

A SEQUENTIAL EXPLANATORY MIXED METHOD RESEARCH STUDY OF
TEACHERS' PERCEPTIONS AND PERSPECTIVES OF HIGH QUALITY MOVEMENT IN
THE CLASSROOM

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By

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The purpose of this study is to examine the support elementary and middle school teachers need to implement high quality movement (embodied pedagogies) in their classroom practice. High quality movement is an effective learning and teaching tool because it is based on students' nature to learn, it improves students' physical health, mental health, cognition, and academic success. Moreover, teachers can implement learning and physical activity in their classrooms, hence combining academic learning and moving at the same time. The purpose of this study is to better understand teachers' perceptions and perspectives because teachers' experiences and views of high quality movement are not well investigated. A sequential explanatory mixed method approach was used. The quantitative survey (N=97) and 21 qualitative interviews revealed that teachers see high quality movement as an efficient and desirable instruction tool. The survey also showed the lack of a common understanding of what high quality movement denotes and the need for another term that is more universally understood. The researcher proposes embodied pedagogies as a term to universally describe

learning academic content through movement. Moreover, teachers requested professional development, teacher collaboration in the school building and beyond, and pedagogical strategies to successfully implement embodied learning in their classrooms. In addition, the researcher also sees higher education as a way to educate preservice teachers with regard to embodied pedagogies.

DEDICATION

To my husband, Reto, who is always very inspirational and supportive, I love you.

To my children, Ada and Francis, who gave my life more meaning.

Thank you for being my family.

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CHAPTER I

INTRODUCTION

Only a mobile creature needs a brain, points out New York University neurophysiologist Rodolfo Llinàs (2001) in his book, *I of the Vortex: From Neurons to Self*. He uses the example of a sea squirt, a tiny jellyfish-like animal, which is born with a simple spinal cord and a three hundred neuron 'brain'. The larva motors around in the shallows until it finds a nice patch of coral on which to put down its roots. It has about twelve hours to do so, or it will die. Once safely attached, however, the sea squirt simply eats its brain. For most of its life, it looks and acts much more like a plant than an animal, and since it's not moving it has no use for its brain (Llinas, 2001).

Statement and Significance of the Problem

The story of the small squirt exemplifies that only a physically active creature needs a brain. The brain's main function is to steer the body that is being physically active, and the physically active body develops the brain accordingly. In the following paragraphs, the researcher states why moving while learning is so important and why teachers' perceptions and perspectives need to be studied so that children in the classroom can learn based on their needs, being physically engaged in the content. The problem is that teachers do not implement enough movement in the classroom and therefore the question is addressed what do teachers need to implement high quality movement (HQM)?

The positive outcomes of implementing more physical activity (PA) during a school day are overwhelming. Studies address that implementing more PA in education has positive influences on body development and body health such as lower risk of obesity, cardiovascular

fitness, elevated blood pressure, and increased bone mass (Annesi et al., 2017; Daniels et al., 2011; Gonzales-Gross & Meléndez, 2013; Honas et al., 2008; Honas et al., 2016; Martin & Murthag, 2017; Strong et al., 2005). Schools are the ideal places to increase physical movement overall since children spend more than half of their wake time in schools (Shape of the Nation Report, 2016). Furthermore, education needs to prepare students so that they can develop a healthy lifestyle for their future and be prepared for a successful life (Prusak, 2014). A healthy lifestyle also includes taking care of one's mental health.

An association between PA and mental health in children and adolescents has been found. Systematic reviews of randomized controlled trials and literature of exercise interventions for anxiety and depression in children, adolescents, and adults indicated a small effect in favor of PA of reducing depression and anxiety levels in the general population (Biddle & Asare, 2011; Fox, 1999; Kravitz, 2007; Larun et al., 2006; Rasmussen & Laumann, 2013). Sedentary behavior, on the other hand, has been associated with anxiety disorders, depression, and lower self-esteem (Hrafnkelsdottir et al., 2018; Teychenne et al., 2015; Trinh, 2015).

Findings in several studies demonstrate that PA has a positive influence on cognitive function as well as brain structure and function (Cadenas-Sánchez et al., 2016; Chaddock, et al., 2011; Hillman et al., 2008; Hillman et al., 2007; Johnson, 2017; Scudder, 2011). The general findings in the systematic reviews are that exercise has a positive effect on cognition (Donnelly et al., 2016; Hillman & Biggan, 2017; Hillman et al., 2017; Kramer, 2007; Ploughman, 2008; Voss et al., 2011) with greater amounts of PA being associated with greater improvements in cognitive function. Intelligence and cognition are closely related to brain development and brain development in relationship with PA is well studied (Donnelly et al., 2016).

PA has a considerable influence on several structures and functions in the brain. Research shows that physical movement provides the brain with more oxygen, higher blood supply, more glucose, and vitamin synthesis (Cheatham, 2014; Steven-Smith, 2016; van Praag, 2008). Furthermore, movement also has an influence on different structures like neurogenesis (formation of new neurons), synaptic plasticity (strengthening of synapses), and cell survival (Chaddock et al., 2011; Cotmann, 2002, Kramer, 2007, Ploughman, 2008; Steven-Smith, 2016; van Praag, 2008; Voss et al., 2011). Some researchers (e.g., van Praag, 2008) even argue that the strongest neurogenic stimulus (forming nervous tissue and stimulating nervous energy) is exercise. Based on the idea that brain function greatly benefits from physical exercise and that challenging cognitive stimulations ensure these benefits are maintained over time, researchers have proposed that coupling physical and cognitive demands could be especially interesting when targeting cognitive enhancement (Curlik & Shors, 2013; Moreau & Conway, 2013; Tomporowski et al., 2011). Therefore, the growth and maintenance of the brain structures and functions is another explanation why exercise has an influence on cognitive functioning (Cotman, 2002).

Research that has focused on an increased amount of PA during the school day, resulted in children being more successful academically (Barnard et al., 2014; Barr-Anderson et al., 2011; Bartholomew & Jowers, 2011; Camahalan, 2015, Carlson et al., 2008; Castelli et al., 2007; Dalziell et al., 2015; De Bruijn et al., 2018; Ericsson, 2008; Erwin et al., 2012; Fredericks et al., 2006; Haapala et al., 2017; Jaakkola et al., 2015; Käll et al., 2014; Kantomaa et al., 2015; Kibbe, 2011; Mead et al., 2016). These studies included research about PA during instruction, physical education (PE), and recess. If there was no improvement academically, there was also no

negative effect on academic achievement if instruction in the classroom was reduced in favor of PA (Centers for Disease Control and Prevention [CDC], 2010; Donnelly et al., 2017). So therefore, there is no loss of time for teaching academic content, yet children are more physically active which has positive benefits like physical and mental health.

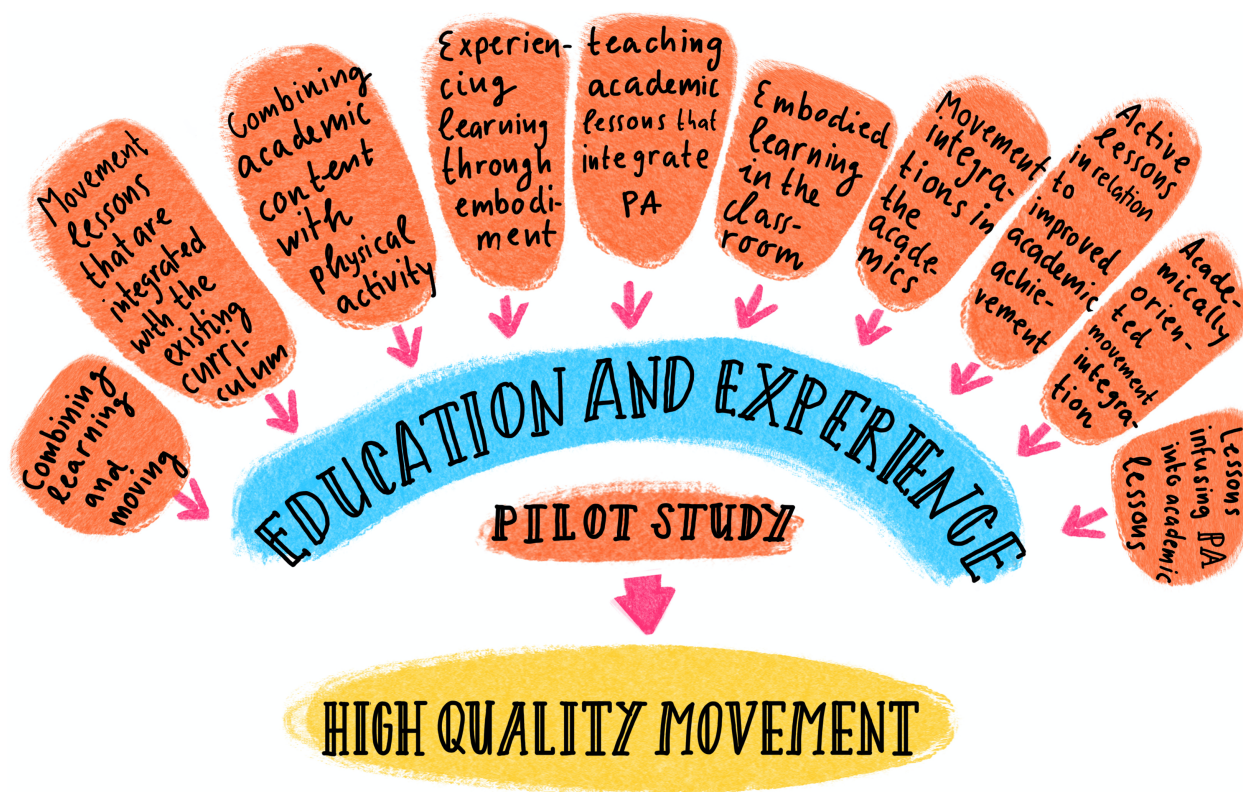
Although the research is sparse, there are some studies that investigated academic outcomes when PA is specifically connected to the academic lesson. Findings in previous research found overall improvements in academic outcomes in several learning divisions in the classroom (Bartholomew & Jowers, 2011; Bartholomew et al., 2018; Donnelly & Lambourne, 2011; Kirk & Kirk, 2016; Kirk et al., 2014; Mahar & Riley, 2006; Maykel et al., 2018; Riley, 2015; Schmidt et al., 2015). In a systematic review of literature, Martin and Murtagh (2107) found that academic performance and facilitators of learning may be improved by teaching academic content using physically active methods. Donnelly et al. (2016) found that physically active lessons appear to have the most consistent positive association to increase academic achievement. Moreover, investigators concluded that moderate to vigorous physical activity (MVPA) that is connected to academic content that is performed for 15-20 minutes at a stretch has the most effect on executive function (Benzing et al., 2016; Chang et al., 2012; Chang et. al., 2015; Donnelly et al., 2016; Jäger et al., 2014; Kubesch et al., 2009; Pesce, 2012).

As described above, various terms exist to describe the combination of learning and moving to teach academic concepts. The variety of different terms is reflected in the literature when it comes to combining academic content with physical activity or experiencing learning through embodiment. The variety of the terms in the literature can be found in Figure 1. The researcher chose to use the term HQM based on the researcher's education as a movement

therapist and prior experience as a teacher and a school principal. Moreover, this term was also chosen based on a pilot study that was conducted in Spring 2018. The researcher hoped that HQM was a term that was easily and universally understood by teachers.

Figure 1

Definition of the Term High Quality Movement



High quality movement integrated into the daily classroom has the most effect on academic success. Johnson (2007; 2017) argues that children build concepts through the senses and that concepts experienced through the body are deeply ingrained in the child's reality. Johnson (2007; 2017) contends that everything that is in the thoughts needs to be experienced by movement and the body. He says that a high amount of our perceptual knowledge comes from

movement, both our bodily motions and our interaction with moving objects (Johnson, 2007). He argues that the body and the mind are not two separately functioning systems, and that HQM is crucial for learning.

All the positive outcomes of PA and HQM are very convincing and therefore movement should be implemented in the classroom. It is necessary that teachers are confident in this practice and get the most effective support to successfully implement HQM into their classroom. Therefore, based on research, it can be argued that PA and HQM should be implemented as much as possible during the school day. Not only are there physical and mental health benefits, but there are also positive outcomes on cognition, brain development, and academic success. Moreover, it is human nature to move (Montessori 1949/1995; Johnson 2007; 2017; Rousseau, 1762/1979). Additionally, there is a possibility that if educators would implement HQM, they could teach about academic content and requirements for standardized testing without losing instruction time.

Thus, why are educators in the United States not adjusting their educational system in regard to movement and PA? Why do we not offer our children an education in which instruction is based on their needs, offering them the most effective learning experiences? The researcher wonders why educators still create schools based on teachers', school principals', and parents' needs? As already mentioned, teachers play a key role in creating and shaping classroom practices and experiences for students (Leithwood, 2008). The researcher was interested in investigating teachers' perspectives and perceptions of PA and HQM in their classrooms and how these elements are connected to teaching and learning. Prior research has been conducted about teachers' perceptions and perspectives of PA at school (e.g., brain breaks, recess, aerobic

fitness) (Cothran et al., 2010; Delk et al., 2014; Dinkel et al., 2017; Forana et al., 2017; Gehris et al., 2014; Gibson et al., 2008; Goh et al., 2013; Howie et al., 2016; Howie et al., 2014; Huberty, 2012; McDonald, 2014; McMullen et al., 2014; Stylianou et al., 2015; Usher & Anderton 2017; Webster, 2011; Webster et al., 2013; Webster et al., 2016). However, there is limited research on HQM that focuses on teaching academic content in the classroom (McMullen et al., 2016).

As McMullen et al. (2016) concluded, future research should consider the perceptions and perspectives of teachers and what they need to support their classroom practice in implementing PA and HQM. Additionally, the investigators stated that it is worth exploring why some teachers felt that movement lessons fitted easily into their daily schedule while others saw it as an addition to their workload. These findings would help researchers to develop support for teachers in regard to PA and HQM. These findings could also help to develop support like professional development, teacher collaboration, the development of additional PA and HQM lessons, and potentially links to web-based resources (McMullen et al., 2016). By letting the teachers reflect on their own practices there is potential that they may start to realize and theorize that movement and academic learning can be combined resulting in positive effects for student learning and overall well-being. Moreover, this research study adds to the existing research in investigating what teachers need to successfully implement high quality into their classrooms.

Purpose of the Study

Researchers such as McMullen et al. (2016) recommend, when considering future research and practices, that we must continue to seek out effective ways to support classroom teachers so that they do not feel movement as an add on, instead, teachers should see the value of HQM. What do classroom teachers of elementary and middle schools need to implement HQM

to teach academic concepts? The following sequential explanatory mixed method study was needed to locate teachers who reported that they are implementing HQM to teach academic concepts. Moreover, the quantitative survey helped locate teachers that implement PA, very little, or do not include movement in their teaching. Locate teachers, in this case, meant that the quantitative survey helped the investigator find and choose the participants for the qualitative phase that could best address the research questions. The study was also designed to capture those who can reflect and theorize about their classroom practices. The purpose of this research study was to explore teachers' understanding of what HQM is and to investigate why teachers do or do not implement HQM. This research study was also intended for these educators to be able to express the support that is needed to successfully implement HQM that may be beneficial for students. Outcomes of this study may help us better understand teachers and their pedagogical methods, plan professional development and training for preservice and in-service teachers, and maintain a long lasting and permanent teaching strategy that supports children through education. Moreover, HQM to teach academic concepts supports children in their natural way to learn, enhances their learning, and prepares them for their mental and physical health. If teachers implement HQM into their daily classroom practice, they are able to fulfill the requirements of the curriculum and at the same time take care of students' needs. As Johnson (2007; 2017) argues, movement and PA is the main way by which human beings learn the meaning of things and can develop a principal and concept as to what the world is like.

Goals and Research Questions

One goal of this research study was to learn about elementary and middle school teachers' classroom practices and how they implement HQM and PA into their daily curriculum.

Another goal was for teachers to reflect on their practices based on students' needs and take into consideration the positive outcomes of PA and HQM. Moreover, this investigation clarified what kind of support and education teachers need to successfully implement HQM into their daily practice that is combined with academic learning. The researcher formulated research questions for each phase. These questions guided me through the research process.

First Phase (Quantitative)

Do teachers from different grade bands implement more non high-quality movement than high-quality movement into the classroom? Are teachers more comfortable to implement non high-quality movement than high-quality movement into the classroom?

Second Phase (Qualitative)

How do elementary and middle school teachers reflect on and integrate physical activity and high-quality movement in their own classroom practice?

Third Phase (Mixed Method)

Is there an association of perceived knowledge and prior training to teach through PA and high quality movement in the classroom in elementary and middle school teachers? Do elementary and middle school teachers want to receive more training in PA and high quality movement and if yes, what are the preferred methods? What are teachers' challenges and possibilities in implementing high quality movement and what do they need to support their future practice of teaching academic concepts through high quality movement?

Rationale

The intention of this mixed method research study was to investigate elementary and middle school teachers' perceptions and perspectives on the relationship between PA, HQM, and their classroom practices in reference to their pedagogy of academic content and movement. Moreover, what support teachers need to successfully implement HQM into their classrooms was also investigated. A sequential explanatory mixed method research design was used with two distinct phases. In the first, quantitative phase of the study, survey data was collected from elementary and middle school teachers about their perceptions of PA and HQM in the classroom and what support, if any, is needed for them to do so. If teachers perceived that they are already integrating PA and or HQM and do not need any support, this finding was important too. The goal was to investigate as many schools as possible but at least three elementary and/or middle schools so that enough perceptions and perspectives of teachers could be included in this research study.

The second qualitative phase was conducted as a follow-up to the quantitative results. The emphasis in this research study was on the qualitative phase. In this exploratory follow up, the tentative plan was to investigate and acquire further insight into teachers' perspectives and perceived classroom practices about PA and HQM. In the qualitative phase, 13 teachers were interviewed for the initial interview and eight teachers were interviewed for the second interview in which the participants reflected on an implemented lesson that included HQM. Additionally, this phase was used to determine in more detail and in depth what teachers need to support their practices. The reason to conduct a mixed method research approach was to obtain a better understanding of how the perceptions (quantitative survey) of elementary and middle school

teachers influence/affect the instruction in their classroom (qualitative interviews) and what support is needed to successfully implement HQM to teach academic concepts (mixing the data). The quantitative and qualitative data was merged in the third phase and was used to address the research question: What are teachers' challenges and possibilities in implementing high quality movement and what do they need to support their future practice of teaching academic concepts through high quality movement?

Conclusion

The arguments that support why HQM to teach academic concepts should be implemented during the school day are overwhelming. There are benefits for children's physical and mental health, cognition, brain development, and academic achievement. Clearly, to successfully implement HQM, there needs to be more research about teachers' perceptions and perspectives since teachers play a key role when it comes to classroom practice (Leithwood, 2008). Moreover, a reflective approach is needed so that educators realize that a holistic approach that includes HQM is beneficial for students for their cognition and embodiment of academic content, which will be described in more detail in Chapter 2. Since it is important to investigate how HQM can be implemented and supported, this research study is needed. Moreover, it needs to be investigated why some teachers believe that PA and HQM is easily integrated into the classroom and others express it as an addition to their workload (McMullen et al., 2016).

Definition of Terms and Abbreviations

Academic Achievement: Academic achievement is defined as high scores on standardized tests and academic achievement or (academic) performance is the extent to which a student, teacher, or institution has achieved their short or long-term educational goals.

Body mass index (BMI): is defined as the individual's body mass divided by the square of his or her height, measured in kilograms/meters squared. A normal BMI ranges from 18.5 to 24.9.

Overweight is defined as having a BMI of 25 to 29.9. A BMI equal or greater than 30 is considered obese.

The Centers for Disease Control and Prevention (CDC)

Cognition: Cognition is a broad term that covers many different aspects of mental functioning including thought processing, memory, attention, concentration, and creativity. Cognitive development is defined in adult terms as the emergence of ability to consciously cognize and consciously understand and articulate understanding (Schacter, 2009).

Cognitive Function: Can be defined as cerebral activities that lead to knowledge, including all means and mechanisms of acquiring information. Cognitive functions encompass reasoning, memory, attention, and language and lead directly to the attainment of information and, thus, knowledge.

Communities of Practice (CoP): A community of practice is a group of people who share a common concern, a set of problems, or an interest in a topic and who come together to fulfill both individual and group goals.

Continuous Professional Development (CPD): This is the term used to describe the learning activities professionals engage in to develop and enhance their abilities. It enables learning to become conscious and proactive, rather than passive and reactive.

Classroom teachers (CT)

Atherosclerotic cardiovascular disease (CVD): Is a disease in which plaque builds up inside the arteries. Arteries are blood vessels that carry oxygen-rich blood to the heart and other parts of the body. Plaque is made up of fat, cholesterol, calcium, and other substances found in the blood.

Brain-derived neurotrophic factor (BDNF): The BDNF gene provides instructions for making a protein found in the brain and spinal cord called brain-derived neurotrophic factor.

This protein promotes the survival of nerve cells (neurons) by playing a role in the growth, maturation (differentiation), and maintenance of these cells.

Embodied Cognition: Is the theory that many features of cognition, whether human or otherwise, are shaped by aspects of the entire body of the organism. The features of cognition include high level mental constructs (such as concepts and categories) and performance on various cognitive tasks (such as reasoning or judgment). The aspects of the body include the motor system, the perceptual system, bodily interactions with the environment (situatedness) and the assumptions about the world that are built into the structure of the organism.

High quality movement (HQM): PA that is connected to the academic content that needs to be learned. Movement that is implemented to teach academic concepts.

Mental Health: Mental health includes the emotional, psychological, and social well-being. It affects the thinking, feeling, and acting. It also helps determine how stress is handled, how

relationships are to others, and how choices are made. Mental health is important at every stage of life, from childhood and adolescence through adulthood.

Moderate to vigorous physical activity (MVPA): Moderate physical activity refers to activities equivalent in intensity to brisk walking or bicycling. Vigorous physical activity produces large increases in breathing or heart rate, such as jogging, aerobic dance or bicycling uphill.

Physical Activity (PA): Brain breaks etc. that are only implemented to keep children physically active

Physical Education (PE): Is an academic subject characterized by a planned, sequential K–12 curriculum (course of study) that is based on the national standards for physical education.

Professional Learning Communities (PLC): Present teachers and principals with an opportunity to improve their level of competence by sharing inclusive practices. PLCs are needs-driven and stimulate collaborative learning, the characteristics of effective CPD.

CHAPTER II

REVIEW OF LITERATURE

Increasing opportunities for children to participate in PA are vital for addressing the high prevalence of children and youth inactivity in the United States (Pate, 2011). Currently, the 2018 PA Guidelines for Americans recommend that children and youth participate in at least 60 minutes of moderate-to-vigorous physical activity (MVPA) each day (Committee PAGA, 2018). Since children spend approximately 14% of the year in the school environment counting all hours of the day and night (Aud, 2011), schools offer an opportunity for increasing PA. Delivering academic lessons through HQM is an innovative approach to increase PA during school without decreasing academic instruction time in the classroom.

