signature Date

Interview Questions for Administrators:

Background

1. How many years in education?
2. What is your teaching background?
3. How long in current position?
4. Tell me about your building/district.

Decision

5. Tell me a little about how you came to the decision to implement physical activity breaks in your classrooms (school district)
6. What was the purpose of this decision?
7. What was the process you used to make this decision?
8. Who was involved?
9. How long did it take?
10. What resources were considered to inform the decision?

Implementation

11. What does the implementation look like in your school?
12. Tell me about the successes you believe have occurred that the physical activity breaks help to make happen
13. Do you notice any changes in your school/classrooms that you say is because of the physical activity breaks?
14. What challenges have you had to overcome? How did you address them? Are there any issues still occurring? If yes, what are they?
15. What are the costs associated with this implementation?
16. Were there any policy implications to implementing physical activity breaks in your district?
17. Were there any contractual implications to implementing physical activity breaks in your district?
18. Is there an expectation of how much time each teacher should give to physical activity breaks?
19. How is this time scheduled?
20. When is it scheduled?
21. What was affected by using this time for activity breaks?
22. Are the activities consistent?
23. Tell me about the activities
24. How do students engage?
25. Are there options for students to opt out?
26. Are students given choices on how to take their activity breaks?
27. What would you do differently if you were to implement it over?
28. What advice or recommendation can you give me concerning physical activity breaks in the classroom?

Appendix D Interview Protocol for Teachers

Thank you for participating in this research on implementation of physical activity breaks in the classroom. My name is Janet O'Rourke. I am a doctoral candidate in Educational Leadership at the University of Pittsburgh, and this case study is part of the requirements for my Doctorate in Education. For this 30-minute interview, I'd appreciate any insights you can provide relating to your process and perceptions of including physical activity breaks during instructional time in your classroom. I hope to learn from you, so I can make informed decisions in my own district.

Your participation in this interview is voluntary. You can stop the interview at any time or skip any questions. I will be jotting some notes as we speak. I will keep the notes and any transcripts confidential and will not share them. In fact, all data received from you will be given an ID number and be anonymous. All stored data will have this number on it and not your real name. All your responses are confidential, and data will be kept under lock and key. We will not associate the information you provide with your name in reports, but it may be possible for someone to think they can identify you. If you have any questions or concerns, you can reach me through the different contacts I included on this business card.

Given these conditions, do you agree to participate in today's interview? I would like to audio-record the conversations to check the accuracy of my notes. Do you agree to this?

Do you have any questions before we begin?

By signing below, I am indicating that I have read this consent form and agree to participate in this inquiry activity described above.

Signature Date

Background:

1. Tell me a little about yourself.
2. How many years in education?
3. What is your teaching background?
4. How long in current position?
5. Tell me about your classroom.
6. Grade
7. Number of students
8. Any additional information that makes your classroom unique. (ESL, ethnicity, disadvantaged, or disabilities)

Perceptions:

9. Tell me a little about your beliefs, thoughts, and ideas concerning physical activity breaks before implementation in your classroom?
10. Tell me a little about your beliefs, thoughts, and ideas concerning physical activity breaks after implementation in your classroom.
11. Did your beliefs, thoughts, and ideas change? Tell me about this change.
12. Do you notice any changes in your classroom or the students that you believe is a direct reflection on the physical activity breaks?
13. Tell me about any successes you believe have occurred that the physical activity breaks help to make happen

Decision:

14. How involved were you in making the decision to include activity breaks in your classroom?

Implementation:

15. Describe what the activity breaks look like in your classroom?
16. When is it scheduled? Why then?
17. How long and how often?
18. Do the children get to choose or is it teacher driven?
19. What resources have you used for the activity breaks?
20. What other resources did you explore but do not use?
21. How do the students engage in the breaks?
22. What challenges have you overcome? How did you address them?
23. Are there still any problems that you are working on?
24. If you were to implement it over again, what would you do differently?
25. What advice or recommendation can you give me concerning physical activity breaks in the classroom?

Appendix E Parent/Guardian Consent

January 6, 2019

Dear Parent/Guardian of Whitehall Elementary:

This letter is to request the participation of your child in *A CASE STUDY EXPLORING THE IMPLEMENTATION OF CLASSROOM PHYSICAL ACTIVITY TIME DURING INSTRUCTION IN AN ELEMENTARY SETTING* that is being conducted as part of a doctoral program at the University of Pittsburgh. Because of their role as a student at Whitehall Elementary School, they have valuable information that can inform this study. In the coming weeks, your child will receive a survey from their teacher asking about the physical activity breaks they take during class. To gain further information, focus groups will be held to further explore their perception of the activity breaks. Your child's participation will be limited to no more than 1 hour and will be conducted at a convenient time with the teacher.

Overview of the Project: The purpose of this study is to explore and understand the process of decision making and outcomes of the students and staff of Whitehall Elementary School concerning physical activity breaks during instruction. This inquiry is designed to inform and generate further knowledge about the influence of physical activity breaks in the classroom from an administrator's, teacher's, and student's perspective. Students will be asked to complete a survey which will take no more than 15 minutes. In addition to the survey, student volunteers will participate in a focus group to discuss their thoughts of activity breaks in the class. The focus group will be scheduled so as not to impact instructional time.

Who is conducting the study: Janet O'Rourke is the principal investigator of this study. She currently is the Assistant to the Superintendent in the Bethel Park School District. She is completing her doctorate in Educational Administration at the University of Pittsburgh. This study is the topic of her dissertation.

What we are trying to learn: The inquiry focuses on the process and procedures of physical activities breaks being implemented in an elementary school. We want to learn about the perspective of students concerning these activity breaks.

How will the information be used: The information will be used to influence decisions concerning professional development and initiatives in other school districts. All information will be confidential and not identifiable.

What are the Benefits and/or Risks to participation in this research? The goal of this research project is to gain information concerning activity breaks in an elementary school. This information may be used to influence professional development and initiatives in other school districts. There are no risks to participating in this research. Participation in this research is voluntary and you may withdraw your child from the study at any time.

If you have any questions, please don't hesitate to contact me at:

Janet O'Rourke

Jmo64@pitt.edu

(412)370-9667

By signing below, I am indicating that I have read this consent form and allow my child to participate in this inquiry activity described above.

Child's Name Room #

Parent/Guardian Signature Date

Appendix F Focus Group Protocol for Students

Thank you for participating in this research on implementation of physical activity breaks in the classroom. My name is Janet O'Rourke. I am a doctoral candidate in Educational Leadership at the University of Pittsburgh, and this case study is part of the requirements for my Doctorate in Education. For this 20-minute focus group, I'd appreciate any insights you can provide relating to your perceptions of including physical activity breaks during instructional time in your classroom. I hope to learn from you, so I can make informed decisions in my own district.

Your participation in this focus group is voluntary. You can choose to not participate at any time. I will be jotting some notes as we speak. I will keep the notes and any transcripts confidential and will not share them.

I would like to audio-record the conversations to check the accuracy of my notes. Do you agree to this?

Do you have any questions before we begin?

Questions for focus group:

1. Tell me about the activity breaks you have during class?
2. What do you like about the breaks?
3. What do you dislike about the breaks?
4. How could the breaks be made better?
5. Do you think the activity breaks help you in any way? If so how?

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