Physical Health

Studies address the fact that implementing more PA during the school day has positive influences on body development and body health such as lower risk of obesity, cardiovascular fitness, elevated blood pressure, and increased bone mass (Annesi et al., 2017; Daniels et al., 2011; Gonzales-Gross & Meléndez, 2013; Honas et al., 2008; Honas et al., 2016; Martin & Murthag, 2017; Strong et al., 2005). According to Kokkinos (2012) and Gonzales-Gross and Meléndez (2013) better health in childhood and youth leads to longer lives and less mortality. The more PA and the higher the intensity the greater the health benefits (Janssen & LeBlanc, 2010). If children experience active classroom interventions, the energy expenditure is higher than in children who experience normal classroom instruction. These results provide evidence for active classroom intervention as a convenient and feasible avenue for increasing PA in students without decreasing instruction time (Honas et al., 2016). Schools need to prepare

children and educate them so that students can develop a healthy lifestyle or experience a lifestyle change (Prusak, 2014) and research shows that this can happen if PA is integrated throughout the school day (De Greeff et al., 2016).

The prevalence of overweight, defined as 95th or greater body mass index (BMI) reference percentile, has increased in children in all age groups (CDC, 2010; Ogden et al., 2006). Therefore, it is important that schools teach and incorporate PA into the school day so that children can develop habits to be physically active. De Greeff et al. (2016) found that if PA is combined with learning, for example, giving mathematical number answers in jumps, BMI could be reduced in 3rd graders. Another study investigated a program that promoted PA in the classroom (Honas et al., 2008). During this study, teachers implemented PA across the curriculum (PAAC) and prevented children from excessive weight gain because the energy expenditure was high enough during the 20 minutes of movement each day. Examples of activities were jumping with invisible jump ropes, jumping jacks, and squats. PAAC was implemented during the school lessons as a brain break.

In a later research study, Honas et al. (2016) implemented HQM to teach academic concepts for 100 minutes per week. For instance, geography (North, South, East, and West) was taught by having children marching to the appropriate designated area for each direction. The results were that PA could be included to teach academic concepts and the energy expenditure was moderate and that active classroom intervention is a feasible and convenient avenue to increase PA without decreasing instruction time (Honas et al., 2016). In addition, Martin and Murtagh (2017) conducted a systematic review of literature on studies that included embodied pedagogies, in which positive effects were reported on students' BMI levels.

Atherosclerotic cardiovascular disease (CVD) is the number one cause of death in the United States and other developed nations (Lloyd-Jones et al., 2009; CDC, 2019). The initial awareness for the importance of cardiovascular health will be provided in childhood and youth (Daniels et al., 2011). In pathologic studies, they found that relatively advanced levels of atherosclerosis, including fibrous plaques, can be present in adolescents and young adults (Daniels et al., 2011). Research has also proven that PA is one factor that can lower CVD (Daniels et al., 2011). For example, Strong et al. (2005) reported that correlational studies indicated low-to-moderate positive relationships between PA and maximal and submaximal indicators of aerobic fitness reduced risk for CVD.

Muscular contractions during weight-bearing activities and specialized exercises such as strength and resistance training are beneficial for skeletal tissues. Comparisons of habitually active and inactive children and adolescents, and comparisons of elite young athletes with less active youth indicate a favorable influence of PA on skeletal health (Strong et al., 2005). If PA includes weight-bearing activities, youth and children can also benefit for their bone mass.

It can be argued that PE does have the assignment to keep children physically active, but studies show the more PA, the greater the health benefits (Janssen & LeBlanc, 2010; Kokkinos, 2011). Furthermore, the Shape of the Nation Report (2016) states that there is a decrease in the number of states that require students to take PE in one or more elementary school grades. Moreover, research shows that the time spent in PE is decreasing in schools because standardized tests have increasingly become more important (Wilkins et al., 2003). Wilkins et al. (2003) stated that one seemingly logical approach to improving test scores is to reduce the time spent in subjects that are not tested, most notably art, music, and PE, thus increasing time for the

tested subjects. However, the findings in this study do not support the notion that a reduced time allocation to art, music, and PE is related to higher test scores (Wilkins et al., 2003).

Physical activity in the classroom can help increase the amount of PA during the school day. Results from experimental studies indicate that even modest amounts of PA can have health benefits such as reducing obesity in children and high-risk youngsters (Janssen & LeBlanc, 2010; Martin & Murthag, 2017). But to achieve substantive, long lasting health benefits, PA should include MVPA activities that may provide even greater benefits (Janssen & LeBlanc, 2010; Kokkinos, 2011).

Mental Health

Systematic reviews of randomized controlled trials and literature of exercise interventions for anxiety and depression in children, adolescents, and adults reported a small effect in favor of PA in reducing depression and anxiety levels in the general population (Biddle & Asare, 2011; Fox, 1999; Kravitz, 2007; Larun et al., 2006; Rasmussen & Laumann 2013), while sedentary behavior has been reported to be associated with anxiety disorders, depression, and lower self-esteem (Teychenne et al., 2015; Hrafnkelsdottir et al., 2018; Trinh et al., 2015). A recent longitudinal study of McPhie and Rawana (2015) has reported that adolescents who engage in higher frequencies of PA are more resilient to developing depressive symptoms.

Although mood does not fall under mental health and is more of a subjective denomination and expression, some studies investigated the relationship between mood states and PA. Fox (1999) reported increased general well-being through moderate and regular exercise in the general public. In a study by Lane and Lovejoy (2001) after an aerobic dance session, participants reported decreased negative moods than right before the workout. Results indicated

that anger, confusion, fatigue, tension, and vigor were reduced significantly after PA. The research study of Hrafnkelsdottir et al. (2018) showed that in 315 tenth grade students, less screen time and more PA is associated with fewer symptoms of anxiety, depression, low self-esteem, and higher life satisfaction.

This is similar to the research study conducted by Kirkcaldy et al., (2002). They administered a questionnaire with 1,000 German adolescents. After analyzing the data, the researchers outlined that self-reported regular participation in endurance exercise was associated with a better self-image. Adolescents that participated in PA disclosed less anxiety and depression and overall better well-being. Moreover, teenagers who exercised regularly showed an adoption of a healthier lifestyle, meaning that smoking, drinking, and drug usage was lower in those who participated in endurance workouts.

In an investigation by McMahon et al. (2017), the researchers concluded that only a small percentage of adolescents (13.6%) reached the recommended level of 60 minutes of MVPA daily. The investigators showed that the more PA being performed daily, the less anxiety and depression and the better overall well-being of youth. In the same study, the most significant difference in terms of all of the mental health measures examined was between the least active and somewhat active subgroups. That means that small amounts of PA can increase youth's physical and psychological health. Interestingly, students who participated in group sports versus individual activities reported better mental health, meaning being less anxious, depressed, and in a better mood (McMahon et al., 2017). The social interaction while doing exercise, sports, and PA plays a substantial role and it needs to be recognized and considered that group sports has a greater positive effect on mental health (McMahon et al., 2017).

As already mentioned, it is crucial to recognize that all the states of mental health were administered in questionnaires and are self-reported. There are no clinical diagnoses made by psychiatrists in these studies. The experiences and definitions of mental health in these studies are rather subjective, meaning that all of these investigations measured a very subjective state of mental health of adults, adolescence, and children. Yet, the results are still very important to recognize. In the majority of the reviewed literature here, the focus is on adolescents and adults. There is a lack of investigations of the relationship of children's mental health and PA, most likely because it is difficult to administer questionnaires around the topic of mental health and well-being in younger ages and get meaningful results. In regard to this research study, it is important to recognize that students who are more physically active tend to have better mental health. Meaning, that they are less depressed, anxious, and are overall in a better mood. If PA could be incorporated during the school day in the classroom, it would increase the potential for students' mental health to be positively enhanced.

Cognition

Several studies support that PA has a positive influence on cognitive function as well as brain structure and function (Cadenas-Sánchez et al., 2016; Chaddock et al., 2011; Hillman et al., 2008; Hillman et al., 2011). Moreover, the general findings in systematic reviews are that exercise has a positive effect on cognition (Donnelly et al., 2016; Hillman & Biggan, 2017; Hillman et al., 2017; Kramer, 2007; Ploughman, 2008; Voss et al., 2011) with greater amounts of PA being associated with greater improvements (Donnelly et al., 2016).

Since cognitive processes are underlying every aspect of life, several different approaches to measure and research cognition exists. Research from a variety of disciplines, including

developmental psychology, sports psychology, biopsychology, kinesiology, and cognitive neuroscience have contributed to the understanding of the role exercise plays in the development and functioning of cognition in children and adolescents (Rasmussen & Laumann, 2013).

Cognition is a broad term that covers many different aspects of mental functioning, including thought processing, memory, attention, concentration, and creativity. Cognitive development is defined in adult terms as the emergence of the ability to consciously cognize and articulate understanding (Schacter, 2009). Since cognition and cognitive development is such a broad term, the focus here is on concrete brain development while being physically active. In the following section, it will be explained how being physically active has an influence on various structures in the brain.

Brain Development

Research shows that physical movement improves the brain supply in different ways. Scientists found that the brain was provided with more oxygen, higher blood supply, more glucose, and vitamin synthesis during and after PA (Cheatham, 2014; Steven-Smith, 2016; van Praag, 2008). Dishman (2006) explains that in studies with animals it could be shown that PA leads to an increase of capillary blood supply to the cortex. Moreover, exercise was supportive for the growth of new blood vessels in animals (Voss et al., 2011).

Furthermore, because muscles need more oxygen when we are physically active, the blood supply and the provision of oxygen to the brain is better while exercising. Oxygen is essential for the brain and PA enables oxygen to be carried to the brain for efficient functioning and learning (Steven-Smith, 2016). According to Cheatham (2014), the increased blood flow during PA is responsible for increased supply of oxygen, glucose, and vitamins to the brain

(Cheatham, 2014). This could be shown in magnetic resonance imaging (MRI). Cheatham (2014) argues that the main connection between exercise and cognition may well be that being physically active increases the amount of nutrient, glucose, oxygen, and most likely others that is being transported to the brain (Cheatham, 2014).

Movement can also influence other structures and systems such as neurogenesis (formation of new neurons), synaptic plasticity (strengthening of synapses), and cell survival (Chaddock et al., 2011; Cotman, 2002; Kramer, 2007; Ploughman, 2008; Steven-Smith, 2016; van Praag, 2008; Voss et al., 2011). The formation of the new neurons while being physically active could be investigated in animals and is mentioned in many research studies that looked at brain development and exercise (Cotman, 2002; Steven-Smith, 2016). For example, wheel running does change the structure of the brain in rats and mice and stimulates neurogenesis (Cotman, 2002). It could be shown that learning and moving activate the same brain area and formation of new neurons can occur. Moreover, PA not only activates formation of neurons and synapses, but also stimulates connection and growth of neurons (Steven-Smith, 2016). The formation, growth, and maintenance of these brain structures are another explanation why exercise has a positive influence on cognitive functions (Cotman, 2002). In a review of research studies, van Praag (2008) reported that the strongest neurogenic stimulus is exercise because cell survival and survival of neurons could be shown in investigations. Some researchers even argue that the strongest neurogenic stimulus is exercise (van Praag, 1999; 2008).

Aerobic exercise has a concentrated benefit on the hippocampus increasing synaptic plasticity, which helps facilitate the integration of hippocampal neurons into existing brain networks (Voss et al., 2011). Moreover, right after exercise the brain-derived neurotrophic factor

(BDNF) levels in young adults was increased in a recent study (Etnier, 2016). The adults remembered more words after exercise compared to no exercise. BDNF is known as a protein that acts on certain neurons of the central nervous system and the peripheral nervous system, helping to support the survival of existing neurons, and encourage the growth and differentiation of new neurons and synapses. In the brain, this protein is active in the hippocampus, cortex, and basal forebrain; areas vital to learning, memory, and higher thinking. According to Kramer (2007) and Cotman (2008) more neurotrophic molecules, such as BDNF, are produced during exercise. Evidence suggests that aerobic exercise, that is, exercise sustained at a moderate pace for a minimum of 20 consecutive minutes, is the most effective in triggering the release of BDNF (Erickson et al. 2011) and in enhancing cognition (Colcombe & Kramer, 2003; Hillman et al., 2008), although some studies indicate that other forms of exercise can be as effective (Liu-Ambrose et al., 2012).

However, it is important to note that if newly formed neurons are not integrated within existing neural networks, they typically die within a couple of weeks (Curlik & Shors, 2013). Interestingly, one of the most effective ways to integrate these new neurons within the existing network, and therefore to maximize their chance of survival, is to challenge the brain and force neural adaptation (Shors et al., 2012). Learning a new skill and acquiring new knowledge appear to be especially promising in this regard (Gould et al., 1999). This means that HQM (learning academic content while being physically active) can help integrating newly formed neurons within existing neural networks.

Other influences of PA on the brain were shown in additional studies. Davis et al. (2011) compared two groups, an experimental and a control group. The exercise group showed

increased bilateral prefrontal cortex activity. Furthermore, structure growth of grey matter in the frontal and temporal cortex and the volume and integrity of anterior white matter increased in adults that participated in regular exercise. These adults walked one hour for three days a week for six months (Kramer, 2007). Such findings are important because greater integrity of white matter has been related to better executive function (i.e., tasks requiring the intentional component of environmental control), in children and adults (Chaddock-Heyman et al., 2013). Researchers also have demonstrated a relationship of cardiorespiratory fitness with specific subcortical structures including the basal ganglia and hippocampus (Chaddock et al., 2010).

Most research studies mentioned here, and the majority of the reviewed literature, is based on studies with adults, young adults, or animals. There is limited research with children and adolescence. Hillman et al. (2017) suggested more research directly conducted with children in schools. Childhood is an ideal period to implement behavioral interventions aimed at cognitive enhancement, because neural plasticity at this age is the norm rather than the exception (Moreau, 2015). This allows larger behaviorally induced cognitive improvement (Green et al., 2012; Steiner et al., 2014), and ultimately the identification and remediation of limitations before they spark off more sizeable difficulties (Franceschini et al., 2013).

There is some evidence that suggests that incremental gains in PA may be related to the magnitude of change in brain function, cognition, or academic performance (Davis et al., 2011; Hillman et al., 2017). If PA plays a crucial role in the classroom, brain function can be improved and children's academic success increases. That is another benefit for students when they are physically involved in the academic content. Besides its theoretical support, the combination of physical and cognitive demands into complex motor activities has also been tested empirically,

with encouraging results. In a recent study, Moreau (2015) assessed the effectiveness of this type of intervention in healthy adults. Training was based on the rationale that cognitive improvements, although often substantial following aerobic exercise (Hillman et al. 2008), can be maximized with the addition of challenging cognitive components (Moreau & Conway 2014).

The benefits of brain development on cognition and academic success are proven but there is still no consensus where or what in the brain contributes the most to the improvement of functioning if PA is performed since so many structures are involved (Hillman et al., 2017). For this study, one possibility is to look into cognition and brain function by academic achievement in children. Moreover, Moreau (2015) proposes based on brain research and the limited time children have being physically active and learning, a blended approach of combining academic learning with physical activity is the best solution to improve cognition and brain function in school children.

Academic Achievement

In this section, increasing academic achievement is defined as reaching higher test scores in the areas of literacy, reading, spelling, and math. Researchers that focused on PA during the school day in general, such as PE, recess, or brain breaks, found that students who are more physically active in schools are overall more successful academically (Barnard et al., 2014; Barr-Anderson et al., 2011; Bartholomew & Jowers 2011; Camahalan, 2015; Carlson et al. 2008; Castelli et al., 2007; Dalziell et al., 2015; De Bruijn et al., 2018; Ericsson, 2008; Erwin et al., 2012; Fredericks et al., 2006; Haapala et al., 2017; Have et al., 2018; Jaakkola et al., 2015; Käll et al., 2014; Kantomaa et al.; 2015; Kibbe, 2011; Maykel et al., 2018; Mead et al., 2016). In a systematic review of 43 studies, the findings revealed that slightly more than half (50.5%) of all

associations examined between PA and academic performance, representing measures of academic achievement, academic behavior, cognitive skills, and attitudes were positive, 48% were not significant, and 1.5% were negative (Rasberry et al., 2011).

Furthermore, a review of 50 studies investigated the effectiveness of school-based PA on academic performance and achievement found that approximately half of the investigations produced positive associations while less than half resulted in no effects, and again only 1.5% of the studies showed negative effects (CDC, 2010). Of those studies, focusing specifically on classroom physical activities, eight of nine studies found positive associations on indicators such as cognitive skills and attitudes, academic behavior, and academic achievement; none of these nine studies found negative associations (CDC, 2010). These nine investigations examined how the introduction of brief physical activities in a classroom setting affected cognitive skills (aptitude, attention, memory), attitudes (mood), academic behaviors (on-task behavior, concentration), and academic achievement (standardized test scores, reading literacy scores, or math fluency scores) (CDC, 2010).

The meta-analysis of 39 articles conducted by Watson et al. (2017) revealed that classroom-based PA had a positive effect on improving on-task and reducing off-task classroom behavior and lead to improvements in academic achievement when a progress monitoring tool was used. The definitions in this study for classroom-based PA were active breaks, curriculum focused active-breaks, and physically active lessons. However, no effect was found for cognitive functions. Moreover, the review of literature by Haapala (2012) stated a universal improvement of concentration and memorization if children move more. In the same review, the outcomes in

other areas were inconclusive because, as the author states, learning is a complex mechanism (Haapala, 2012).

More specifically, the researchers identified different areas in which students were more successful if PA plays an important role during the school day. Students improved significantly in literacy (Barnard et al., 2014), reading, mathematics (Carlson et al., 2008; Erwin et al., 2012; Fedewa, et al., 2015; Fredericks et al., 2006; Hapaala et al., 2017; Have et al., 2018), and spelling (Bartholomew et al., 2011). Other studies showed that verbal and visuospatial working memory could be improved if PA was incorporated in children's school day (De Bruijn et al., 2018; Dalziell et al., 2015). Even if studies did not reveal a positive effect in any cognitive area, none showed any harm for academic achievement if students spend more time being physically active compared to students that spend more time being engaged in the academic content (Dills et al., 2011; Fedewa et al., 2015; Trudeau & Shephard, 2010).

High Quality Movement to Teach Academic Concepts

A variety of different terminology exists to describe PA in the classroom. Terms such as activity breaks, brain breaks, movement lessons, and PA while leaning are used throughout the literature that describe similar activities and approaches to implement movement into the classroom. Although the different types of activities might share one common goal, to increase PA (or, vice versa, reduce sedentary time), they vary in the scope and quality of movement. In general, movement integration activities seek to infuse PA into general education classrooms. Activity- or brain-breaks seek to provide a 'break' from academic learning for students whereas HQM is designed to be integrated within the existing curriculum. Although all strategies serve to reduce or interrupt sedentary time for children or youth during the school day, academically-

oriented HQM integration lessons espouse the meaning or reason to experience the academic content through the physical body. Therefore, implementing embodied learning and pedagogies, and HQM is more appropriate given mounting expectations for academic excellence on all levels of compulsory schooling (McMullen et al., 2016).

Two systematic reviews of literature conducted by Bedard et al. (2019) and Martin and Murtagh (2017) showed that implementing HQM in the classrooms has a positive effect on academic learning. In the review of Martin and Murtagh (2017), studies that included interventions deliberately taught academic content using physically active methods were considered. While in the study of Bedard et al. (2019) literature that included interventions that were physically active school lessons in which academic content (e.g., mathematics, geography, language, history, etc.) are taught through physical activities. This could include lessons where physical activity is either related to the academic content (e.g., if learning the meaning of the word 'fly', children would run and move their arms to act out the word) or unrelated to the academic content (e.g., jumping in place to indicate the answer to a math problem). In this review, no studies that included brain breaks were considered.

Furthermore, in a systematic review of literature, Donnelly et al. (2016) found that HQM, embodied pedagogies to teach academic content appears to have the most consistent positive association to increased academic achievement compared to other forms of PA in the classroom. The researchers reviewed 64 studies that included participants from age five to thirteen and concluded that HQM that is connected to the academic content had the highest and most consistent effect on academic success (Donnelly et al., 2016). Other research stated that

MVPA that is connected to academic content has the greatest effect on executive function (Benzing et al., 2016; Jäger et al., 2014; Kubesch et al., 2009; Pesce, 2012).

Although the research is sparse, there are some studies conducted in the United States, Australia, and Switzerland that investigated specific areas of academic outcomes if HQM is connected to and integrated into the academic lessons (Bartholomew et al., 2018; Donnelly & Lambourne, 2011; Donnelly et al., 2017; Kirk & Kirk, 2016; Kirk et al., 2014; Mahar et al., 2006; Riley, 2015; Padial-Ruz et al., 2019; Schmidt et al., 2015, Schmidt et al. 2019). However, these studies reported academic success and improvements in different subject areas. Donnelly and Lambourne (2011) reported that physically active academic lessons of moderate intensity improved overall performance on a standardized test of academic achievement by 6% compared to a decrease of 1% for the control groups. In another study, researchers found positive results, with a three-year exposure to active academic intervention resulting in significantly higher scores on a composite of reading, math and spelling tests (Donnelly et al., 2009).

In the research study of Bartholomew and Jowers (2011), different lessons were implemented over the school day with fifth graders, including lessons that directly connected academic content and PA and they found improvement in spelling. Although the implementation of active academic lessons was short (one week), the experimental group showed significant improvement in the post-test compared to the control group. Moreover, Bartholomew et al. (2018), Mahar et al. (2006) and Riley (2015) could show better on-task behavior in third and fourth graders in academic lessons like math if HQM to teach academic content is implemented. Studies with pre-school children acknowledged that children learn the specific task better by being physically involved in the content because there is a significantly improved performance in

literacy and geography skills (Kirk et al., 2014; Kirk & Kirk; 2016; Mavilidi, et al., 2016). Moreover, Schmidt et al. (2019) and Padial-Ruz et al., (2019) reported better learning of vocabulary by embodied learning.

Overall, research shows that HQM to teach academic content has the highest impact on academic learning (Benzing et al., 2016; Donnelly et al., 2016; Jäger et al., 2014; Kubesch et al., 2009; Pesce, 2012), with moderate to intense HQM having the biggest effect (Donnelly et al., 2009; Donnelly 2011; Donnelly et al., 2016; Kirk et al., 2014; Kirk & Kirk 2016; Schmidt et al., 2016). That means that greater amounts of PA being associated with greater improvements in cognitive function (Donnelly et al., 2016). Although Chang et al. (2012) reported that 20 minutes of HQM at a time has the most benefits on cognition. In a later study, Chang (2015) concluded that even 15 minutes is a reasonable time frame to implement HQM. Moreover, there are a number of other positive effects like brain development, mental health, and physical health if PA plays an important role during the school day. Since buy-in from teachers is a key component to successfully achieve increased HQM integration in education, it is important to understand their perceptions, perspectives and needs of PA and HQM in schools and specifically in the classroom.

Teachers' Experiences and Perceptions

Staff perception of PA in schools is well studied (Cothran et al., 2010; Delk et al., 2014; Dinkel et al., 2017; Forana et al., 2017; Gehris et al., 2014; Gibson et al., 2008; Goh et al., 2013; Howie et al., 2016; Howie et al., 2014; Huberty, 2012; McDonald, 2014; McMullen et al., 2014; Stylianou et al., 2015; Usher & Anderton 2017; Webster, 2011; Webster et al., 2013; Webster et al., 2016). Teachers report that they do not have enough time to plan the incorporation of PA

because of curriculum requirements and material that they have to finish for standardized testing (Cothran et al., 2010; Dinkel et al., 2017; Goh et al., 2013; Howie et al., 2014; Huberty et al., 2012; McMullen et al., 2014; Webster, 2016). Another concern is that there is not enough access to training in preservice and in-service teacher education, professional development, teacher collaboration and resources in general (Dinkel et al., 2017; Forana et al., 2017; Webster et al., 2011; Webster et al., 2016; Webster et al., 2019). Several studies reported that support from administration and other teachers is crucial to implement PA successfully (Dinkel et al., 2017; Forana et al., 2017; Goh et al. 2017; Webster et al., 2016). Despite the negative comments about implementing PA in the classroom, the overall response in the studies was that students are enjoying being physically active and that they are more focused after PA in the classroom (Cothran et al., 2010; Dinkel et al., 2017; Forana et al. 2017; Howie et al., 2014; McDonald, 2014).

Limited research has focused on the perceptions and perspectives of teachers about HQM that is somehow connected to academic content and learning. In the existing investigations, teachers reported similar obstacles, as mentioned before: not enough time for planning, limited space in the classroom, equipment and environmental issues, not enough access to resources, and lack of support (Gibson et al., 2008; Goh et al., 2017; Martin & Murtagh, 2017; McMullen et al., 2016; Stylianou et al., 2015). However, teachers also reported that students had better focus and engagement, more motivation for academic learning, and better atmosphere in the classroom (Gibson et al., 2008; Goh et al., 2017; Martin & Murtagh, 2017; McMullen et al., 2016; Stylianou et al., 2015). Furthermore, teachers reported that students are more interested, have improved concentration and retention of information, and have a higher enjoyment of learning if

HQM is implemented to teach academic concepts (Finn & McInnis, 2014; Martin & Murtagh, 2017; Martin & Murtagh, 2017).

In some studies, teachers reported that if HQM is implemented the curriculum requirements still could be accomplished and the material for standardize testing finished (Finn & McInnis, 2014; Martin & Murtagh, 2017). But in most studies, teachers still preferred implementing brain breaks and were hesitant to change their instruction even though there are many benefits of connecting movement to the academic content (Gibson et al., 2016; McMullen, et al., 2016; Stylianou et al., 2015). There is evidence in these research studies that some teachers did not see PA as a long-term way to instruct students because the instructors reported it was hard to go back to the ‘normal instruction’ and that teachers do not have the time for planning and bringing students back on track (Martin & Murtagh, 2017; McMullen, et al., 2016; Stylianou et al., 2015; Usher & Anderton, 2017). Do teachers’ perceptions and perspectives of HQM in this research study align with studies that were conducted earlier? In addition to the barriers and obstacles teachers experience, the question remains what do teachers need to implement HQM to teach academic concepts that bears so many benefits for students and their long-term education and life?

Embodiment

In this section, the philosophical part of embodiment in education will be discussed. Furthermore, embodiment leads into the theoretical framework that will be used in this research study. Embodiment can be interpreted in many ways and plays a crucial role in education. When we observe children in nature or while playing freely, especially in the early ages, they are exploring the world by moving around. It is very rare that a child chooses to sit still over a long

period (Gulick 1920; Rousseau, 1762/1979). Rather, the child will learn through a combination of intellectual and PA, naturally making it a whole-body experience (Montessori, 1949/1995). Why are we not adjusting our education system according to this seemingly universal principle? Why do we not offer our children an education in which instruction is based on their needs, offering them the most effective learning experiences? History and research show that PA as part of education has many positive effects (Dewey, 1897/1908; Johnson, 2007; Montessori, 1949/1995; Plato, 350 BCE/2007; Ratey, 2008; Rousseau, 1762/1979). But for a long time, there was an understanding that the body and mind should be seen and treated as dualistic systems (Plato, 350 BCE/2007).

Across teacher education research, the term embodied pedagogy is invoked in ways to emphasize nuances of its nature, relevance and value. For example, drawing on the educational theories of Dewey and Freire, Nguyen and Larson (2015) define embodied pedagogy as “learning that joins body and mind in a physical and mental act of knowledge construction” (p. 332). Embodied pedagogies are those that invite students to “construct knowledge in physical, sensing, or being approaches” (p. 334). They go on to identify three salient characteristics of embodied pedagogies: developing bodily and spatial awareness, unifying the mind and body in the learning process, and developing awareness of the body’s role in socialization (Forgasz & McDonough, 2017; Nguyen & Larson, 2015).

Drawing on Merleau-Ponty’s phenomenology, Satina and Hultgren (2001) define an embodied perspective of education as one that “recognize[s] the body as the subject of human experience” (p. 521). Thus, for them, a pedagogy of embodiment “brings the body in from the educational margins and makes it central in our knowing and being” (p. 531). Much like Nguyen

and Larson (2015), they propose that embodied pedagogies are those that encourage students to develop an awareness of their bodies and of “the essential nature of human experience as embodied” (p. 521).

In phenomenological research, as well as educational research per se, investigators argue that we do not have a body, but we are our body. The embodied approach makes clear that in the mind/body relationship, the body not only precedes the mind for stimuli reactions but is also active in the interpretation and comprehension of reality (Francesconi, 2013). Furthermore, if curriculum and academic content is embodied, researchers argue that we can get to know through movement and that we know because of physical activity (Calderazzo; 2017; Stull et al., 2017). Differently formulated, but same in meaning, Snober (2012) stated that we are bodies, not just bodies, and that movement education and dance is always a return to voice and passion. She further says, “Inhabiting our bodies allows for a deep authentic voice within to emerge” (Snober, 2012, p. 119). Embodiment of curriculum or implementing movement allows students to connect back to their physical compounds and be educated as a whole person. The focus on the head and the sense organs in the head can be shifted to a focus on the whole human being and therefore to a holistic education that includes the whole physical body. Embodiment in education allows students to learn with their full existence.

Theoretical Framework

While it is important that the study of curriculum should be connected to the classroom practices, it is also essential to “have enough theoretical explanatory power to interrogate the complex material and social relations embodied by those very same practices” (Au 2012, p. 33). Therefore, it is important to develop and find foundations for my research interest. Mark Johnson

(2007/2009) connects most meaningfully to the body-based approach of Maurice Merleau-Ponty, and Johnson's theory resonates with my own view of the advantages and the need for embodiment, PA, and HQM in relation to students' classroom experiences and academic learning. Johnson (2007) explains that everything that is in the thoughts needs to be experienced through the senses. He writes, "Movement is one of the conditions for our sense of what our world is like and who we are. A great deal of our perceptual knowledge comes from movement, both our bodily motions and our interaction with moving objects" (Johnson, 2007, p.19). Johnson says that the body and mind cannot be separated, and that HQM is crucial for learning. He states, "Movement is thus one of the principal ways by which we learn the meaning of things and acquire our ever-growing sense of what our world is like" (p. 21).

Johnson (2017) develops an argument for the central importance of our bodies in everything we experience, mean, think, say, value, and do. The reason for choosing Johnson's theory for my own theoretical framework is because he synthesizes and updates earlier, important scholars such as John Dewey and Maurice Merleau-Ponty, making their theories more compatible with the contemporary discourse in the United States and beyond. Johnson's argument is based to a great part on Dewey's curriculum theory of experience in education, yet it is also connected in many ways to the phenomenological approach of Merleau-Ponty, who acknowledged the fundamental role of embodiment in our experiences. One of Johnson's most important additions to their theories is his emphasis on research and science to fundamentally give "flesh and blood to some of Dewey's and Merleau-Ponty's skeletal remarks about how organism-environment interactions generate meaningful experiences" (Johnson, 2017, p. 1). Johnson argues that both, Dewey and Merleau-Ponty, were exploring the same deep dimensions

of embodied meaning and thought. Johnson's focus is not on criticism, rather, he is engaged in constructing a positive account of human meaning-making and understanding that draws on the cognitive science of an embodied mind.

In the line of inquiry, the researcher would like to build a grounded and applicable argument for bodily involvement in learning, by helping students to experience academic concepts and content through the physical, and experiencing academic concepts through HQM. Not only is it important to be physically active for health reasons like reducing BMI, improving cardiovascular and mental health, movement as a central part of the curriculum can enhance and support brain development and academic learning. The researcher believes that if students are more connected to academic content through direct bodily experiences, they can understand abstract, theoretical concepts more fully, which, in turn, has positive outcomes on academic achievement overall, which the researcher calls HQM that aligns with Johnson's (2007/2017) argument. While teachers' perceptions and perspectives so far have mostly been looked at through the lens of general PA during the school day, my theoretical framework allows me to look more specifically at teachers' perceptions and perspectives of HQM connected to academic content in their classrooms. Johnson (2007/2017) says that understanding is not just a conceptual achievement, but rather a whole body, visceral engagement with the world around us that defines who we are and how we compose ourselves.

The key idea of Johnson's theory (2017) is that the same sensory, motor, and affective neural process involved in our bodily engagement are activated when we conceptualize, reason, and talk about objects and concepts respectively. He states,

There are not two different and independent systems, one for perception and another for conception; instead, to conceive some objects is a matter of engaging in a simulation process that activates selective sensory and motor aspects of that object and our typical physical and cultural interactions with it. (Johnson, 2017, p. 23)

In his scholarly approach, Johnson (2017) explains how neuroscience can explain the brain architecture that keeps our thoughts tied to feelings, emotions and motive forces. Empirical studies reveal that the body-mind emerges from our bodily engagement with our physical interactions with things and events, and from our interpersonal interactions with other humans or animals (Johnson, 2017). He further elaborates that cognitive neuroscience is beginning to provide us with a fundamental understanding of the neural architectures that give rise to thought and language. Johnson argues,

Through a multilevel dialogue between neurocomputational modeling, cognitive linguistic accounts of language understanding, empirical psychological experiments on thought and language, and neurophysiology, we are beginning to understand how the body lies at the heart of our ability to make, understand, and communicate meaning and thought. (p. 33-34)

At the beginning of this dissertation proposal, the researcher illustrates the most fundamental connection between the body and the brain through the story of an animal that moves around until it firmly attaches itself to the ground and then eats its own brain cells because they are no longer needed. Johnson (2017) reaffirms the same basic interrelationship between the physical and the neurological by saying, “Mind is an evolutionary accomplishment that cannot exist without a body in continual interaction with its world... There is no mind

without a functioning body and brain, nor a functioning brain without cognitive activity engaging the world” (p. 40-41).

An important finding in more recent neuroscience that is connected to my thesis is that the nervous system exploits topological and topographic organizations. In other words, the brain builds neural maps when the sensory system is in contact with the environment. An experiment with a frog revealed that after manipulation of the frog’s visual competences, his long tongue could explore the environment around him and it was able to draw a map in its brain (Johnson, 2017). This experiment shows that the brain has plasticity and is able to adjust based on the sensory ability. Moreover, “A number of experiences indicate that parts of the sensory system cortex are weakly activated when people observe others performing motor tasks or imagine themselves doing those tasks” (Johnson, 2017, p. 104).

Without such patterns of the brain and developing maps, each moment or experience would be chaotic and not related to a larger whole or past; this means that we would have to make sense of our world from scratch, over and over again. Johnson (2017) explains, “Human perception, experience, consciousness, feeling, meaning, thought, and action all require a functioning human brain operating in and through a live body that is in ongoing engagement with environments that are once physical, interpersonal, and cultural” (p. 142). Johnson further stresses that,

Embodied meaning and thought is the acknowledgment that perception emerges in the context of action; that is, in the interaction of an organism with its environment...Perception and action are not two independent functions, but rather are aspects of a series of ongoing organism-environment interactions. (pp. 142-143)

Philosophical Assumption

The worldview for this study is pragmatism. As Tashakkori and Teddlie (2010) explain, pragmatism is usually associated with mixed method research as an overarching philosophy embraced by a large number of mixed method scholars. Researchers with that pragmatic worldview do not commit to any one system of philosophy and reality. Instead, the individual researcher has the freedom of choice of methods and techniques and procedures that best meet their needs and purposes. The focus is what best works at the time to uncover answers to the research question (Creswell, 2014). Creswell & Plano (2018) further state, “The focus is on the consequences of research, on the primary importance of the question asked rather than the methods, and on the use of multiple methods” (p. 37). The question asked, and the ultimate goal of this research study is to find out more about teachers’ perceptions and perspectives of HQM to teach academic concepts during instruction and what kind of support they need to successfully implement it into their classrooms. Tashakkori and Teddlie argue, “One of the central ideas in pragmatism is that engagement in philosophical activity should be done to address problems, not to build systems (p. 97). The problem is that teachers do not implement enough HQM into their classrooms, although it has so many positive effects and outcomes. Within this study, it is the meaning that problems can be addressed, and support can be developed based on the investigation.

The research questions for this study are based on the problem that in our global education system, most children are instructed while sitting. I, as the researcher, investigated by surveying and interviewing teachers to explain why this is the case in the United States and what can be done to change this. The researcher chooses teachers because they hold a key role in

designing the method of classroom instruction (Leithwood, 2008). This research should help to underscore what reasons teachers have to implement or not implement HQM. Moreover, this study investigated what kind of PA teachers integrate, and what support they want and need to successfully implement HQM in their classrooms.

The ontology of pragmatism includes multiple realities (i.e., subjective, objective, intersubjective). It rejects traditional dualism (i.e., subjectivism vs. objectivism; facts vs. values). Pragmatism considers the reality and influence of the inner world of human experience in action and looks at the current truth. Pragmatism takes into account that meaning and knowledge are tentative and changing (Onwuegbuzie, Johnson, & Collins, 2010). Within this worldview of pragmatism, the qualitative phase helps to reveal participants' perspectives that were chosen through the quantitative survey. As Creswell (2013) explains,

The individual using this worldview will use multiple methods of data collection to best answer the research question, will employ multiple sources of data collection, will focus on the practical implications of the research, and will emphasize the importance of conducting research that best addresses the research problem. (pp. 28-29)

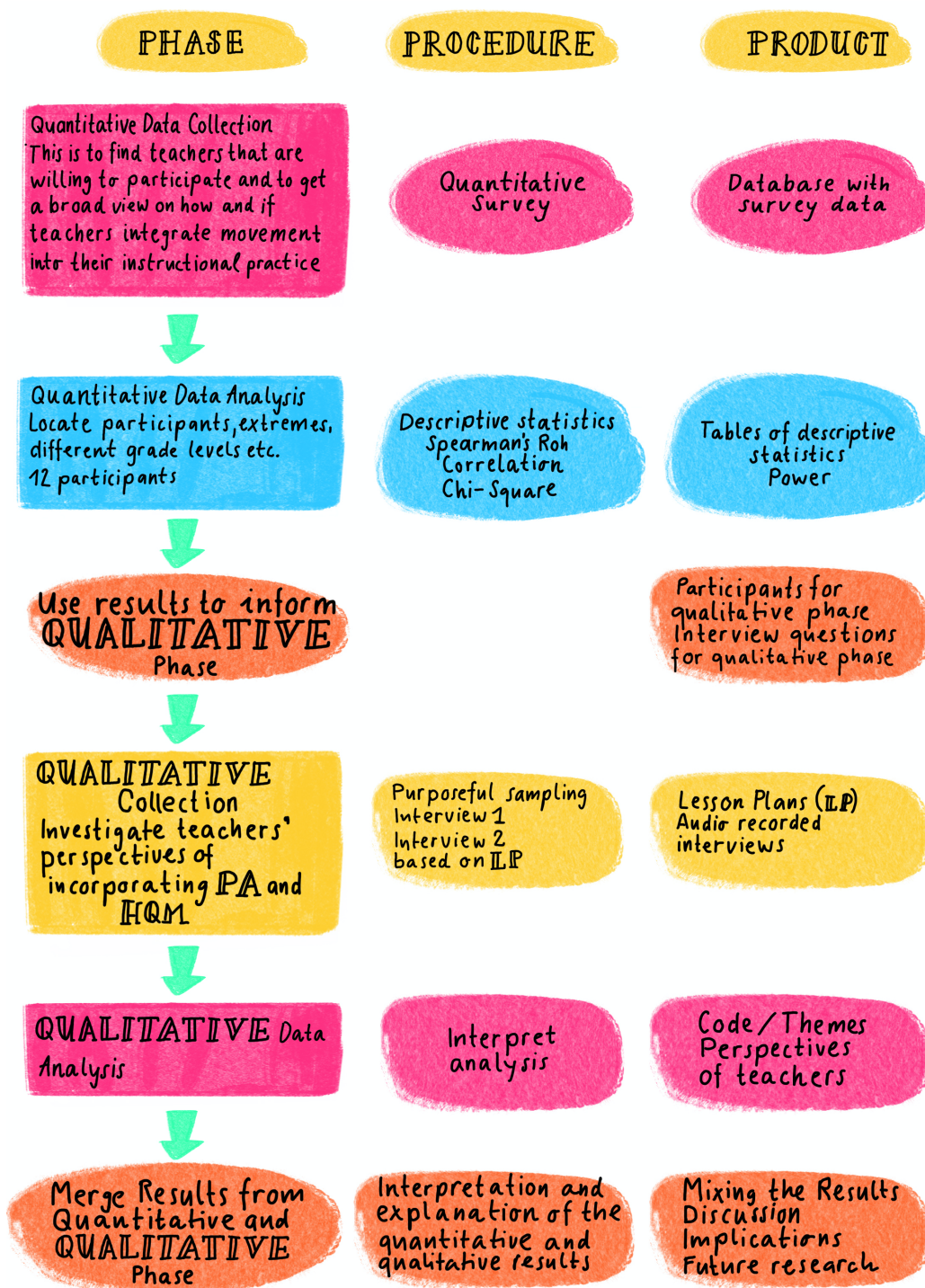
CHAPTER III

METHODS

For the purpose of maximum and detailed information, this research study was designed as a sequential explanatory mixed method research design. Quantitative surveys with teachers were conducted followed by phone interviews that were based on a willingness to participate in the second part of the research study. The qualitative phase provided the researcher with in-depth results of teachers' perspectives and implementation of PA and HQM. Merging the quantitative and qualitative data helped the researcher develop new ideas about what challenges and possibilities teachers face in their pedagogy in regard to HQM in the classroom and what support teachers need to implement HQM. Figure 2 provides a detailed overview of the research design.

Figure 2

Study Overview



Research Design

The intention of this mixed method research study was to investigate elementary and middle school teachers' perceptions and perspectives on the relationship between PA, HQM, and their classroom practices. A sequential explanatory mixed method research design was used. In a sequential explanatory research design, there are two distinct phases. During the first phase, quantitative data is collected and analyzed. In the second phase the qualitative data is collected to further explain the findings of the quantitative data. The analysis of the qualitative data and merging of the two types of data show new ideas to the researcher (Creswell & Plano, 2018). In the first, quantitative phase of the study, survey data were collected from teachers who taught preschool through middle school about their perceptions of PA and HQM in the classroom and what support or if any is needed for them to do so. The researcher was able to acquire data from six charter schools and one private school. Five of the charter schools are in one network.

The second qualitative phase was conducted as a follow-up to the quantitative results. The emphasis in this research study is on the qualitative phase. In this exploratory follow up, the tentative plan was to investigate and acquire further insight into teachers' perspectives and perceived classroom practice about PA and HQM to teach academic concepts. Additionally, this phase was also used to determine in more detail and in depth what teachers need to support their practices. The reason to conduct a mixed method research approach was to obtain a better understanding on how schoolteachers' perceptions (quantitative survey) influence the instruction in their classroom (qualitative interviews) and what support was needed to successfully implement HQM to teach academic concepts (mixing the data). The data within the third phase merged the quantitative and qualitative data and was used to address the research question: What

are teachers' challenges and possibilities in implementing high quality movement and what do they need to support their future practice of teaching academic concepts through high quality movement?

Process to Find Research Sites

The goal was to find at least three elementary/middle schools located in a major city in the Northeast that were willing to participate in this research study. The plan was that all schools that were willing to participate would be included (i.e., public, private, and charter schools). When the researcher relocated to the Northeast right after completing the comprehensive exams and a pilot study, the researcher had to find new research sites. She applied to conduct research at the major city's public school district. This was a very long and exhausting process which resulted in a very clear rejection. In addition, the researcher connected with school leaders of charter and private schools and was able to find seven (six charter schools and one private school) that were willing to participate in the research study. It took a year of tremendous effort that included lots of phone calls and emails before these schools were found and approved. It is important to note that in the area where the research was conducted, the public schools are overwhelmed with research requests. There are many colleges and universities with doctoral programs in education in the area.

Site Selection

Collectively, seven different schools were willing to participate in this research study. First, five charter schools that were in one network participated in the research study. Since opening its doors in 2010, this network focused on taking the lowest performing schools and transforming those schools into exceptional learning environments. The mission of these charter

schools is to rapidly transform chronically underperforming district schools into extraordinary schools that sustain high achievement over time. This charter school network serves over 2500 students from Kindergarten through eighth grade. Second, the additional charter school that is in another network serves 640 students in grades pre-kindergarten through fifth grade and has a special focus on serving families who do not speak English as a first language. Third, the private school is a school that serves 283 students in grades pre-kindergarten to eighth grade with a student-teacher ratio of six to one. Prekindergarten to 3rd grade include boys and girls and fourth to eighth grade is an all-girls school.

As the researcher mentioned before, all schools that were willing, participated in the research study. There was no particular selection. Therefore, all the grades were included. Initially, the researcher wanted to focus on the elementary schools, which was based on the pilot study that was conducted in Spring 2018 where the results showed that teachers are more focused on PA and it was more common to find PA and HQM in the classrooms at the elementary school level. The pilot study entailed K-12 teachers' perceptions and perspectives of physical activity in the classroom. Based on the results of the pilot study, elementary school teachers were more willing to participate in this particular investigation to reveal information about movement in the classroom and were more aware of the importance of PA and HQM. Due to the school sites willing to participate, the survey was conducted with all teachers in all available grades.

Phase 1: Quantitative

In a sequential mixed method research design the collection of the quantitative data takes place as an initial step. First, the sample and procedure are defined. Next, the participants who

took the survey are characterized in more detail. Second, the instrument used will be described for the quantitative phase. Lastly, the descriptions of the statistical approaches are elaborated on and the instrument's validity and reliability discussed.

Participants, Sample, and Procedures

For the quantitative phase, the researcher used a convenient sample strategy. Teddlie and Yu (2007) explain that convenience sampling involves drawing samples that are easily accessible and willing to participate in a study. Seven schools participated in the quantitative survey. 150 participants started the survey with 102 valid responses registered for demographic data and 97 responses could be used for the statistical analysis. The demographic data of the participant can be found in Table 1.

Identifiers of the participants that completed the survey included more females than males, Caucasians, and teachers who were between the age of 30 and 40 and taught between one and five years. Almost 70% of the participants have a master's degrees and about half of the participants worked in a charter school and the other half in a private school (Table 1). Most teachers in this survey taught Language Arts followed by Math, Science, and Social Studies (Table 2).

Table 1

Subject Demographics

Gender	88.2% Female 10.8% Male 1.0 % Non-Binary
Race	78.4% Caucasian/White 8.9% Black/African American

	8.8% Hispanic/Latino
	2.9% Multiracial
	1.0% Asian
	1.0% Wish to not report
Age	56.9% (30-39)
	25.5% (40-49)
	10.8% (50-59)
	4.9% (60-69)
	2.0% (70-79)
Years of Teaching	47.0% (1-5)
	22.5% (6-10)
	27.4% (11-15)
	8.0% (16-20)
	4.0% (21-25)
	3.0% (26-30)
	1.0% (31-35)
Grade Level	27.5% Pre-K to 2 nd grade
	14.7% 3 rd to 5 th grade
	33.3% 6 th to 8 th grade
	11.8% Pre-K to 5 th grade
	7.8% 3 rd Grade to 8 th grade
	3.9% Pre-K to 8 th grade
Subject Area Taught	51.0% Language Arts
	44.1% Math
	23.5% Social Studies
	21.6% Science
	14.7% Special Education
	6.9% Physical Education
	5.9% Art
	5.0% English as a second language
	3.9% Music
	2.9% Foreign Language
	18.5% Others
Level of Education	63.7% Master's degree
	18.6% Bachelor's degree
	13.7% Bachelor's degree but enrolled in master's program
	2.9% Education specialist degree
	1.0% Doctoral degree

School Type	45.1% Private School
	45.1% Charter School 1-5 (one network)
	9.8 % Charter School 6

Table 2*Subject in which Teachers Mostly Integrate High Quality Movement*

Math	36.3%
Language Arts	32.4%
Special Education	14.9%
Science	14.7%
Social Studies	8.8%
Physical Education	7.8%
Music	4.9%
Foreign Language	4.9%
Art	2.9%
ESL/Speech	2.0%
Never	14.7%
Others	8.77%

Instruments

In the first phase of this research study, a quantitative survey was the tool used to collect data. The survey was designed in Qualtrics that entails teachers' perceptions about the role of PA and HQM specifically in their classrooms. The instrument was used to ask questions about whether educators implement PA and HQM, and what kind of support is needed to do so (see Appendix A).

For the pilot study that was conducted in Spring 2018, the quantitative survey was developed from similar studies (Benes et. al, 2006), in which questions were modified to address the quantitative research question. After the data analysis, it was clear that the survey needed to be revised. It was necessary to adjust the first survey to indicate what was meant by HQM

teaching academic concepts. All teachers chosen for the qualitative phase based on the quantitative survey were not aware what the researcher meant with HQM. Moreover, the goal for this research study was to collect data that provides information about what kind of support teachers need to be able to implement more HQM. This part in the survey needed to be added too.

The quantitative survey contained a consent form at the beginning and was followed by four sections. In the first section, the researcher asked about demographic information such as gender, age, ethnicity, education, grade of teaching, etc. In the second section of the survey, teachers were asked about their attitudes and practices when it came to PA and HQM in the classroom. At the beginning of this section there was an explanation on what PA and HQM means in the survey. In the third section, teachers gave responses to why they do or do not implement PA and HQM in the classroom. Finally, in the last section of the survey the questions were about the support and training they received or would need to successfully implement PA and HQM in the classroom. The link to the survey can be found in Appendix A.

Measures and Data Analysis

The responses to the survey were saved in Qualtrics. The data was exported to and analyzed in SPSS 24. The data were addressing two research questions: Do teachers from different grade bands implement more non high-quality movement than high-quality movement into the classroom? Are teachers more comfortable to implement non high-quality movement than high-quality movement into the classroom? ANOVA and a paired sample t-test was performed. Spearman Rho correlation statistics were used to address the third quantitative research question: Is there an association of perceived knowledge and prior training to teach

through physical activity and high quality movement in the classroom in elementary and middle school teachers? Spearman Rho correlation statistics were calculated as opposed to Pearson r , since the monotonic aspect of the Spearman Rho statistic is more appropriate for ordinal data. In addition, the Chi-Square were calculated to address the fourth research question for the quantitative analysis: Do elementary and middle school teachers want to receive more training in physical activity and high quality movement and if yes, what are the preferred methods? Descriptive statistics were used for the preferred methods and to find out what support teachers want and need.

At the end of the survey, participants were asked if they were willing to be contacted to participate in the second phase of the research study. Based on the responses and the analysis of the survey, the researcher contacted the people to conduct the qualitative phase of the research study with them. For the second phase, the qualitative phase, the researcher chose participants based on their own perception of already implementing PA, HQM, or implementing little or no movement into their classroom practice. It was necessary to administer the quantitative survey first to choose the participants for the qualitative phase. This procedure was intended to get a deeper understanding of teachers' perspectives and understanding of what kind of support they need to successfully implement HQM into their classrooms.

Instrument Validity and Reliability

For the quantitative instrument it is important to analyze and discuss the instrument's validity and reliability. First, the validity of the survey will be examined. Then, the reliability will be closely looked at.

External Validity. Doing research in schools and not being in control of external influences always presents validity threats. It needs to be recognized that conducting the research study in different schools is an external validity threat which was taken into consideration. Since the survey was developed based on the pilot study conducted in Spring 2018, external validity can be more assured than before the onset of the study. The survey used did not gather data the researcher was hoping for. There was a skewed sample regarding the disposition to use PA and HQM. Almost all teachers who participated in the survey responded favorably to PA in the classroom. Moreover, teachers did not understand the differences between PA and HQM. This difference was made much clearer in the survey used in this research study so that teachers could specifically answer the survey questions based on this differentiation.

The extent to which we can generalize from the experimental sample to the accessible population is questionable. This external validity threat was considered since the sample size was small. Moreover, it is necessary to obtain responses from teachers that do not include PA or HQM into their instruction in the classroom so that the survey data represents the whole population of the schools. To make educational research reliable, these threats were taken into consideration.

Reliability. All assumptions of ANOVA, Paired sample t-test, Spearman's Rho correlation, and Chi-Square Test needed to be met before conducting the statistical approach. All the assumptions were met. The assumptions of ANOVA included normal distribution, homogeneity of variance, and independent observations. The assumptions of the paired sample t-tests are that the dependent variables are interval/ratio, independent observations, normal distribution, and no outliers observed. The assumptions of Spearman's Rho correlation are that

data must be at least ordinal and the scores on one variable must be monotonically related to the other variable. The assumptions of the Chi-square include that the data in the cells should be frequencies or counts of cases rather than percentages or some other transformation of the data. The levels (or categories) of the variables are mutually exclusive.

Phase 2: Qualitative

In a sequential mixed method design the qualitative data collection of the research study takes place as a second step. In this study the emphasis was on this phase and was conducted to gain deeper insights of teachers' perspectives. In the following section, the participants and the data collection procedures are discussed.

Participants

For the qualitative phase of this research project, purposive sampling techniques were used. The participants were chosen based on the responses they provided for the quantitative survey. It was necessary that teachers from different grades, subjects, schools, and of varying responses were chosen to participate in the qualitative phase. The participants were teachers that already implemented HQM, PA or non HQM, or little to no movement. Based on the survey data, 13 teachers participated in the initial interview and eight teachers in the second interview that was based on the lesson plan they sent me beforehand (Table 3). This sample size gave the researcher the opportunity to reach saturation. As Malterut et. al (2016) explain, the sample size is dependent on the aim of the study, sample specificity, use of established theory, quality of dialogue, and analysis strategy. Moreover, interviewing these teachers from seven different schools with different instructional philosophies gave me the opportunity to gain deep insights while simultaneously providing a strong overview to the quantitative data.

Table 3*Data Collection Chart*

Participant	School	Grade	Subject	I1	LP	I2	HQM
Andrea	CH 5	6th	All	yes	no	yes	Medium
Ben	PS	PreK-8th	Music	yes	no	no	High
Charlotte	PS	K-4th	Science	yes	yes	yes	Medium to high
Cory	PS	3rd	Math, LA, Social S	yes	yes	yes	Medium to high
Debra	PS	K	Math, LA, Social S	yes	yes	yes	High
Jamie	CHS 6	PreK	All	yes	yes	yes	Medium to high
Liz	PS	8th	Science, Math	yes	yes	yes	High
Lukas	CHS 4	6th	Science	yes	yes	yes	Medium
Makeeba	CHS 1	6th	LA	yes	no	no	None
Paula	CHS 3	2nd	All	yes	yes	yes	High
Ramona	PS	2nd	Math, LA, Social S	yes	yes	yes	Non
Ruth	CHS 6	4th	Math, LA, Social S	yes	no	no	Medium
Theresa	PS	2nd-4th	Math, LA	yes	yes	yes	High

CHS 1-5: Charter School 1-5; PS: Private School

The goal of interviewing these teachers was to understand their perspectives and self-reflection of HQM and PA. Teddlie and Yu (2007) explain, “Purposive sampling has also been referred to as nonprobability sampling, purposeful sampling, or ‘qualitative sampling’. As noted above, purposive sampling techniques involve selecting certain units or cases ‘based on a specific purpose rather than randomly’ ” (p. 80).

The emphasis in this research study was on the qualitative phase. Based on the survey data, participants for the qualitative data were selected. This is a very common procedure in a sequential explanatory mixed method design. As Creswell and Plano (2018) described, in a sequential explanatory design, the first phase, the quantitative phase, helps to plan the follow up qualitative data collection phase. This plan included what questions needed to be further probed and what individuals could be sampled to best help explain the quantitative results.

Data Collection

The qualitative data collection entailed two phone/video interviews. The first interview took place as an initial step, followed by an interview that was based on a lesson plan that teachers sent me beforehand. Due to the COVID-19 pandemic that started in March 2020 the researcher had to adjust my methods. Because meeting face to face and observations in the classroom were impossible and with the support of my committee, the researcher decided to do all my interviews on the phone or via video conference. Moreover, instead of observations, the second interview took place based on a teacher's lesson plan, which they sent to me before the second interview. Participants sent the researcher a lesson that they already taught. Most of the teachers chose lessons in which they implemented, based on their opinion, PA and HQM.

Interview 1. Teachers that were chosen based on the survey and their willingness to participate were contacted to schedule the phone or video interview that lasted between 30-60 minutes. The researcher was conducting the interviews from home and most of the teachers were home too. One participant was in the car driving and one was on a walk during the interviews. At the beginning of the interview, the teachers verbally agreed to a consent to move forward with the interview. All participants agreed to the consent form that the researcher read from and can be found in Appendix E. The agreements were audio recorded and transcribed. Moreover, the interview was audio recorded and the researcher took notes. The interview was semi-structured and probing questions were used to gain deeper insights. The interview protocol for interview number one can be found in Appendix B.

Artifact Lesson Plan. After the first interview, the researcher asked the teachers to send me a lesson plan of a typical lesson that reflects their teaching in the classroom. The researcher

chose this data collecting method because it allowed her to interview teachers in regard to their teaching methods and pedagogy in PA and HQM and was able to adjust the questions for the interviews for each individual participant based on their lesson plan. The lesson plan completed the qualitative data collection, meaning that the researcher has an artifact to triangulate the data. The original plan was to use photo elicitation interviews and to reflect on the lesson teachers taught after the observation. Due to the pandemic an alternative plan had to be found. The researcher chose lesson plans that showed lessons that teachers taught in the past and the researcher had the opportunity to prepare the second interview and let teachers reflect on their lesson in regard to PA and HQM. An example of the artifact lesson plan can be found in Appendix C.

Interview 2. The second semi-structured interview occurred after the teachers sent the researcher a lesson plan via email and the researcher had some time to prepare the interview based on the lesson plan for each individual teacher. The goal was to let teachers talk and explain how and why (or why not) they integrated PA and HQM. The interviews took place on the phone or via video chat. The second interview lasted between 30 and 60 minutes for each participant. The interviews were audio recorded and the researcher took notes based on the participants' responses. The notes were primarily for the researcher to remember what to ask for in the probing questions while the teacher was still speaking. Furthermore, the notes included what needed to be explained from the participant in more detail. The researcher asked probing questions for clarification and always went back to the lesson plan so that teachers were able to reflect on their pedagogy or lack of their implementation of PA and HQM.

Research Journal. The researcher kept a research journal, since a research journal can work as a validity strategy. Moreover, a research journal works as a tool to write down personal thoughts after and before the interviews, ideas that come up during data collection, and informal conversations with people other than participants. As Spradley (1980) explains, journals are records of “experiences, ideas, fears, mistakes, confusions, breakthroughs, and problems that arise during fieldwork” (p. 71). Research journals “provide a place where researchers can openly reflect on what is happening during the research experience and how they feel about it” (Hatch, 2002, p. 88).

The researcher wrote the research journal on her laptop and, after each phase, the research journal worked as both a post-processing tool and a preparation tool for the next steps in the study. It was important to have a place in which the whole process was written down on a personal level. The journal was kept on the researcher’s computer that is secured with a password.

Data Analysis

Merriam (1998) states, “Data analysis is the process of making sense out of the data. And making sense out of the data involves consolidating, reducing, and interpreting what people have said and what the researcher has seen and read” (p. 178). The interviews were audio recorded and transcribed. The notes during the interviews and the preparation on the lesson plans were involved in the data analysis process. The data was analyzed in NVivo. NVivo is a qualitative data analysis computer software program. It has been designed for qualitative researchers working with very rich text-based and/or multimedia information, where deep levels of analysis on small or large volumes of data are required. Creswell (2013) explains that the data

collected and organized in computer files can be voluminous and overwhelming. But of course, organizing them in a qualitative analyzing program is helpful and necessary.

Bogdan (1998) states, “Analysis involves working with data, organizing them, breaking them to manageable units, synthesizing them, searching for patterns, discovering what is important and what is to be learned, and deciding what you will tell others” (p. 157). As a novice researcher, it was appropriate for me to first gather a suitable amount of qualitative data before analyzing it. Yet, informal analysis happened early in the process in order to stay on the right path. Analysis of data with Bogden’s (1998) following argument:

One mode is to collect the data before doing the analysis. Because reflecting about what you are finding and making decisions while you are in the field is part of every qualitative study, a researcher only approaches this mode, never following it in its pure form. In our judgment, the beginning researcher should borrow strategies from the analysis-in-the-field mode, but leave the more formal analysis until most of the data are in. (p. 158)

After the initial interview, the researcher utilized a professional transcription bureau and the research bureau of Kent State University. As soon as the researcher received the transcribed interviews, the researcher uploaded them into NVivo. While preparing for the second interview, the researcher not only prepared the interview based on the lesson plan the teachers sent to me, but the researcher also looked over the initial interview with the particular teacher. Informal data analysis began early on in the data collection process, which is considered desirable in the development of a study (Hatch, 2002, p. 149). In doing so, the researcher received an idea of what to focus on during my second interview. As Bogdan (1998) recommends, “Regularly

review your field notes and plan to pursue specific leads in your next data-collection session” (p. 161). In my research journal, the researcher wrote about the ideas the researcher generated, including memos on what the researcher learned throughout my research.

The researcher was engaged with my data during the whole process but did the formal data analysis as soon as the researcher concluded my data collection. Moreover, other researchers have recommended reading all the transcripts in their entirety when all data is collected because it is important to immerse oneself into the data and to understand it as a whole before breaking the fieldnotes and the interviews into parts (Agar, 1980 from Creswell, 2013). As soon as the researcher concluded my data collection, the researcher read all the transcripts, artifacts, and notes before breaking them into parts to get a wholistic understanding of my data.

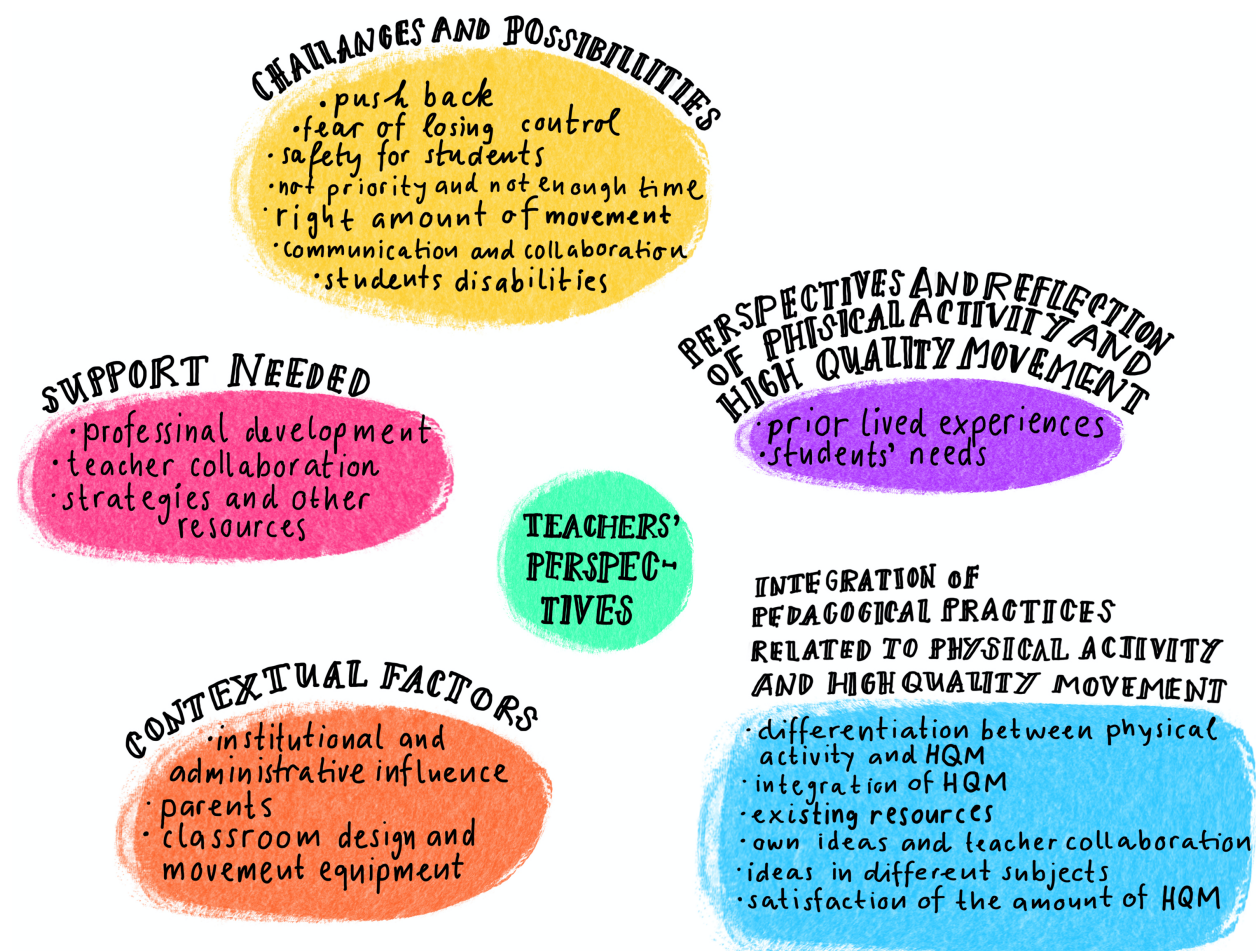
The next step consisted of reading and creating memos to describe, classify, and interpret data (Creswell, 2013). Data including both the artifacts and the interviews were coded, and themes were found. According to Creswell (2013), “The process of coding involves aggregating the text or visual data into small themes of information” (p. 184). The tentative codes were developed organically regardless of the lengths of the data. During this stage, constant comparison took place. That means that the text or visual data was aggregated into smaller themes of information. It is important that the code is connected to different data being used in the study and a label to the code can be assigned (Creswell, 2013). Through strategic coding, the researcher discovered themes and narrowed the findings down. Coding did allow me to find meanings in the teachers’ perspectives. The codes were as follows: administration, beliefs, benefits of HQM, brain breaks, challenges and solutions, classroom design, definition of HQM, diversifying teaching, education, enjoyment, examples of brain breaks, examples of HQM,

existing resources, feeling comfortable, ideas in different subjects, learn and time to sit and listen, mindfulness, movement equipment, movement in different grades, outside space, parents, personal movement, prior experiences and training, project based learning, reasons why movement in the classroom, reasons why HQM, reflection on own teaching, school and institutional background, students' participation, teacher collaboration for HQM, teachers personal background, teaching persona, teaching to the test, unique examples of HQM, wish for resources. The goal of the data analysis was to establish themes about why and what kind of PA teachers implement in their classrooms, their perspectives and reflection on their teaching in more depth, their challenges and possibilities, and to find out what they need to implement more HQM. Merriam (1998) states that themes are abstractions derived from the data, not the data themselves.

The researcher made sure that my themes were emergent from the artifacts, the notes, and interviews so that there were new themes and new ideas. Moreover, the themes addressed the research question. Themes should be exhaustive, mutually exclusive, sensitizing, and conceptually congruent (Merriam, 1998). The number of themes were larger at the beginning of data analysis, but as Merriam (1998) suggests, the number of themes should be manageable. The key was to keep synthesizing through the analysis. The researcher used Post-it notes and a big wallpaper to put the codes in groups based on the relation they had. After carefully going through all the codes, themes were established that contained the codes that were found as the initial step. After establishing the themes, it was necessary to go through the data again to find more examples and make the themes stronger, and at the same time erase weak themes. Finally, the emerging themes and subthemes can be found in Figure 3.

Figure 3

Themes and Subthemes



Trustworthiness

Trustworthiness in the qualitative part of the research is “a component of your research design, consists of your conceptualization of threats and the strategies you use to discover if they are plausible in your actual research situation, and to deal with them if they are plausible” (Maxwell, 2013, p. 123). The following strategies, embedded in the research study, made sure

that the researcher was aware of trustworthiness threats. Moreover, these trustworthiness strategies serve the reader to get an objective view of the data and the research study.

Researcher Bias and Reflexivity. It is impossible to eliminate the researcher's theories, beliefs, and perceptual lens. Maxwell (2013) explains, "Instead, qualitative research is primarily concerned with understanding how a particular researcher's values and expectations may have influenced the conduct and conclusions of the study (which may be either positive or negative) and avoiding the negative consequences of these" (p. 124). Therefore, it is essential to uncover the researcher's biases in regards of this investigation.

As a teacher, a school principal, and a movement therapist, it is obvious that the researcher has a positive relationship to HQM, PA and learning. Moreover, as an active child and a current physically active adult, the researcher is a firm believer in using PA and HQM as a tool to release tension, staying healthy, and to learn concepts, thus, the researcher is likely biased. The researcher needs to take these biases into account through the whole research study. The researcher's biases could possibly influence the questions she addresses in the interviews and how she sees participants as teachers. It was important to stay as neutral as possible when it came to interviewing the teachers. In order to collect trustworthy data, the participants have to talk freely. Since HQM is the passion of the researcher, it is necessary to see PA in the classroom as a valid instruction tool as well and that teachers can talk about their implementation of it.

In addition, a critical friend of the researcher read the dissertation and added feedback about the bias the researcher has. Together they reflected on the data in regards of PA and HQM and beyond. The critical friend continuously gave feedback about the biases of the researcher and provided another view to the data. The critical friend was a person that the researcher got to

know during her course work for her doctorate degree. This critical friend also gave feedback about grammatical issues in this research study.

Triangulation. Triangulation is a method of using different data collection tools. In my case, the researcher used a quantitative survey, artifacts, and interviews to triangulate my data. As Maxwell claims, “This strategy reduces the risk of chance associations and of systematic biases due to a specific method and allows better assessment of the generality of the explanations that one develops” (Maxwell, 2013, p. 128). However, Maxwell (2013) also adds that triangulation could give the researcher a “false sense of security” and therefore this validity tool needs to be used in addition to other strategies (p. 128).

Systematic Analysis and Negative Case Analysis. The analysis of data needed to be systematic and rigorous in order to thoroughly and accurately represent participants’ experiences, practices, and meanings. As a researcher, the researcher weighted and assessed all of the material the researcher collected to provide a thorough analysis and representation of the research, which is an important strategy that included negative case analysis (Niesz, 2016). For my dissertation, the researcher needed to ensure that she collected negative case data throughout my interviews. the researcher searched for instances or cases that contradict the emerging findings. This process allowed me to be confident that my findings have fidelity and are accountable to the data (Niesz, 2016). Searching for negative cases prevented me from jumping to a conclusion too quickly since the researcher has biases. The researcher systematically looked through the data to find data that did not fit into my view and experience. The negative case data can be found throughout the qualitative data in chapter four.

Deliberate Reflection. By journal writing, the researcher used this strategy to write about my own relationship to the topic that the researcher is studying. By writing frequently in my research journal, I could reflect on my deeply held beliefs and feelings about PA and learning. Through this reflective writing process, I was able to examine my subjectivity and role, and the researcher could gain awareness that helped me make research design, data collection, and data analysis decisions that account for my subjectivity (Niesz, 2016). This strategy also needed to be made transparent to the reader, which is the ultimate goal of this validity tool.

Phase 3: Mixing the Data

The third phase of this mixed method study happened after all data of the first and second phase were collected and analyzed. Creswell and Plano (2018) state, “Mixed method data analysis consists of analytic techniques applied to both the quantitative and the qualitative data as well as the integration of the two forms of data” (p. 218). Moreover, for the mixed method research question, it was important to integrate the quantitative and the qualitative data to make a mixed method interpretation (Creswell & Plano, 2018). In the sequential explanatory design, the data analysis and integration occurs at more than one time in the study (Creswell & Plan, 2018). In my study, the analysis of the quantitative data informed the qualitative study, and the qualitative study provided a strong explanation of specific results from the initial quantitative phase. While merging the data, the goal was to find new ideas and reasons why teachers do or do not implement HQM and what support they need to successfully implement it in the classroom. The goal was to find new ideas while analyzing the survey, artifacts, notes, and the interviews and find theories about what are challenges and possibilities for teachers and what kind of support they need to implement more HQM in the classroom to teach academic concepts. The

goal included collecting data about what can be done so that children can learn based on their physical nature. The representation of the results of the merged data are at different points in the study.

Legitimation

Legitimation is the integrity of mixed method research and is used when mixed method research is conducted (Onwuegbuzi & Johnson, 2006). The following reasons explain why a mixed method research design was needed for this research study to fully investigate the research question. Weakness minimization, paradigmatic mixing, and multiple validities are discussed in the following section.

Weakness minimization. For this research study, it was important to conduct both the quantitative and the qualitative part of research so that the weakness of both methodologies could be compensated. The quantitative survey provided the researcher with an overview of the perception about classroom PA but could not offer in-depth details, which was contributed with the qualitative data. Furthermore, the quantitative survey helped the researcher to locate the participants that do or do not implement HQM, which would not have been possible otherwise and gave the researcher an overview about the teachers' perceptions. Furthermore, the mixing of the data is necessary to develop new ideas on what teachers need to implement HQM to teach academic concepts.

Paradigmatic mixing. Clearly, this sequential explanatory research design gave more weight to the qualitative phase, but the quantitative data was important to locate participants, inform the interview questions, and merge the data. Moreover, the quantitative part supported the qualitative data which gives the data more weight and importance. Therefore, weight was given

to both methods and it was necessary to merge the quantitative phase with the qualitative phase to develop new ideas and theories.

Multiple validities. This refers to the extent to which the researcher validates the quantitative and qualitative strands separately of each other and validates the whole mixed methods study to develop high quality meta-inferences. Both of the strands were validated and needed to merge the data. The multiple validities of this mixed method research make this study stronger and higher in validity, reliability, and trustworthiness.

Timeline

The following timeline in Table 3 provides an overview of this sequential explanatory mixed method research study.

Table 4

Study Timeline and Procedures

Study Phase	Anticipated Date	Procedures
Dissertation Proposal	April/May 2019	<ul style="list-style-type: none"> • Obtain permission to research in the school district. • Identify relevant literature and address significance of the study. • Identify and provide rationale for appropriate methods • Write and defend proposal
Institutional Review Board	IRB is in place (Spring 2018), Amendment June/July 2019	<ul style="list-style-type: none"> • Update CITI training • Obtain permission of the amendment to conduct the study
Participant Recruitment	August - October 2019	<ul style="list-style-type: none"> • Contact teachers via email over school leaders.
Data Collection Phase 1(Quantitative)	December 2019 – June 2020	<ul style="list-style-type: none"> • Teachers take quantitative survey online

Data Analysis Phase 1 (Quantitative)	June 2020 – August 2020	<ul style="list-style-type: none"> Analyze Data in SPSS 24 Get in contact with advisor Dr. Kosko about analysis of data Address the first research question Locate teachers for the second phase and contact them Plan next phase (Qualitative)
Data Collection Phase 2 (Qualitative)	February 2020 – August 2020	<ul style="list-style-type: none"> Participants of the second phase (Qualitative) take the quantitative survey again First interview with each teacher Second interview with each teacher
Data Analysis Phase 2 (Qualitative)	August 2020 – October 2020	<ul style="list-style-type: none"> Upload transcripts and field notes to NVivo Begin coding data Find themes Meet with critical friend to discuss codes and preliminary findings.
Dissertation Writing	August 2020 – January 2021	<ul style="list-style-type: none"> Complete all data analysis. Write up findings and results

Ethical Consideration

Researchers need to maintain a standard of ethical conduct when invited to collect data in schools. Study participants, school administrators, and students need to be fully informed of the researcher's intentions and purposes for conducting the study. The researcher needed to obtain the appropriate level of Institutional Review Board (IRB) approval and had to provide the schools with appropriate documentation such as a police background check, IRB permissions, and consent forms. The IRB for the pilot study was approved in Spring 2018 and was effective through December 2020. For this research study, the research site needed to be updated, the revised survey needed to be approved, one interview protocol needed to be added and one updated. As soon as a research site in the Northeast was located, the updates were made, and the amendment submitted.

The school administrators needed to provide written permission for the researcher to collect data. At the beginning of the quantitative survey, all participants agreed to a consent form. All study participants for the qualitative phase needed to verbally agree to a consent that outlined the potential benefits, limited anticipated harm, and goals of the study (Creswell, 2013). At my initial phone meeting with the participants, the researcher verbally provided an informed consent form (Appendix E) and answered any questions about their rights as a participant or the study in general. Each participant was required to verbally agree the consent form. Participants received a copy of the consent form they agreed to verbally by email and reserved the right to withdraw from the study at any time without penalty. As with any study conducted under the supervision of a research institution, all study procedures were approved by the Kent State IRB prior to the collection of data.

CHAPTER IV

FINDINGS

The design of this research is an explanatory mixed method study, with the emphasis placed on the qualitative data. After the presentation of the demographic data, the quantitative research questions will be addressed: Do teachers from different grade bands implement more non high-quality movement than high-quality movement into the classroom? Are teachers more comfortable to implement non high-quality movement than high-quality movement into the classroom? After the presentation of the quantitative results, the qualitative research question will be addressed: How do elementary and middle school teachers reflect on and integrate physical activity (PA) and high-quality movement in their own classroom practice? The quantitative data and the qualitative data will complement each other, and the mixed method research questions will be introduced to merge the data. The mixed method research questions are: Is there an association of perceived knowledge and prior training to teach through physical activity and high quality movement in the classroom in elementary and middle school teachers? Do elementary and middle school teachers want to receive more training in PA and high quality movement and if yes, what are the preferred methods? What are teachers' challenges and possibilities in implementing high quality movement and what do they need to support their future practice of teaching academic concepts through high quality movement? During the third phase of this mixed method research study new ideas will be developed and again the quantitative data will be presented throughout the qualitative data presentation to support and complement the qualitative results.

Quantitative Results

To begin the reporting of the quantitative data, it is important to address the research question: Do teachers from different grade bands implement more non-high quality movement than high quality movement into the classroom? To answer this research question, ANOVA was performed to test for difference in perception with respect to grade levels. The grade levels were divided into three grade bands: Pre-K to second grade, third to fifth grade, and sixth to eighth grade. To perform ANOVA, the mean of the questions (I implement more high-quality movement than physical activity in my classroom; I currently utilize high-quality movement to help teach concepts in the classroom, I think that high quality movement that is combined with academic learning has a stronger effect on academic success than physical activity) was calculated and the three groups of independent variables (Pre-K to second grade, third to fifth grade, and sixth to eighth grade) were compared. All the assumptions were met. The null hypothesis was as followed: The level of implementing PA and HQM in the classroom is the same through all presented grade bands. The alternative hypothesis was that the amount and willingness to implement movement in the classroom is higher in the lower grades (i.e., K-2).

There were no statistically significant differences between group means as determined by one-way ANOVA for all three survey questions. Therefore, there was no statistically significant difference between groups of the amount in implementing movement in the classroom (I implement more high quality movement than physical activity in my classroom $F(2,70) = .241, p = .787$; I currently utilize high-quality movement to help teach concepts in the classroom $F(2,70) = 1.937, p = .152$; I think that high quality movement that is combined with academic learning has a stronger effect on academic success than physical activity $F(7,70) = .849,$

$p = .432$). It was surprising that teachers from PreK to eighth grade perceived to implement a similar amount of movement in the classroom. The researcher predicted a much higher amount of HQM implemented in the lower grades. The pilot study that was conducted in Spring 2018 showed a higher amount of PA implemented in the lower grades.

Then the subsequent research question was addressed: Are teachers more comfortable to implement non-high quality movement than high quality movement into the classroom? A paired-samples t-test was conducted to compare the comfortableness in implementing PA and HQM. Since there was no statistically significant difference between grade bands they did not need to be divided. The null hypothesis was teachers implement the same amount of non-high quality movement and high quality movement in the classroom. The alternative hypothesis was, teachers implement more non-high quality movement than high quality movement in the classroom.

There was no statistically significant difference in the comfortableness between implementing PA ($M = 4.91, SD = 1.24$) and HQM ($M = 4.62, SD = 1.14$) $t(df=96) = 1.90, p = 0.06$. These results suggest that participants have similar comfortable levels of implementing PA and HQM. But since the qualitative data showed something else, it is important to stress, that the p-value of the paired sample t-test was marginal with .06 and does support my qualitative findings. Meaning that teachers are more comfortable implementing physical activity and brain breaks into their classrooms. After analyzing the qualitative data, it became evident that teachers are much more comfortable integrating non high quality movement. After analyzing the qualitative data, it became evident that teachers are much more comfortable integrating non high quality movement like PA and brain breaks over HQM. Another thought was that the skewed

sample regarding the disposition to use high quality movement may have screwed up the researcher paired sample t-test and a more diverse group may have yielded a stronger statistic.

Qualitative Results

In this research study, the purpose of the second phase was to explore elementary and middle school teachers' perspectives on PA and HQM in their classroom practice. Moreover, the qualitative data helped to understand and explain the quantitative data. Throughout the reporting of the qualitative data analysis, some quantitative data will be presented to support the qualitative data. Teachers' perspectives were used to examine and address the following research question: How do elementary and middle school teachers reflect on and integrate physical activity and high quality movement in their own classroom practice?

Data collection and analysis of 13 semi-structured initial interviews, eight semi-structured lesson reflection interviews, and eight lesson plans resulted in three major themes: (1) perspectives and reflection of physical activity and high quality movement (2) integration of pedagogical practices related to physical activity and high quality movement (3) contextual factors. Themes one and three addressed the first part of the research question by describing what influenced the participants' reflection. Themes two and three informed the pedagogies and contextual factors that impacted the integration of PA and HQM.

Perspectives and Reflection of Physical Activity and High Quality Movement

Participants defined reflection in multiple ways. Specifically, prior lived experiences was recognized as a main component of reflection of PA and HQM in the classroom. More precisely, teachers reflected on PA and HQM based on their own school experiences and teachers used PA and HQM to stay cognitively engaged themselves. Some teachers encountered PA and/or HQM

during their college education or other training like professional development. The other main component of reflection was based on students needing PA and HQM that included differentiation of teaching and academic learning. Through implementing more PA and HQM, students' participation in the classroom and enjoyment of school was enhanced.

Prior Lived Experiences

First, it is worth mentioning that when the participants completed the survey, 87.2% of all teachers believed that creating opportunities for students to participate in physical activity and HQM in the classroom while learning was important because participants believed we need to nurture the body and mind. Participants reflected on PA and HQM in their own classroom practice based on their prior lived experiences. Teachers found that their own personal background, movement habits and preferences, education, prior Kindergarten to eighth grade classroom experience, and professional development opportunities influenced their beliefs and comfort in implementing PA and HQM. Based on their reflection, all participants concluded that movement is an essential teaching tool to enhance students' learning and engagement. However, teachers disclosed their concerns and lack of knowledge about how to implement HQM, especially since professional support and training was almost non-existent in their school districts.

Participants recalled their own school experiences, and it became obvious that many of them did not receive PA and HQM as students in their kindergarten through high school education. For some, this caused them to struggle with their attention span and how they performed academically in school. For example, Andrea, a building-based educator (i.e., a substitute teacher who can be appointed to teach classes in the whole school building, but who

mostly teaches sixth graders), narrated a situation in middle school where she encountered punishment and discipline because her teachers rarely implemented movement in the classroom,

I got pulled out of classes to get more reading help because I wasn't engaged. I was in the back of the room. I was the shortest kid and I had trouble. I'd raise my hand but if the majority of the classroom doesn't have that particular question, I got ignored. So, in my mind, I know that I really enjoyed moving. I dance. I dance six days out of the week, even with this whole crisis happening. So, I believe that if you're able to connect with the mind, physically, it's more likely to stay in long-term memory... I believe that if I was struggling with these sorts of things, millions of kids all over the place are suffering from it, whether with autism or they have ADHD, ADD, whatever you want to call it. I'm not the only one. That I know for a fact. So, if I can help any kid with movement, regardless of their condition or their living situation, that's a win for me.

Andrea's experiences as a student not only shaped her philosophy of supporting her own students who struggle in the classroom with PA and HQM, she also explained that movement is an important pedagogy she employs as a teacher. Liz, an eighth grade math and science teacher, related to her students who have to sit all day when she attends teacher meetings,

There'll be a bunch of us at the back of the room who are standing up and fidgeting and we always joke that we're teachers because we can't sit still. And so, I can really relate to kids in my class who also feel that way. Who have to sit in chairs all day, every day, and for whom that might be a trial. Because it's a trial for me. If I even have to sit through an hour-long meeting, it's a trial.

Many participants use movement as a tool to be cognitively engaged. As Charlotte, a science teacher for kindergarten through fourth grade described, “I’m a real kinesthetic learner, so I really understand that just in my own body. I think that’s why yoga is so important to me cause when I... I just can feel things through movement so much better.” Based on the participants’ own lived experiences, habits, and practices, they understood that integrating PA and especially HQM is essential for their students to be successful learners.

Only two of the interviewed teachers encountered HQM as participants during their college education. Jamie, a Pre-K teacher, reflected upon her education as she remembers that this pedagogical tool helped her learn,

Even in college, my early education professors would get up and move more like adults from high school. I’ve seen it. Helps us learn it and makes it more fun and interesting for us as adults. So, I would imagine that would help for the high school students as well. She further explained how this experience in college inspired her own classroom practice,

It’s in my brain now that it’s [HQM] super important for children to learn...Like some of our brains work differently than others, some of them work with physical movement and putting that into a role because there’s a different learner’s resource. When we teach, especially for younger kids, trying to figure out what works best for them, that we’re giving them all options for them to be able to learn.

Furthermore, Paula, a second grade teacher, was excited to learn during a movement integration course in college on how to integrate HQM in the classroom. She described,

The instructor at the time, he was doing his PhD also in PE integrated with movement in the classroom. And so, he was teaching this course and that’s the course where we really

got to write lessons...we were writing a math lesson on blabbedy-blue, and we had to include movement into it, really organic movement into it. And actually, it was pretty cool because he had us write PE lessons with academics involved in them.

Ramona, a second grade teacher, shared that she learned about PA and HQM during professional development. She was one of the few teachers that mentioned professional development being a prior lived experience that shaped her thinking about PA and HQM. Makeeba, a sixth grade teacher, mentioned that the only contact she had with movement in the classroom was during her first year of teaching when she was in a mentoring program and observed other teachers,

Yeah, so I was in my first year of teaching. I was going to schools and observing what teachers were doing in their classroom. At a school, the English class was two hours long, so to break up the English class they found a YouTube video and kids just took a five-minute dance break, and it seemed to have restarted the kids' brains. Then they came back and were much stronger in the class.

Debra, a kindergarten teacher, was one of the many participants who had extensive classroom experience. Debra expressed that she can tell when children need a movement break or a HQM session:

I could see it in my kids. Sometimes there have been times where they've sat a little too long, and I feel that if they're sitting for too long, I could see that they're not focusing. I could just see they start to get very antsy, and their bodies are starting to naturally move, especially at that age, so they start to get a little fidgety, and I feel like at that point, they're getting fidgety and they're not really paying attention to what that person might be

telling them, or to the instructions, or to the lessons. So, I've noticed, and sometimes I have to pause, have them stop, and we do a quick... Sometimes it's a movement break, sometimes I try to find something else...

Prior lived experiences shaped the participants' beliefs on movement in the classroom. Jamie mirrored the experiences she had with PA and HQM in elementary school into her classroom practice with her students.

Their [students] attention span isn't that long, and they need to be moving. And in cases like their brain function and their oxygen flow, helps them absorb information more. I believe not just putting it to words, but also putting it to sounds and motion.

Paula's beliefs aligned with Jamie's,

I say this over and over again and I fight for it all the time, and I preach it to everybody: A brain that has blood going through it, a brain that has fresh air going through it, a brain that is awake is learning.

Although participants acknowledged the benefits of PA and HQM, they also questioned themselves as to whether they integrate HQM appropriately and at the right time. For example, Debra asked,

But if there was a way to learn a little bit more about what is high quality movement. Like I guess that's my question, like is this good? Or like how- if, if, if it can be better, how can I make it better? And I would be willing to make it better, but I just would need to know what that is first, you know? like just- I want you or someone to actually watch me like, Per (teacher leader) observed and Per- Per did, like he was like, 'That was- like you had them moving' like he, he said he thought it was pretty good like there was

differentiation, like they never sat for very long, like he was like, ‘You were able to teach the lesson, there was a lot of movement.’ But I want someone else you know, because I think he was observing more through the lens of like academic.

Based on prior lived experiences that included their own personal background, movement habits and preferences, prior education, their classroom experience, and additional training, teachers seem to believe that PA and HQM is an essential pedagogical tool in their daily classroom practice. Yet, teachers recognized their limited knowledge and experience with PA and HQM and longed for immediate feedback and support through additional professional development and mentoring.

Students’ Needs

Before the researcher focus on the qualitative data from the interviews, she would like to report the quantitative descriptive statistics that is connected to teachers’ perceptions of PA and HQM and students’ needs. Based on the quantitative survey, 94.1% of the participants think that integrating PA has a positive effect on students. Furthermore, 92.1% of all teachers believe that HQM helps students to better learn academic concepts. Based on the quantitative data, teachers clearly believe that PA and HQM help students to be successful in the classroom and that it is students’ needs and their nature to experience PA and HQM in the classroom. These results are further supported by the qualitative data.

Participants reflected on the use of PA and HQM in their own classroom practice based on their students’ needs. Teachers observed that PA and HQM is an appropriate way to differentiate teaching and that through this process academic learning was improved. Moreover, students’ participation in the classroom and enjoyment of school was enhanced due to the

implementation of PA and HQM. Yet, teachers also articulated that there were times for students to sit and listen.

Participants made it clear in their interviews that differentiating instruction was one of the most important reasons to implement PA and HQM in their classrooms, as students need the opportunity to experience the academic content in a variety of ways. Lukas, a sixth grade science teacher stated, “I aspire to give kids as much opportunity to move as possible, be it for academics or not academics and just change the modality.” By changing the modality, he meant offering students diverse learning experiences because it is important to Lukas to reach all children based on their learning needs. He pointed out, “Just listening and speaking are one thing, but especially, for my language learners, having that physical movement is just one additional way to reinforce the idea.” Liz listed all the different approaches of her instruction and then continued, “For some kids, the thing that's going to make the connection is the movement, is the physical memory of something. Or even they say attaching a motion to learning really helps fix it too.” When Theresa reflected on her lesson, a main component was to differentiate her instruction, I understand that some kids can learn through auditory experiences, but that's certainly not every kid. And so, I think diversifying the way I teach is just good practice, and so giving those physical experiences for kids along with opportunities to physically engage with something, whether it's a concrete object or auditorily or verbally recalling what it is that they're doing, it's activating all those different senses. I believe that when you do activate all of those, it just helps everyone and it just diversifies the experience as well, which makes it more interesting.

Teachers believed that differentiating instruction is essential for students' learning, but many teachers questioned whether they were implementing PA and HQM with their teaching. Ramona asked, "So, am I differentiating, or am I making everyone do the high quality movement, how am I deciding who gets what, or does everyone get it, you know." Could this concern or level of unsureness resolve if teachers get more education and professional development on PA and HQM? This argument can be made based on the participants' expression of the connections between the implementation of PA and especially HQM with students' success of learning academic content.

All of the teachers found that PA and HQM is needed in their classroom practice and is one cause why students are stronger in their performance. Ruth, a fourth grade teacher, expressed that both brain breaks and HQM are important factors for her students' success. She thinks that the short attention span and the different energy levels of children call for kinesthetic input in the classroom. She explained, "I think that by meeting students where they are and giving them what they need and that physical outlet, we're going to see much higher returns on their academic gains."

Cory, a third grade teacher, also believed that vocabulary can be emphasized and ingrained by experiencing them physically. While she displayed an exercise in which she embodied angles in geometry, she said, "I do think that there are certain things that are memorable. Like my kids will remember the angle abs more than they will anything else I did with angles." She further elaborated on how using movement helped students learn new content, "When kids are learning terms that they haven't heard before, like perpendicular or area and perimeter or acute or obtuse. They're learning it for the first time. I find that using your body is a

good trick to remembering the difference between different terms.” Debra, with 13 years of teaching experience, is convinced that students who receive HQM are more successful in school, “I have seen proof of kids just doing a little bit better if they're moving.”

When teachers talk about academic understanding on the tests, especially participants from the charter schools, they argue that PA and HQM support the success in standardized tests. Lukas is certain that, “Doing these movement-based strategies ensures my students master content and sets them up for the test.” Andrea suggested that adding HQM make a stronger connection and therefore kids have higher test results. She shared, “I want that memory, that connection to be as strong as humanly possible. If I take that [HQM] away, I don't know if that would affect them negatively or if they would even remember what I teach them.” Paula is confident that teaching standard academic content by HQM, she is preparing the students for the tests, “Because if you're telling me that the test is testing my kids on standards, I'm telling you I'm teaching the standards.” Being successful on the test goes back to differentiating instruction. Theresa, a second, third, and fourth grade math and language arts teacher has implemented HQM in her classroom practice for a long time. She claimed, “I think that any well-rounded understanding of something should be understood in multiple formats” and expressed that students who have an embodied experience of the concept can better grasp it. Theresa continued that physical experiences build a fundamental and memorable base of an academic concept,

By moving around and marking the minutes makes it more concrete because they're [students] moving their bodies, so I think that experience definitely ingrains that knowledge in them more, and I've seen it where they just...you know, students have a better understanding of the hour hand and minute hand, when we get into elapsed time

and all of those things much later on, because of those experiences. And they have so much fun doing it.

Theresa highlighted that students enjoy participating in movement. The fact that students are happier and laugh while being physically active was critical for participants. Jamie's students enjoyed literacy movement sessions that she implemented as a routine every day. During one of her interviews, she depicted a lesson where,

We point to the uppercase letter, they recognize uppercase letter and it's big so I'm going to stand up and then when I point to the lowercase letter, they sit down so they [students] think it's fun and they laugh cause we're going up and down.

When Cory thought about the same angle exercise she did during a geometry lesson she said, "I am a little bit of a drill sergeant, but it's fun. And they [students] think it's fun. I think they could all tell what all of the angles are, and they understand that they're making angles with their body." Cory connected the physical experiences and the fact that students enjoyed it with their understanding of the concepts. She explained, "Students think it's fun and funny. So, I think the fun and funny part is memorable, and then that probably helps everyone."

Several teachers stated that students participated much better when PA and HQM was emphasized in the classroom. Ruth talked about a student that does much better academically in school when he participates, and he engages better when he can move during a lesson. "Now, if there's a lesson where we're doing some type of a jigsaw activity...I've seen him do much better in retaining the information." Debra reflected on a lesson where exercise was included, "I will say all of them [students] moved. Even the girl that maybe didn't necessarily yell the number out, her body was- their bodies were always moving. I would say all 12 of them were always

moving.” This clearly shows that children are motivated and participating in lessons in which PA and HQM is implemented. Kate, who works with middle school students, disclosed that her teenagers were eager to participate and volunteer in one of her HQM science lessons. Kate did admit that sometimes older students give her a harder time because they feel silly moving around in front of their peers. “Well, they're teenagers so they roll their eyes and then they try to get away with not doing the movement. And the best way to get through that is with a sense of humor.” Ben, who works with all age groups is convinced if students are used to being physically active in the classroom, they are open to it when they are older. He shared, “You know, if you build up a culture of kind of expectation that that's what you're going to do, they're still open to it later on.”

A very important suggestion by participants when they reflected on their lessons is that they feel that there are times for students to sit still and listen. Charlotte offered her theory when she has her kindergarten students on the rug,

So, sitting upright, it is really, I think attentive for them...From this book and also just experience that when you're sitting up straight and you're breathing and you're looking, you're- you have your full body attention, that's the best that you can be.

Ramona is convinced that children need to learn to sit still and listen so that they can be successful throughout their schooling, “I think that at this point of the year [March], second graders are able to sit for 15 minutes comfortable without losing it.” Debra reflected on her lesson and offered solutions to children who have difficulties sitting still.

I think there's a time and a place for us to teach our kids to sit, and to sit in a way where we're showing that we're listening respectfully, obviously, which I even do that with my

kids... but I show them some things they can do with their hands if they feel a need to fidget, and we talk about things like that. We talk about maybe just moving our legs a little bit, stretching them out, like moving our neck back and forth.

Based on all the interviews and teachers' reflecting on their experiences, students need to move in the classroom to be able to learn. Not only do children perform and participate better in school, they also have more fun and motivation to learn if PA or HQM is a part of the lesson. It is important for participants to differentiate their instruction by adding PA and HQM. There is potential for increased students' success based on all of these factors. What needs further consideration is that teachers are unsure about how to implement movement in their classrooms. As Makeeba mentioned, "I think it's [PA and HQM] beneficial for kids. I think that we just need to find a way to implement it in a way that is safe and productive for everyone." Providing opportunities for teachers to gain more knowledge on how and when to implement PA and HQM in a safe way so that students can benefit from this pedagogical tool is needed.

Integration of Pedagogical Practices Related to Physical Activity and High Quality Movement

Participants' pedagogies were recognized as the main component in implementing PA and HQM in the classroom. In this section, teachers' pedagogies are further divided into the distinction between PA and HQM and participants' integration of high quality movement. The pedagogy of HQM is also related to participants' satisfaction of the amount and quality of the implementation of HQM in their classroom practice and the resources that are available. Lastly, participants' comfort with the subject they taught influenced their pedagogy and integration HQM.

Distinction between Physical Activity and High Quality Movement

Almost all participants articulated a clear distinction between PA and HQM. Specifically, they expressed that PA and brain breaks are a break from academic learning. Andrea described an example of a brain break in English Language Arts, “They [students] would be prepared to completely write an essay for a good 30 minutes. Then, about halfway through, I’ll have a stretch break so the kids can breathe a little bit and then go back to their work.” Charlotte said that she does not do many brain breaks, but if she does, she uses GoNoodle, because, “There’s the moving and dancing around.” Paula incorporates PA when she realizes that students need it. She depicted, “We’re doing 10 jumping jacks and sit back down. Or we’ll do a silly one, I’ll be like, ‘Spell your name in jumping jacks,’ so they’ll be like, ‘G-E,’ or whatever silly thing we’ll do.” Ramona integrates ball and other games like Simon Says or Four Corners into her morning meetings or literacy blocks that are back to back. Most participants were very familiar with integrating brain breaks into their daily routine and there was not a lot of discrepancy.

Since high quality movement is not an official name for combining movement with academics, it is necessary to clarify how participants made meaning of HQM, which was the basis for how they utilized it in their practice. When asking teachers about their definitions of HQM, there was uncertainty about it as they struggled to formulate their personal description. Cory defined HQM as movement breaks, that is, breaks from sitting but still learning academic content. She clarified, “I will do movement breaks that you would qualify as high quality movement breaks, mostly in math to support concepts that the kids are learning.” When I asked her why she called it movement breaks she explained, “Because the purpose of it in that moment is less to reinforce the angles, but more to just get their body moving.”

When I asked Paula about her definition of HQM she spontaneously responded, “It’s that piece of really organically engaging children in movement but also in academic content, which is hard to do. Not always allowed but that’s what I shoot for.” She further explained, “We often referred to it as movement integrated in academics. I see what you’re saying with high-quality movement. But I think it’s easy to ‘Oh, movement that’s high quality.’ ” This is an appropriate critique. A clear definition of high quality movement would be helpful for teachers to be able to talk about high quality movement and its content and purpose. To successfully integrate HQM, teachers need to have more knowledge about what it exactly means and how it is incorporated.

Integration of High Quality Movement

When teachers identified cases of HQM their examples were different and wide ranging. Some participants defined hand gestures or small body movements that represent vocabulary as HQM. Andrea shared, “If I’m trying to connect something from math class, like, greater than or lesser than, I’ll use my fingers as an alligator mouth. So, I would physically have kids show me these particular hand motions.” Lukas also reinforced vocabulary with hand gestures and total physical response. He gave an example of an earth science lesson, “I was saying weathering, so they can remember weathering breaks things down. Or erosion moves things away or deposition puts them down and using hand gestures to reinforce those terms.” Furthermore, Charlotte, another science teacher, described an exercise of supporting vocabulary with hand gestures and body movement,

When we say cumulus, I have them stand up and then use their hands to look like puffiness. I say, ‘Cu-mu-lus,’ I make them do that a couple times. Stratus is layered, so we make sort of body movements and say the word at the same time.

Other participants provided more complexity in how they implemented HQM. Liz described how she instructed the students during a part of the class in which she incorporated HQM, which sounds like a contemporary dance,

‘Okay so you’re gonna melt now into liquid and I’m gonna come heat you up by the sun or fire or something like that.’ And then, and then they [students] just choose how they’re gonna move, but so it’s just, ‘Move a little faster and a little further away,’ so then they kind of trot and then, and then I say, you know, ‘Now you’re going to move into gas so move way far away from each other and move a lot faster.’ And then you know, and then I bring them back into a solid. I think, you know that just sort of gives them an idea without- we could just say, ‘Okay solids are, have a structure, but the molecules still move. Liquids take the shape of their container.’

Ben, a music teacher, shared how his students create a choreography to music with certain rules, “Students respond to what we call in music the form of a piece, how the sections of the piece interact, and the students show that to me physically.” He continued with describing another lesson, “Moving to music in a way that where you're [students] demonstrating physically something that shows me what's happening in the music.” By doing this Ben wants students to understand the characteristics of the music physically.

Cory, a third grade teacher, instructs HQM in a more guided way. She described, “We would talk to the kids about a 90 degree angle, an obtuse angle, acute angle, a straight line, 180 degrees. And then I would have the kids do the movement, create the angles with their body, so that they're basically doing sit-ups.” Debra executed a related task for the subject math, “I’ll have

them jump out a certain number. I might say, 'I want you to jump a number that's two less than 10.' ”

Teachers who coach literacy and language arts, had other ideas how to embody academics. For example, Paula narrated how she incorporated a poem, “I read it [poem] and they could tap their feet or tap their hands, tap their head, tap their body, whatever they wanted to do, to the rhythm...And so then we felt out like, ‘This poem has this kind of rhythm.’ ” Jamie, who teaches Pre-Kindergarten, described a daily routine to go over the phonics of the letter, “We’ll do like, ‘A, apple, ah,’ and we’ll move our hands to our mouth, like we’re eating an apple. I’m like, ‘Repeat that B,’ which I’m swinging a baseball bat.” Ruth, who also described a lesson in literacy, defined and understood HQM very differently than the others. She explained,

Let’s say they’re reading a text, reading a book, we would do a partner pair. So, they would do a handout, stand up, pair up, find someone and discuss a key question that's related to both the underlying standard and the objective of the day.

Ruth was one of the participants that defined PA during academic learning as HQM. Based on the literature, the mentioned example would be PA that is integrated in the classroom because standing up is not movement that is combined with the academic content in this lesson. This could be an explanation why the quantitative survey and the qualitative interviews revealed different results. During the quantitative survey, some teachers answered the questions based on a different concept for HQM. Therefore, it is necessary that all teachers understand the concept of HQM in the same way, but the name or definition for HQM can be different so that there is less confusion.

Some teachers were able to integrate HQM with project based learning. Paula rhapsodized, “I’m a huge proponent of it because I’ve seen project-based learning settings and children naturally are just up and moving in those settings. Because again, here, we give someone a worksheet and they have to do the worksheet.” Other teachers expressed their interest in mindfulness practices in the classroom and related it to HQM. Charlotte, who is also a yoga teacher, explained that it is crucial to her to practice mindfulness with her students, “Being positive, the importance of your word, the importance of how your body posture is. The importance of keeping your body healthy just by moving it and doing stuff like yoga.”

As can be conceived, HQM was integrated in a wide range of pedagogies and had a different meaning for each participant. Collectively, the participants’ implementation of HQM is body action that is combined with learning. Is it important that teachers have a common conception of HQM? Can this diverse understanding and practicing of HQM be a chance for collaboration and acquiring ideas among teachers? It would be an important development to educate teachers on the wide range and to work on the common understanding of HQM and what is possible. Teachers and other educators with their different pedagogies and examples in regard to HQM could be a valued resource for other educators and collaboratively new ideas could be acquired for the whole school building and beyond.

Existing Resources

Teachers’ pedagogy of PA and HQM is influenced by the resources that are available to them. In this section, participants talk about some pedagogies and pedagogues that combine movement with academic content. Moreover, there are some online resources available to teachers in particular for PA and brain breaks that affect their pedagogies. Therefore, educators

have resources available for PA and brain breaks, but the existing resources for HQM in the classroom are sparse.

Ben, the music teacher, expressed that he has been working with resources that support his pedagogy in combining music and movement for a long time. He mentioned three pedagogues that are combining music education with physical activity. He follows John Fireob who works with Martha Graham, a trained dancer who choreographed music pieces of his. Ben elaborated, "If you do the movements with it [music], it helps you understand what's happening in the music both from a formal perspective of things that are repeating in the music and also feeling the expressive aspects of the music." A second pedagogue Ben has worked with are Carl Orff who put a lot of the emphasis on, "playful, childlike nature of music." He specified, "A quintessential Orff activity would be to read a folk tale and then create music and movement around it where the kids they're moving, they're playing instruments, they're saying rhymes...And so I think it's very creative and playful." The third pedagogue that Ben is using for integrating HQM is Zoltán Kodaly. Ben portrayed his approach as, "It is the singing voice being your primary instrument and there's a lot of emphasis on being able to audiate and then think about melody and rhythm." Audiation is the foundation of musicianship. It takes place when we hear and comprehend music for which the sound is no longer or may never have been present. One may audiate when listening to music, performing from notation, playing 'by ear,' improvising, composing, or notating music (Gordon, 2007).

While Ben showcased a good repertoire of combining music and movement, other teachers found it challenging to articulate resources they have knowledge of and access to. Debra has a CD for a resource, but she cannot play the songs in the classroom, because she is not

equipped with a CD player. She explained, “There's a teacher that I used to follow a lot of years ago, and she's really good about songs and movement. Her name is Dr. Jean Feldman. She's wonderful at songs where most of them do require movement.”

Some participants used online programs that were purchased from the school. Yet, these resources are mostly PA and brain breaks that can be implemented in the classroom and did not emphasize HQM. Debra shared an efficient tool she uses to complement her instruction, “I do use Fluency and Fitness, which is new this year for me...I've used that a lot actually...they have movement for math and reading skills.” But mostly, teachers randomly search the internet when they are looking for movement opportunities in the classroom and adjust the exercises based on their students’ needs. Cory mentioned, “I know of a lot of different online resources and videos that you can watch and move along to. I don't feel like I need more of that.” Paula specified she is looking for resources on Pinterest and YouTube. Ruth connects to other teachers through social media to get more ideas about movement in the classroom, “I lean a lot on online communities for teachers. So, Facebook groups, message boards, Instagram groups, whatever it might be.”

Own Ideas and Teacher Collaboration

The pedagogy of HQM in the classroom was also based on the participants’ own ideas and how much collaboration they had with other educators. Participants who implemented a lot of HQM revealed that they come up with ideas by themselves. Resources that could be found need to be adjusted for the individual classroom, and teachers were convinced that their own ideas work best for their students. Liz explained, “I mostly make it up [HQM exercises] as I go along. Most of the incorporation of the physics ideas and the chemistry ideas, I just make it up.

‘Okay, what's another way I can present this.’ ” Lukas added, “I feel like in general, I don't know enough about strategies, and resources here have been, mostly to your point, it's self-directed.”

Furthermore, by collaborating with other educators, teacher colleagues, and administrators, teachers come up with the most useful ideas for the classroom. Paula said that she was really lucky to be able to learn so much about HQM in the classroom from her mentor, “Her whole classroom was super movement-based and she was a big proponent of it, so I learned a lot from her and often, I'll text her and be like, ‘Hey.’ ” Lukas has a positive and inspiring relationship with his principal, “My manager is also a really big fan of this idea of total physical response of using gestures to reinforce the science. She often is a great resource in helping me think about these things.” Jamie emphasized the idea of collaboration within the school building, “I usually just use ours as a resource like my boss, my co-teachers around me.” Theresa is the most experienced participant in using HQM. She explained that collaborating with other teachers and observing children in other classroom situations helped her to come up with ideas for her own instruction. She illustrated,

I would say my biggest resource is just talking through ideas with different teachers. I think that often times, when we have a minute to really think about it, multiple minds are better than one, and so we'll often bounce ideas off of one another. I also think that sometimes when you, even just watching other content areas, so knowing what they're doing in PE, or watching kids out at recess, or taking something that might not be math-related and looking at how teachers are incorporating movement breaks. You can say, ‘Oh, that would be a really cool way to reinforce this idea’.

Numerous participants agreed that teachers' collaboration is a useful tool to promote and integrate HQM. Cory revealed that she works together with Theresa to come up with ideas,

She and I teach math a lot together, and so we have come up with fun exercises to do...And I also think that when other teachers hear that you've done something like that, I think they think 'Oh, that's a really good idea, I should do that too.'...And so I think sharing those kinds of things is probably how I've learned the most.

Theresa confirmed, "There's especially two of the teachers that I work with that are both very physically active and so they are often on board with physical movement activities and kind of working outside the box, which is great. So, I kind of have a team there that is on board with me." Cory also thinks that she can learn a lot from the PE teacher in her school by observing his instruction to get inspiration. She explains that she was inspired watching his videos to keep children moving and that this was the reason that she created her movement video in geometry.

There was one participant that stated that she would like to have more autonomy in creating her own lessons, most likely because her collaboration team was not educated in implementing HQM. Paula, who is well versed in incorporating HQM into her classrooms expressed,

I would even want more freedom to rewrite more lessons. Because what I'll do a lot is I'll take their [other teachers'] curriculum, I'll plan with my team because we all plan together...But then on my own time...I try to sprinkle in [HQM]..."

In addition to not having enough knowledge about HQM, Paula explained why teachers incorporate PA and brain breaks instead of HQM,

I think there's teacher support in terms of the idea of movement, but I think a lot more teachers think about movement in terms of like, 'Let me do this brain break in this minute.' They're all really educated people here. And I think they would all say, 'Yes, of course, movement. Do that brain break. Do the GoNoodle. Do the thing.' But then when you actually task them with incorporate movement into your lesson and pair it with academics and make it meaningful and organic, they think that's harder. And I think that's scarier and can feel scarier.

Ideas in Different Subjects

It was evident that participants' pedagogies was dependent on their ideas and resources. Teachers seem to have the most and strongest ideas in the main subject they teach. Charlotte, the science teacher, speculated, "Usually it's easier with science, you know because if I was teaching math, I think I would have to think so much harder about the movement." Liz who is an eighth grade science and math teacher argued that it is easier for her to come up with HQM in science, but integrates PA and brain breaks in math. Liz deliberated, "Both of these things [PA and HQM] are easier in science than they are in math. But I do number line walks in math and for brain breaks, I would do maybe a little mobility like shake it out." While Cory, who is a third grade teacher has the most ideas in math,

I just think I naturally try to be more playful in math, and I don't have as many brilliant ideas for language arts. So, I don't know why...It occurred to me that I could only really think of purposeful academic movement in math.

Theresa who teaches math and language arts in second, third, and fourth grade also stated that she has more concepts in math. She considered, "When I think about movement as it relates to

being connected to the content, and reinforcing the learning, I just, I've found more ways to do that in math, I think because of the quantity involved.” She adds that she integrates HQM in language arts, the other subject she teaches. She exemplified, “You can do acting out the scenes to help reinforce and visualize the learning.”

Ruth has the most ideas in literature since she teaches that the longest at the school she works at, she explained,

I know the curriculum [literature content] inside and out and it looks secure. If no, I can figure out where putting in something [HQM]. I feel the most comfortable taking some risks there [literature] to get the chance to move and try something different.

Whereas Andrea, who is a building based substitute teacher, thinks that she has the hardest time to come up with ideas during her English Language Arts classes, “I think maybe the toughest would be English Language Arts, just because you're required to sit still and read this text and find this text and write and sit and read and type.”

Lukas, the sixth grade science teacher, has the most ideas in science for his English Language Learners (ELL). He integrates HQM when he teaches hand gestures and explained that he has the biggest repertoire because of the support and education he has, “I think a lot of what I do pedagogically is a combination of guidance I got from my principal about possibly incorporating the movement into my instruction with songs and from instruction I've received on ELL strategies.” Lukas typically integrates a few words every week that go along with some sort of hand gestures that allow students to practice vocabulary.

Certainly, teachers know how to implement PA and brain breaks into the classroom. It also implies that there are enough resources. All these conversations revealed that there is a wide

range of integration of HQM. Participants assimilated and defined HQM in numerous ways. It needs to be recognized that most participants who were willing to engage in the second part of this research study already implemented PA and/or HQM with only a few exceptions. There are a few resources for HQM that teachers use, mostly there are pedagogues or theorists teachers follow. But based on all the interviews, teachers come up with their own ideas, rely on collaboration within their school building and beyond, and are the surest and strongest in their main subject to successfully implement HQM.

Satisfaction of the Amount and Condition of High Quality Movement

During the second interview, teachers answered questions about the satisfaction of the integration of HQM based on a lesson plan they shared with the researcher. Most of the lesson plans were classes in which a lot of movement was integrated by the participant. Some teachers were perfectly satisfied with their pedagogy of HQM when reflecting on their lessons, such as Andrea who said, “I think I have a good amount of physical activity in the classroom.” Lukas wanted to give his students as many movement opportunities as possible and when he looked back on the class he was satisfied about the amount and type of movement integration. Lukas reflected,

There was a fair amount from the non-academic...getting up to move and then in the middle, I would put things like the ‘Stand-up if it’s A, stand up if it’s B, stand up if it’s C.’...And then with the vocabulary gestures, like- the sole purpose is academics. I feel like there were many opportunities to move.

Still, most of the teachers wanted to integrate more HQM yet required more knowledge about it to improve the condition and quality of their pedagogy. When Charlotte looked back on

the science class, she reflected on her lessons with kindergarteners, “I would love to integrate more movement that helps them remember things better and learn things better. When I’m being really thoughtful, I try to make sure that...they’re not just sitting there listening to me.” She recognized that the lesson she selected for the basis of our discussion was not a traditional lesson in the scope of the whole year in regard to HQM. The example lesson included an exceptional amount of HQM. Debra called up her class session and said, “The lesson was good. I was able to teach the lesson, get the point you know, across to them with what needed to be taught. It could’ve been a little bit stronger but like it was definitely movement.” She continued with a critical reflection of her lesson, “If there was a way to like learn a little bit more about what is high-quality movement...And I would be willing to make it better, but I just would need to know what that is first, you know?” She further stated that an experienced coach or teacher collaboration could help her to develop more knowledge and improve the condition of HQM in her practice. She pointed out, “Someone might have a great idea...I do feel comfortable knowing that my kids need to move, I’m always going to think when I look at a lesson – is there enough movement in this? Or are they sitting too long?”

Liz selected one of her favorite science classes and stated,

I love the ones [lesson] where we move. They're my favorite lessons of the year. It's fulfilling for them. It's fulfilling for me. They remember it. It feels good. They leave and they're laughing and they're smiling, and they had a good day of science.

Theresa reflected on her integration similarly like Liz, but was more precise,

I think whenever I can get the kids to be building and creating and physically interacting with the content, it makes it more meaningful to them. They take more ownership over it, they have more fun doing it, they really enjoy those types of activities.

She explained that the lesson she talked about had the ideal amount of movement and that not all classes look like that. She further elaborated,

I would say I definitely incorporate other movement activities into different lessons, but it's not a component of every lesson that I do for various reasons. Just maybe I haven't thought of a way to do it yet...I think there's benefits for students in many ways.

Makeeba would like to integrate movement but she does not know how. She specified in which part of her lesson it would be needed, "Maybe during a discussion, kids would be able to get up and move around, or maybe after a reading kids would move around for a second, and maybe synthesize what they've learned. I just, I don't know how." Ramona was also not satisfied with the amount of movement she integrates, because,

There is the fear of losing control, and this is so, not regimented, but this is very precise, what we do, and so I think that's always the fear I have of... And sometimes I do it [implement movement], and I lose control, and so we have to stop.

Ramona expressed her interest in the nature of HQM,

How that could help some kids with learning their facts, their math facts, or just kind of internalizing some of the lessons, like some of those kids who do move around a lot, how could high quality movement positively affect their learning? That's something I'm interested in.

It needs to be clarified that the lesson discussed were lessons that teachers chose because they included a lot of movement. Still, almost all participants would like to learn and integrate more movement and especially HQM. Therefore, how can standardized knowledge, definitions, and integration of HQM be created throughout a school building? How can educators support each other in implementing HQM and how does the organization of these teams look like? Could there be some experienced HQM teacher leaders in the collaborating groups? And what resources are needed to support teachers to implement better and more HQM? In phase three all of these questions will be answered based on the interviews of the participants and the literature. Before doing so, there is a need to reflect on contextual factors within the school building to analyze the support and infrastructure for integrating HQM into the classroom.

Contextual Factors

Contextual factors regarding PA and HQM means how teachers reflect and integrate movement in their classroom based on their institutional influence, the support of administration, and parents. Furthermore, teachers reflected on their classroom design, outside space, and movement equipment. While there were minimal differences between teachers' perceptions between charter schools and private schools in the previous themes, it became apparent that teachers felt differently when talking about the contextual factors that influence PA and HQM

Institutional and Administrative Influence

The school and institutional background was an important factor on how teachers felt about implementing movement in the classroom. Ruth, a second grade teacher in the charter school network 2, talked about how her institution shifted towards student centered operations in

recent years. Due to this shift, she observed herself moving away from a controlled classroom to one where students have some ownership. Ruth explained,

The first year that I was there, students were sitting up straight and tall in their seats with their hands folded. I would be dinged on my evaluation. Now many years later, we're seeing a total paradigm shift where it's celebrated to have students moving around the room and taking advantage of different spaces where they know that they're going to be most productive...But I think the other thing is that as I've become a more experienced teacher, I find myself being more comfortable with letting go of some of the ownership in the classroom.

At the beginning of this subtheme, the researcher would like to report that participants articulated that they would like to have more support from administration to implement both PA (36.3%) and HQM (41.2%). In general, teachers in the private schools felt supported by their administration in implementing PA and HQM. For example, Debra talked about her classroom and how much she worked on it to make it work for PA and HQM, "The nice part is I've had administration come in to my room, and they actually have complimented my classroom and me on my classroom set up. They'll mention, 'Oh, my gosh, this space is so open, I love it.' " Ramona expressed her appreciation for the freedom she has, "Just the autonomy that I have as a teacher at this private school. No one would come into my classroom and be, 'What are you doing? Why are you moving around so much? It's math, you should be sitting.' " Liz added, "I would say in general, I do feel supported by my administration." The support teachers experienced in the private school felt uninvolved, the leadership accepted the fact that teachers implemented PA and HQM but was not actively participating in it.

Contrary to the private school teachers, some participants who worked at the first charter school network had to hide and cover that they implement PA and HQM. Paula revealed, “I have to shut my door and just hope that they [administration] don't come by in that moment.” She reinforced, “I'll have to shut my door and hope nobody walks in or be ready to explain if somebody walks in.” Paula realized that she needed more data to present the advantages of movement in the classroom. She elaborated, “They [administration] allow me to get away with some stuff, but I really have to fight for it” and by fighting for it she meant presenting data that students do better with PA and HQM,

In order to sell it to my principal who's coming in being like, ‘Why are children on the floor?’ I do have to bring it back to, ‘Here's the data that shows. My kids do make a lot of progress. My kids have upped their reading. My kids have made progress in math.’

Makeeba, who works in the same charter school network, was clear about needing more administrative support to successfully implement PA and HQM. She explained, “I think we would need a lot of administrative support because it's something that we haven't really done before. So, a matter of talking with administrators about what we think is more beneficial and how we'll implement that would be super helpful.” In Makeeba’s school, administrators do not allow students to move in the classroom even during the ten-minute breaks. She argued, “In an effort to manage the class, the administration wants kids to remain seated which is, I think, it defeats the purpose of a break if they’re just sitting there.” Makeeba explained how she does not know the reason for this administrative order, “We haven't really been given a reason other than it's easier to manage a classroom if kids are in it.”

Some questions remain, such as, does administration need to be included and involved in the education of PA and HQM in order to support teachers by providing educational opportunities about the advantages of PA and HQM in the classroom? Do they need to become a substantial part of the whole school collaboration to successfully implement more PA and HQM? Based on all the interviews, teachers who were able to successfully implement HQM received support from all educators including administration in the school building. Some principals need to be educated about the advantages and how they can actively support teachers in implementing HQM. Through continuous professional development this can be realized and teachers' collaboration in practice in the school building and beyond needs to be institutionalized.

Parents

The reverse was true, based on the type of school, when participants talked about parents' support of PA and HQM. Participants from the charter schools felt supported while teachers who worked in the private school had the feeling that parents do not have enough knowledge to know that students learn while moving. Liz, who educates eighth graders in a private school stated, "It's really discouraging. If they [parents] hear that I took the kids outside to do outside classroom, they're like, "You're just doing nature walks? They need to be doing labs." She continued, "If they [parents] hear that the kids are up dancing around, they think the kids aren't learning." Liz, who previously worked in public schools, thought the reason for this reaction in private schools is because the parents are so involved. Liz explained,

They [parents] think that the kids are not doing science, and it is extremely discouraging.

It's the race to nowhere thing. They're already stressing about their children's college

prospects and their children are in eighth grade. This little private school, it's such a pressure cooker. The parents are so intense.

When I further asked her if she adjusted her instruction methods based on parents' opinion, she clarified,

I try to do what I believe in, but there comes a point where it's not worth it, right? Where I do modify and I do a little more testing, a little more sitting. I would never do just worksheets, but there comes a time where I'm like, "Well, I'm due for a week of doing worksheets until this all blows over." And I wish that weren't true. I wish that that was not the case. But it's just some days, it's not worth it to stir the pot.

Liz would love to educate parents that PA and HQM is a very efficient and engaging pedagogical approach to learning. She described,

I would have a parent in my class who was there as an ally and let them see all of this and see me be a goofball and make the kids run around. Because all of this is good for people to see.

Ramona, who works at the same school, had a similar experience with parents and how they support PA and HQM, "I can imagine that there might be some pushback from some parents because it is a school where parents have really high standards. If there was an impression that students weren't working enough because they were moving around."

Whereas in both of the charter school networks there was limited involvement from parents in regard to PA and HQM. When parents were involved, participants felt supported by them. Jamie shared, "I think they [parents] support it [movement] for sure." As with

administration, parents need to be educated and more involved so that they understand that PA and HQM support students' success and does not hinder their learning.

Classroom Design and Movement Equipment

When participants talked about classroom design and movement equipment, it became apparent that the private school has much more space and tools available. All of the teachers in the private school were very happy with their space, where they have small class sizes, big classrooms, and have a lot of autonomy to design their classrooms based on students' movement needs. Cory shared,

I think that I'm comfortable doing movement in my classroom because the classroom is quite big, and I have a lot of empty, free space. I feel that I can have the kids jump up and down. And right now, I only have 11 students.

Almost all other participants from this school had the same opinion about classroom size and number of children. They also have a lot of autonomy from administration to design their classrooms. Debra is very proud of how she changed her classroom over the summer to be ready to teach the kindergarteners,

There was a lot of furniture, way too much, too many chairs, too much of everything, which is not necessarily a bad thing, but I wanted a space that was more open. Just very open and clean and where it would allow the kids to move around...So I moved everything around where my kids can be at any part...I am pretty proud of my classroom.

Ben, who teaches music in the same private school, explained how he uses his classroom for movement, "It's a little small but I make it do. My classes are small enough that we can do line dances, circle dances, expressive movement. I definitely wouldn't mind having a bit more space."

It can be concluded that the perceived size of the classroom is very individual and depends how much and what kind of movement is implemented in the classroom. It seems if there is space available and participants have autonomy to create their classroom, teachers are able to integrate PA and HQM.

Many teachers from the private school also used the outside space for opportunities to implement more movement into the daily instruction. Their outside space is located on a large campus next to conservation land. Liz talked about teaching science to her eighth graders, “I took them out to the field the other day. I made the field a number line and I was like, ‘Positive acceleration! Negative acceleration!’ I was just making them run back and forth, the kinematics constraints.” Ramona critically reflected on her teaching related to the outdoors,

I think that getting outside is an area where we could, or I could personally really improve upon. I think that, from a personal level, I know that I feel better when I get outside every day in some kind of nature. That's an area of growth for me as a teacher.

Ramona did not exemplify what she wanted to do with the students outside, but Cory explained that she uses the outside space to change modality, “We do go outside to read a lot, and it's not really movement but let the kids stretch and bring their snack and I'll do a read aloud.”

Participants from both charter school networks rarely discussed the outside space as an opportunity for movement. The only participant who took her class outside regularly was Paula who said that she takes her students out when her manager is at lunch and distracted. She gave an example of an embodied experience she provided for her students,

We're going to pretend to be a huge whale. And so, we use our own bodies and I literally I had all my kids lie down one head to foot, I was like, 'Okay, now look how big this is. That's not even how big the whale is.

Also, teachers from both charter school networks have more trouble finding space for PA and HQM in their classrooms, because there is less room, and they have bigger class sizes. Teachers claimed that they still make it work, as Andrea pointed out, "I think that our space is efficient for what we have right now. Our classrooms are actually a little bit smaller than they were last year. We've been getting kids left and right from other schools throughout the year." Jamie reflected, "It's not really that big of a space." Lukas argued, "When I think about things like the gestures and the movement, in a perfect world, would we have more space? Yes." Lukas explained that his movement strategy does not need a lot of space, he mostly integrates hand gestures to make vocabulary more memorable and accessible in different ways. He depicted, "We just have rows of chairs. Some of these are simple hand gestures, so those are easy and then sometimes we'll get out of our seats so we can move more." Both Ben and Paula talk about the rows of tables they have in their classrooms, but Paula was able to rearrange it. Paula pointed out "It's better than last year. Last year, I used to have these miserable rows that didn't allow for any space."

It can be concluded that the perceived size of the classroom is very individual and depends how much and what kind of movement is implemented in the classroom. It seems if there is a certain space available and participants have autonomy to create their classroom, teachers make it work and are able to integrate PA and HQM. But of course, the perspectives of teachers about the space they have available could be different in private schools.

During the discussion about movement equipment, participants mostly talked about equipment that allows students to move while sitting. Cory listed all the seating and standing options and reflected,

I have standing desks; I have a wiggle seat for one or two kids. I have those cushions, sensory cushions for some kids...I do realize that my kids need to sit and learn in different ways, and try to identify as soon as I can, the needs of the kids.

Debra on the other hand wished to have more options for children to sit, "If there was anything, I wanted more for my classroom, it would be just more flexible seating like material, tools, more ball chairs...At the moment children have to take turns with the material." Jamie is a big fan of a certain cushion, she explained, "You put it on the floor and sit on it and so it's like kinda gives their body motion while they're just sitting. It almost calms their body when have so much energy." Ramona thinks that sometimes the wiggle stools are counterproductive and that children lose their focus even more when they sit on it. She reflected upon one student that used it, "It was like I'd look over and she'd be trying to stand on it or falling off of it, so that kind of drove me crazy." Ramona preferred equipment for students to concentrate, "Sometimes I wish that we just had individual desks, so that there was more flexibility in how to configure the space. Some kids need to sit by themselves to be able to focus." Lukas, who wanted to include more technology in his classrooms stated, "Something I've thought about is having more whiteboards on the walls so students can get up and be writing more often." Even though he used technology he did not to implement movement, "I think they [technology and movement] are sort of separate...I don't think the technology necessarily suits itself to physical movement. I find that if we're using technology, we're probably just using technology."

Based on all the interviews, it is necessary that these contextual factors encountered in a school building provide support for successful implementation of PA and HQM. It can be concluded that teachers in the charter schools look for more administrative support while teachers in the private schools want parents to be more educated about the advantages of learning in regard to PA and HQM. All the other factors are perceived individually and teachers who want to implement PA and HQM adjust to the particular situation and make it work.

Thoughts About the Diverse Results

The paired sample t-test showed similar comfortable levels for teachers to implement PA and HQM. The paired sample t-test was not statistically significance with a marginal p-value of 0.06. The qualitative interviews revealed that teachers might not have a common understanding of HQM and therefore the quantitative statistics showed a result that needed to be investigated through qualitative research. After analyzing the qualitative data, it became obvious that the marginal statistics supported the qualitative data. Meaning, teachers are more comfortable and knowledgeable in implementing PA and brain breaks over HQM.

Moreover, the skewed sample regarding the disposition to use high quality movement may have screwed up my paired sample t-test and a more diverse group may have yielded a stronger statistic.

Obviously, many teachers do not distinguish between PA and HQM. For instance, Ruth who explained an exercise that she implements on a regular basis in the meaning of it as HQM. She illustrated a popular task that she implemented into her daily classroom practice,

So one of our favorites was after students had a chance to work on texts independently,

let's say they're reading a text, reading a book, we would do a partner pair. So they would

do a handout, stand up, pair up, find someone and discuss a key question that's related to both the underlying standard and the objective of the day. Following out, we go from pair to square. So they would find another partnership, match up with them and then discuss a related but different question. And that was a really fun one because it gives kids a lot of autonomy and choice over who they were working with, where they were working, where they were working, if they're sitting or standing or on the bouncy balls or in the comfy chair, whatever kind of bag but still prioritizing that connection between one and other and they have a very clear timer. If it's four minutes for conversation, they can move around afterwards. So that was a real trail blazer.

Moreover, Paula who is a teacher in a charter school as well and has a lot of contact to other teachers in her school building explained that teachers think that they are integrating HQM but what they are really practicing is PA and brain breaks. She illustrated, "I think there's teacher support in terms of the idea of movement, but a lot more teachers think about movement in terms of like, 'Let me do this brain break in this minute' You know what I mean?" Paula continued with the reason why teachers implement more PA and brain breaks than HQM,

They're all really educated people here. And I think they would all say, 'Yes, of course, movement. Do that brain break. Do the GoNoodle. Do the thing.' But then when you actually task them with incorporate movement into your lesson and pair it with academics and make it meaningful and organic, they think that's harder. And I think that's scarier and can feel scarier.

There is a possibility that the survey did not pick up the exact perception of HQM because the term HQM was not understood in the way the researcher had anticipated. Even

though it was clearly explained at the beginning and throughout the survey. This could also mean that the idea and concept of HQM is not understood because there is not enough education and training so that educators do not have a clear concept of what HQM means. It could also mean that HQM is not the right term for teaching and learning tools in which academic content is experienced through movement. Therefore, more research is needed on what term should be used so that there is more clarity among teachers in regard to HQM. Moreover, at this point, it is also important to mention that based on the quantitative survey, 87.3% of teachers think that HQM that is combined with academic learning has a stronger effect on academic success than physical activity. Therefore, the focus during the mixed method part of this research study is mainly on HQM.

Mixed Method Results

In a mixed method study, it is essential to merge the data and develop new ideas. That said, based on the quantitative and qualitative data, teachers want to receive more training in regard to HQM and would like to collaborate with other educators within the school building and beyond to continuously implement HQM into the classroom and to improve their pedagogical practice. To develop new ideas of what teachers need in detail and to plan professional development and teachers' collaboration, there needs to be a more thorough investigation of the quantitative and qualitative data by merging the results. Therefore, the mixed method research question was addressed: What do teachers need to support their future practice of teaching academic concepts through HQM and what challenges and possibilities do they face in implementing HQM? By addressing this research question in the following paragraphs new ideas can be developed and implemented in future practices of HQM.

Merging the Data

The quantitative findings showed that teachers in all grade bands perceived to implement a similar amount of PA and HQM. Furthermore, the paired sample t-test revealed a p-value of 0.06 which is marginal and supports the qualitative findings that teachers are more comfortable to implement PA and brain breaks over HQM. Moreover, the qualitative findings supported the quantitative findings that teachers have enough resources available for PA and brain breaks and are less confident in implementing HQM. Therefore, the researcher focused on HQM during the mixed method phase to gain new knowledge how to support teachers in implementing more HQM into the daily classroom practice. Since all the quantitative and qualitative data point to the direction of teachers want to receive more professional development in HQM, the following research question needed to be addressed first: Is there an association of perceived knowledge and prior training to teach through physical activity and high quality movement in the classroom in elementary and middle school teachers?

Spearman Rho correlation statistics were calculated as opposed to Pearson r , since the monotonic aspect of the Spearman Rho statistic is more appropriate for ordinal data. The correlation coefficients suggest strong and statistically significant correlations between prior training in implementing PA in the classroom and perceived knowledge to implement PA in the classroom ($r = .74, p < .001, n = 97$). Examining the relationship between prior training in implementing HQM and perceived knowledge to implement HQM, since the focus in the mixed method analysis is on HQM yielded similar results. The relationship between received training and perceived knowledge in implementing HQM was found to have a statistically significant relationship with strong strength ($r = .78, p < .001, n = 97$). The interpretation of the statistical

significance is that more training in both PA and HQM revealed higher perceived knowledge. During the quantitative analysis the paired sample t-test showed that teachers are more comfortable to implement PA and brain breaks versus HQM. Furthermore, the qualitative data revealed that teachers had enough training, knowledge, and resources available to integrate PA in the classrooms. Therefore, the goal was to focus on professional development in HQM. Meaning that the researcher focused on HQM during the mixed method phase to gain more knowledge about what support is needed to implement HQM into the classroom.

Since the focus in the mixed method research section is on HQM and Spearman Rho correlation revealed more training means more knowledge, the following research question needed to be answered: Do elementary and middle school teachers want to receive more training in high quality movement and if yes what are the preferred methods? Nearly all teachers reported wanting more training in HQM (79.4%) regardless of the amount of such professional development they had previously. The assumption is if teachers had been ‘fully’ or ‘completely’ trained in HQM, teachers would not want more training on it. The Chi-square statistics was calculated and are not statistically significant for training for HQM $\chi^2(df = 1) = 0.166, p > .05$ and suggest this relationship does not hold. Indicating that wanting more professional development in HQM was due to chance. Meaning, teachers who do and do not have training tend to want more professional development to implement HQM into the classroom (Table 5).

Table 5*Chi-Square Analysis of Wanting More Professional Development in HQM*

	Had lower perceived HQM knowledge	Had higher perceived HQM knowledge
Did want more PD	8 <i>8.74</i>	45 <i>44.25</i>
Did not want more PD	8 <i>7.25</i>	36 <i>36.74</i>
Total		

Note: Observed counts are in regular text and expected counts are in italics.

There are similar observed frequencies of individuals with and without training who desire collaboration with colleagues and both of these frequencies are relatively high. Teachers (67.7%) reported to want to have support from other teachers and colleagues. Moreover, the Chi-square statistics was calculated and are not statistically significant for teacher collaboration: $\chi^2(df = 1) = 1.477, p > .05$. Indicating that wanting more teacher collaboration in regard to HQM was due to chance (Table 6).

Table 6

Chi-Square Analysis of Wanting More Teacher Collaboration in HQM

	Had lower perceived HQM knowledge	Had higher perceived HQM knowledge
Did want more collaboration	18 <i>15.29</i>	45 <i>37.7</i>
Did not want more collaboration	10 <i>7.25</i>	34 <i>31.29</i>
Total		

Note: Observed counts are in regular text and expected counts are in italics.

The interpretation of all of this is that the training teachers have received and collaboration with other teachers and colleagues they had, may not have been the way teachers would have liked it. Meaning that if teachers had professional development in HQM, it was not effective in improving the implementation of HQM into their classroom practice. Moreover, collaboration teachers had with other educators and or professionals also did not support teachers in implementing HQM. The conclusion of the results are that in addition to the knowledge teachers would like to receive through training and professional development, teachers would also like to have continuous collaboration in practice with other teachers within the school building and beyond.

To give the reader a clearer overview, the percentage of the descriptive statistics of the preferred methods are as follows: Only 2.9% of all participants were not interested in implementing more HQM into the classroom and therefore did not want to receive more support. The preferred support for HQM for all other participants were professional development (79.4%)

and support from other teachers and colleagues (67.7%). Moreover, teachers (41.2%) would like to receive more support from administration.

All of these results clearly show that teachers are interested in implementing more HQM into the classroom and that prior training resulted in higher perceived knowledge. Teachers also showed interest in more training and support to be more successful in integrating more HQM into the classroom. The preferred training and support were professional development and collaboration with other teachers and colleagues. Administrative support was requested as well, but with a lower percentage of demand.

These results clearly support the qualitative findings which showcased similar data, but in more detail and depth. Based on the literature and this study's results, there is a higher need to educate, support, and add resources for teachers to implement HQM in the classroom on a daily basis. Throughout the qualitative data analysis there were numerous questions about how to educate and further support teachers in practice and who else needs to be involved within the school building and beyond. Throughout the following section, these questions will be answered based on the interviews and descriptive statistics.

Support Needed

Within the following section the support teachers wished for is described through quantitative and qualitative data. The data are merged to find new ideas as to what teachers need to reinforce their classroom practice of HQM. Participants expressed that professional development, teacher collaboration within the school building and beyond, and pedagogical strategies could help them to find solutions and possibilities to implement HQM in the classroom.

Professional Development. In general, based on the quantitative data, teachers who have training in HQM have more knowledge. Although some teachers had training in HQM, they wanted more training. To be more precise, the descriptive statistics of the quantitative survey reports that teachers (79.4%) would like to receive professional development for implementing HQM into the classroom. These results were confirmed and deepened by the qualitative data. When teachers were asked during the interviews what kind of resources they need to support their future practice of teaching academic concepts through HQM, almost all participants mentioned that there is a need for professional development. Even very experienced teachers in integrating HQM were interested in more professional development. Peggy said, “Professional development would be great. I know that would be welcomed at our school too, especially for the lower schoolteachers. Not that the kids in the upper school couldn't benefit from it either.” Theresa, who already had previous training wants to have more training since she thinks that there are only pockets of HQM, but no training that really focused on this teaching tool. She described, “I haven't ever been to a professional development seminar about math and movement. We've had little pockets of professional development around just the importance of physical movement in general. I think you can build off of those opportunities.”

When I asked Lukas if he would be interested in professional development he answered, “I do. So, anything would be interesting and useful.” After Ramona expressed her interest in professional development, she explained what should be included, “I guess just learning what HQM is, what are some examples, what's the research that... I want to make sure that what I'm doing is based in something and not just something I came up with.” Ben on the other hand was really skeptical about professional development. He explained, “I don't wanna put the time in

unless it's someone really good. So I haven't done a big training for quite a while, I guess. I feel like I have a lot of resources at this point.”

Teacher Collaboration. Based on the quantitative survey, in addition to the knowledge participants would like to receive through training and professional development, teachers would also like to have continuous collaboration in practice with other teachers within the school building and beyond. Participants (67.7%) mentioned that they would like teachers’ collaboration to support their practice of HQM in the classroom. During the interviews, teachers argued that there should be teachers’ collaboration after teachers’ training and even some teacher leadership of HQM within that teamwork.

Theresa said that she wants to talk face to face with teachers who know the class she teaches well to improve the implementation of high quality. She illustrated,

So, I think sometimes just having that opportunity to talk to other teachers is a great way to explore movement. And then I think that's a huge one for me and I'm lucky in that sense that I work with a lot of teachers, so I have that opportunity to talk with them.

Charlotte would prefer a collaboration that takes place in her school building in which she could talk to teachers on a regular basis. She elaborated, “And for some reason at this school, they just haven't set up a good system of people giving you feedback. And I think that's the best way that teachers learn.” She continued that there needs to be an assigned time to collaborate,

Having dedicated time for teachers to get together and evaluate each other. Not in an invasive way, but what I've done before, is where you have a group of teachers that gets together and says, ‘Okay, we're gonna think about mindful movement.’

She gave an example of what the observation that focuses on HQM could look like,

Then they come into your classroom and they watch and then they say, 'Well, I noticed that these kids over here were not, or whatever, or maybe you need to set it up more.' Or just getting another eye on it is really nice.

Charlotte shared, "I think I have asked for, and what I would really like more often is the support of another teacher as like a buddy, or three, to give you feedback." Debra often feels that she would like to say something in regard to HQM to other teachers. She explained,

In my head, I'm like- you almost wanna like stop, you know? And say, 'Okay, alright like that's enough' but you wanna give that teacher you know, respect to let them do their thing. But, I think for me, I was always like, movement. Like for me that was just huge.

She further elaborated,

Having the time to talk to other teachers. Cause sometimes teachers are doing things and we don't know. You should connect with other teachers and go in and observe them and have them observe you and I think that's good. But I think one thing that could come out of it and you know, instead of like, okay come in and observe. It would be almost like, hey like when you come in and observe, let me know what you think about movement in my classroom.

Cory explained how the videos of the PE teacher inspired her and therefore made her movement video much better. She illustrated, "I think his videos encouraged me to make shorter videos for my students and to also do things that were kind of silly or a little whacky just to maintain some engagement." Ramona provided her perspective on teacher collaboration,

I think that I'm someone who thrives in situations where I feel like we're well planned, and I thought through all the great things that could happen then all the potential negative

implications and knowing how to address them. So, I think it would really just be a matter of me having the time or having a thought partner to map out how everything could look.

Theresa wants to continuously improve her teaching and therefore considered more collaboration, “I think some of it is just my own creativity in coming up with a day to do that, and it’s talking to other teachers and expanding that [HQM]. I think if you ask me in 20 years, I would probably say the same thing, because, as a teacher, I think you should always be thinking of ways to refine your work.”

Some teachers talked about collaboration beyond the school building and how successful it was for implementing HQM. Ruth talked about the support she gets from other teachers through social media,

If somebody posts something that says, ‘Hey, this went really well for my class.’ I’m going to feel more likely to try it knowing that someone, regardless of how closely connected we are, has felt successful and their students have had higher outcomes because of it.

Of course, teachers collaboration beyond the school building could take place through social media. Ruth depicted how this has worked for her,

It’s just been such a great place for great ideas to emerge and for people to collaborate and share, especially across lines that maybe in the past have been too big of failures for people to connect with one and other. The fact that I’m using someone’s ideas from Vancouver or from Glendora or from New York City, it definitely helps to triangulate the best of the best very quickly.

Teachers identified that some form of leadership is needed within the collaboration to continuously implement HQM. Ramona explained,

To help follow through with the new information learned, to have another touch point at school. So, whether it's someone else who also went to the professional development or someone who is kind of the trainer or the leader in that area and can do observations and give feedback. I think that having accountability is really important for me because, like I said, there's so many things that you're trying to do as a teacher and implement. Unless I have someone, who is holding me accountable and saying, 'Hey, let's talk about how you're going to incorporate movement,' then I think it's easy for it to fall through the cracks.

Ruth agreed that after professional development the collaboration and support needs to continue. She considered that leadership within that collaboration could be a thriving force, "I think ongoing PD would be really important, either learning from an administrator in my school or a teacher who's done this really well." Jamie reflected on how much she learned from educators and other teachers and colleagues when she was in her first year of teaching, "I've learned so much from my colleagues...I always go to them for anything because they just have more experience than I do, which is very helpful. I just think in any situation, teachers collaboration is very helpful." She further elaborated, "I had so much support. People would either record me as well and then we could watch it and be like that didn't go well or this is what we can do...just for the movement aspect, all of that helps."

Liz, who could be a leader in a HQM group said that she did not have any opportunity to share her ideas. She regretted her silence because she believes in HQM and her skills to develop

pedagogical strategies to implement HQM. “I’m sorry that I never really got a chance to share this with the rest of the faculty. I would share it...certainly the learning specialist knows that I do this. But I never really got the chance to share.” Liz explained in more detail that observations and giving each other feedback is institutionalized in her school, but the collaboration time was not reserved for HQM. Liz continued,

I will say that one of the things I love about my school is that we're expected to observe each other. So I'm expected to do three observations and have three people observe me. Just peers, peer to peer, teacher to teacher. I always take something away from my observations. I have never observed a teacher and walked away like, well, I have nothing to learn from them.

Ruth who works in another school setting and building said that the teams are working,

I would say we are exceptionally collaborative on my team. We have a prep time together once a day. We’re constantly on text message or email. But I think most of our conversations have been around academic outputs because that's really where the bulk of our evaluations come from, that's what our children are looking for when they come in.

Makeeba who has no experience in implementing HQM said,

I think teacher collaboration would be wonderful. I think we need to start honestly with the administration though becoming more educated, because if they're more educated then they would definitely be more supportive of teachers and having kids move in classrooms. If we don't have that support from them, then it's going to be harder to implement that in our own classroom.

Clearly, teachers' collaboration is very important in successfully implementing HQM, but of course administrative support is required for a strong teacher collaboration. By involving administration into professional development and collaboration the potential success of implementing HQM within the whole school building can become more likely.

Strategies and Other Resources. Some participants expressed that they would appreciate having more resources and especially more concrete strategies and examples at hand. Ramona said that she would like to have more concepts of HQM available, "I think just seeing more examples of it working well in the classroom would be helpful. That you could implement in your classroom, like differentiated or not, or whole, or...but you would have some resource at hand." Cory mentioned that she would like to have more pedagogical tools in language arts because she does not have many ideas in this particular subject. She explained, "I would like to have some ideas for how to have more HQM in language arts. I have noticed, like you've noticed, that it comes more naturally to me in certain subjects over others." Peggy suggested, "Definitely some internet resources, songs." Even though Liz has generated ideas on her own, she still wants to have more resources, "Oh! I would love to have more resources! I'm proud of what I have developed but of course I would love more resources. I'm sure there's much more I could be doing that I haven't thought of yet." On the other hand, Paula expressed that she was really happy with what she has,

I'm actually fine the way I am because I really, really like having autonomy. Like I said, I wish I had more autonomy. I think that that resource would be great for teachers who are like, 'I really want to do this but I don't know how.' The struggle I foresee is between schools, curriculum is different. So it's really difficult. I wouldn't know what the resource

would look like. Again, I love autonomy. I love having my freedom. I would love the resource in terms of, for example, if I'm really stuck and Pinterest is not helping.

Paula raised a very important point that it is very difficult to develop ideas and resources for each individual teacher, in each individual classroom, for each individual subject. The concept of teachers learning the craft through professional development to easily and quickly develop ideas for their classroom, their students, and their subject is much more realistic. Professional development needs to be created so that teachers develop their own HQM, share it with other teachers in their school building and beyond so that the teaching method of HQM can be sustainable within the school system.

Teachers who have a lot of experience could take on a leadership role and acquire new and concrete ideas and resources through collaboration with other teachers. Paula, who mostly uses her own developed strategies shared how other teachers would benefit from learning new strategies. She explained, “There are teachers who they'll take the curriculum, and they'll teach it that way. They'll take that resource [high quality exercise], and they'll do it that way. So I think it [acquire new ideas] can be useful.” This can be true for very experienced teachers who already implement HQM, such as Liz, “I don't have one [HQM exercise] for everything I teach. I don't have one for every day. So, there is more room for growth here. It's been very spontaneous and very organic and natural for me to come up with it.” For some teachers, it is very effortless to come up with new ideas and this talent and craft of developing new HQM exercises could be a part of professional development and teacher collaboration. There are many teachers who say that ideas for HQM come quite instinctively. In the quantitative survey, 46.1% of the participants said that they feel comfortable integrating HQM because it comes naturally to them.

Challenges and Possibilities

Based on the conversations with the participants it can be concluded that teachers are facing challenges with their pedagogical practices of HQM. Also, the quantitative survey showed that teachers (33.4%) think that integrating high-quality movement in the classroom would cause class management issues or would be disruptive. This data raised more questions, such as: What else do teachers think is challenging in implementing HQM in the classroom? What other challenges do teachers face that need to be addressed within professional development or teacher's collaboration so that teachers can integrate advanced HQM?

The challenges that teachers encounter include push back from students because they feel silly to move in the classroom, teachers fear a loss of control, and potential safety concerns for students. Teachers also think that there is not enough time to develop pedagogical strategies and that HQM is not a priority within the whole school system. Moreover, even though it is so important for the success of implementing HQM, teachers lack communication and collaboration within the school building in regard to HQM. Lastly, teachers want and need to integrate students with disabilities into the pedagogies of HQM. The teachers themselves mentioned possible solutions as to how to overcome these challenges. These challenges and possibilities are important directories on how to create professional development and teachers' collaboration within the school building and beyond in more detail to support teachers in their classroom practice of implementing HQM.

Push Back. Teachers receive push back from students when implementing HQM. Participants assumed that most of the time they push back is because students feel silly to physically move in the classroom. Ben explained that even though children feel silly,

embodiment of the academic content is necessary for the academic learning and that it is important to create an environment for children to experience that. He clarified,

Sometimes to be able to create an environment where it's not just silly, but, you know, you're really getting kids to experience the art. I mean, I think that's kind of the art of teaching if you're doing a really good job trying to kind of weave that. So, kids are invested, they're maybe having fun, but then they're also maybe experiencing music in a way that they might not have if you didn't lay it out a certain way.

Cory thought that, "One challenge is occasionally a kid thinks that the movement is stupid or that they feel silly doing it, and they just don't want to." Cory's solution was different from Ben's. She forces children to participate in the HQM and "I just tell them they have to do it...I don't indulge their feeling of feeling silly." One reason that students feel silly to move while learning is that sometimes teachers feel silly moving in the classroom themselves. Cory admitted, "I'm a little embarrassed by the video [HQM geometry video] because it's just so silly."

Liz, who teaches science in middle school, says that teenagers roll their eyes sometimes and "try to get away with not doing the movement." Participants also expressed that peer pressure and the group dynamic can play a crucial role in successfully implementing HQM for academic learning. Liz illustrated, "So this year, I had this one girl who just hated me. She just had this bone to pick with me all of the time. She was like that with a lot of her teachers. She just flat out refused to move." It was very challenging for Liz to deal with one student that influenced the whole class dynamic. For Liz, the best way was to react to this push back with a sense of humor and being herself a good movement role model. She explained,

If the kids have a sense of humor and some of the other kids pick up on it being silly and funny, then if I can get a critical mass of kids to decide that it's silly and funny and we're doing it for the laugh, then the rest usually do it too. This year's a little hard because the class is very cynical, so sometimes I can't get them to do it. And in that case, I just bop around like a silly person at the front of the room and it's fine. But they're missing out. If they won't do it, they're missing out.

For Ben, his challenge was when he received students from other schools. He explained, “We had some new kids come to the school at a certain point, some years back, and they weren't used to the kind of stuff that we do. So yeah, that was a little challenging.” Charlotte confirmed Ben’s theory that when students are used to physical movement from early on it helps students not feeling silly while moving. Charlotte, who teaches kindergarten, asked for volunteers to demonstrate the HQM exercise and she received a positive response, “They want to be picked. They wanna, you know, do something so they get a little bit more focused.” If the implementation and culture of HQM could start in the lowest grades in a school building or district, it is possible that students feel less silly while moving when students get older. But of course, they are adolescents and their embarrassment come from other influences too.

An institutional implementation of HQM could be a possibility for students to get used to HQM in the classroom and be physically active in front of each other from the early grades. Building a HQM culture in the school building and beyond can be a solution of not feeling silly and inducing push back from students. Certainly, some teachers offered other solutions like reacting to push back with humor or ignoring it. These other solutions could be integrated and taught to teachers by other teachers within a collaboration. Some teachers, such as Liz, could

take over some teacher leader positions in the collaboration group and provide strategies so that educators have more pedagogical tools in hand to react when students push back.

Fear of Losing Control. Another challenge for teachers in implementing HQM and academic content is that they have a fear of losing control in the classroom. For some participants, the risk of losing control over the students while implementing HQM was not worth the advantages HQM offers. Ramona only feels comfortable in implementing brain breaks and PA in the classroom. She disclosed,

I think the movement brain breaks I do right now, I do that because it's been easy to get the kids to resettle back into the learning. I think my hesitation and my fear is that other, more movement involved breaks will...it'll be harder to get the kids back and settled.

Ramona further explained that her class is challenging and the more consistency the class has, the better the class functions and that she does not deviate from that because it worked so well. For Ramona, losing control means, "Loud, wild, not accomplishing what we hoped to accomplish." Ramona explained that she tried several times to implement HQM into the classroom but,

There's a group of kids who take it too far, who can't rein it back in then, and then there's a group of kids who don't really do it, they're just standing watching because they're maybe shy or they're not used to it. And then there's a few kids who are trying the movement, doing it in earnest, but there's the group that is too silly and takes it too far...and then you have to spend the time reining back in, and then, 'Okay, let's sit quietly for a minute, we need to calm down,' you know.

Ruth had similar experiences in the past. She revealed that students being loud and wild and therefore not learn what they were supposed to, was one of her biggest struggles when she let go of control. She explained how she used to react,

I felt myself not being as in control and I would revert back to some of the older ways. So basically like, 'Oh, no. We're going to stay in our rows. We're not going to move around.' ... it's like wanting to reclaim my leadership presence in the classroom when things were feeling tough.

One reaction or possibility to losing control in the classroom is to structure HQM in a way that students know the teacher's expectations. Debra explained how important setting the stage is at the beginning of the school year to reinforce the teacher's expectations,

We do take that time, those first six weeks of school with a responsive classroom, and I model every little thing... Because I want them to know that we are going to do things that are a little fun, a little loud, and we are going to get a little wild sometimes, but that we have to be able to, I call it "bring it to zero". . So, there are times where we're doing something super fun, they're moving around, and I just hold up, and I just go "five, four, three, two, one" and bring it to zero, and I close my hand...They're really good, I will say. They're really good about just sitting down. I think if we model it and we really explain it...They've been very successful with bringing it to zero. We've done stuff that gets loud, it gets silly, but I just say, 'Bring it to zero.'

Charlotte uses a little bell as a protocol so that children know when to resettle. Ruth shared her strategy to get students focused,

Obviously if you're ramping up your nervous system, you have to then bring it back down in order to bring your focus back to your schoolwork. So that kind of thing that we built in as a part of our daily routine. That was very successful.

Jamie's strategy is to give students the opportunity to live out their physical needs by giving them the option to do jumping jacks or breathing activities.

Clearly, some teachers have positive strategies, routines, and protocols to get students to refocus after engaging in movement. Some teachers do not implement movement because they fear that they cannot accomplish their academic outcomes. As part of the professional development on HQM, educators need to learn that noise and organized 'chaos' while implementing HQM that is combined with academic learning does not mean that students are not learning. Prior socialization and learned behaviors tell us that disarray is not a good foundation of learning. But children learn differently and this needs to be taken into account. Moreover, it is very counterproductive if teachers feel judged by others when implementing movement and students are wild and loud. Paula explained,

People will sometimes walk in here and be like, 'It's chaos in here.' I'm like, 'Actually, it's not. It's actually not. You just feel like it's chaotic because you don't know what's going on. All my kids know their purpose. All my kids know what they're doing. All my kids know where they're going to stop. All my kids know that I...' It is well set up. And it is work and it's a lot of work and it's a lot of extra work, but I don't care. Ultimately, it's for the betterment of the children and for myself. I can't sit and teach all day.

This mindset needs to change among educators, but also among parents and other people that are in the school setting for teachers to implement HQM successfully and without fear.

Safety for Students. Related to losing control in the classroom, the challenge of keeping students safe when implementing high quality was discussed among participants. Charlotte recognized safety problems in her science classroom when children got out of control while participating in HQM. At the beginning of a HQM lesson, she instructed the children and told them, “‘Just be safe with your body you know, we’re doing this for fun but also to learn it, if you get a little out of control, we’re gonna have to stop.’ So they, they kinda get the warning first.” Charlotte added that “You do have to kind of keep them [students] safe and the rules in the science classroom are they can’t just go around and touch things cause you never know what they’re gonna touch.” Makeeba, who does not implement movement at all, thinks that the safety problem is one factor that is hindering her to implement HQM into her classroom. She stated,

The only reason I would say we shouldn't integrate movement into the classroom is because we haven't figured out a way to do it safely. If we can do that in an environment where it's safe for everyone, I don't see why teachers shouldn't involve movement in the classroom.

Jamie is sometimes worried that children may hurt themselves participating in HQM, “The only issue that I have is when they like tip their chair cause I’m afraid they’re gonna fall back and like hit their head. As long as they’re not like harming their friends or like putting themselves in danger, I like don’t care.” Being sure that children are safe may help teachers to let go a little bit of the fear of losing control. When I asked Andrea if she fears that students can have an accident in her classroom while being physically active, she replied,

No, absolutely not. They are aware of their space. They're aware of their size. There's things like being tall and things like that...but, no, I never fear that they're going to hurt

themselves, just because they're already aware of their space... They're very comfortable with their own space.

Children learn from the teachers how to be physical activity in the classroom, by moving around and navigating their bodies in familiar spaces. The younger they are taught and with clear rules, routines, and expectations, injuries and accidents can be prevented.

Not a Priority and Not Enough Time. Another objection is that teachers do not have enough time to come up with useful pedagogical strategies to implement meaningful HQM in the classroom because they have so many other projects going on within the school building. Ramona described that there are other objectives that teachers are required to implement during the school year, because HQM is not a priority and a topic within the school building,

There's so much content that we're trying to cover throughout the day and the curriculum expectations are so high, that sometimes it just feels overwhelming to add in something new. We're piloting a new literacy program this year, so it's hard when you're already doing something brand new, to also incorporate a ton of movement or high quality movement, when you don't really know what you're doing.

She continued that there are other outcomes teachers and students have to accomplish that HQM is not a priority,

There are so many different needs of the students, particularly this year. I have a class with a lot of learning needs. So, I think that there's already so much differentiation going on within the day that also it just makes it harder to add in something new.

Charlotte agreed that she has the same concerns and that she would need time to focus on HQM. She clarified, "I need the time to work on it and also the focus on it. And there's so many other

things to focus on too, like inclusivity and diversity. And to just keep working on these kinds of things, it takes a while.” In addition, Charlotte considered that she instructs so many different grades because she teaches science from kindergarten to fourth grade. Therefore, she does not have the time to come up with ideas for all the different classes. She analyzed,

With five grades, it's really hard to change. If I had one class, I feel like I could just think about that one class, but since I have five different grades, I'm going from one grade, to the next grade, to the next grade, and then, I have to think about the kids, and the behavior problems.

Theresa talked about how time is a factor that hinders her implementation of HQM. She pointed out, “Sometimes time is a factor. Sometimes it’s just coming up with an idea for it, so kind of moving outside of what I have typically done and thinking of a way to do it in a meaningful way.” Ruth explained that as long as the test scores are high enough, teachers and the school support the movement. But if not, teachers in her school building cut back first on the HQM, because most likely, teachers are still not fully convinced that teaching academic content combined with movement is an efficient way for teaching and learning to occur. Ruth examined,

I think despite of all our best efforts, some of the bad habits that were established, and the school has created are still alive and well. So, we’re getting better about letting kids have autonomy and a choice and that movement but only if their test scores are high enough. If the averages are dipping from year to year, the first thing that's going to go is the newest initiative, which for us would be the addition of movement and choice.

Professional development, school wide collaboration, and acquiring new pedagogical strategies together during these initiatives could take away the burden of investing too much time in

developing new ideas. Moreover, teachers need to consider HQM as a valuable teaching tool, which is supported by those participants who learned from professional development or during their teacher preparation.

Right Amount of Movement. Some of the participants observed that students occasionally cannot focus on moving and the academic content at the same time. Finding the right balance between physical activity and academics can be challenging. As an example, Charlotte illustrated the obstacle she faced with a HQM exercise,

Of course, the body movement is pretty hard that they're doing. So if you have the sun and the moon and you have the earth, well one person is the earth and the moon is going around the earth, and the earth is going around the sun, that's like just kind of hilarious because they have to move slow enough for the moon to keep going around the earth and then the earth is trying to go around the sun.

But she said that children were able to do it and that the more they are doing exercises like this the better they become. Theresa explained that she learned not to correct her students too much while they are experiencing academic content physically because they are learning more if she lets them try out things. She depicted a part of her lesson,

The hardest thing for them is the spatial reasoning that they have to do with their partner in laying the spacing out of their circle and their Popsicle sticks. I, over time, have learned to not try to control that as much, because I think the more that I try and control and intervene, the less learning that they do.

Of course, as mentioned at the beginning of this topic, it is challenging to implement the right amount of physical activity to experience the academic content so that children are still learning.

Teachers need to try out and experiment and while doing that children should become better at focusing on both, the movement and the academics.

Communication and Collaboration. Participants mentioned the challenge of communication with other teachers and that the support system within the school building does not work properly. Moreover, some of the participants noted that other teachers are not educated in the same way in regard to HQM. Debra complained that sometimes she observed teachers in the classroom and that they let students sit for too long,

You know some [teachers] come in this year and they would work with my kids on something and I sort of would sit there and watch...we're like twenty minutes in and my kids had not moved...this is just in general with teachers, I think sometimes teachers will... think that someone's misbehaving or not paying attention and it's- I think sometimes we have to stop and think why.

Participants shared that the communication between teachers does not work well regarding HQM within the school building. Charlotte expressed that she wanted to give children a break from sitting at the tables during a lesson of hers and let them sit on the rug instead until she realized, "A lot of us are making them sit on the rug. The morning meeting they're on the rug. And then they transition and in music they're on the rug. They've been sitting on the ground for three hours already." Charlotte explained that the communication between teachers are not always working and even though teachers meant well and incorporate movement they are doing the opposite.

Ruth explained in detail the lack of communication in her school building on HQM,

I would say we are exceptionally collaborative on my team. We have a prep time together once a day. We're constantly on text message or email, whatever. But I think most of our

conversations have been around academic outputs because that's really where the bulk of our evaluations come from, that's what our children are looking for when they come in.

Paula explained that one reason could be that teachers are not educated enough in HQM to collaborate. She even mentioned that other people do not understand what she is doing in the classroom when she implements HQM. By making HQM a more common and popular learning and teaching tool the stigma of chaos and noise means no learning can be addressed and erased.

Students' Disabilities. One area that has not been discussed and the researcher acknowledges that she did not ask questions directly to the participants is students with disabilities and HQM. Ben brought up a very important point that teachers need to consider,

I mean, I know sometimes in a public school you might have a child who needed a wheelchair or something like that. In our school, I haven't had that challenge actually.

Most of our kids are moving... I remember being really amazed because for a while I was doing a kind of folk dancing and there was one person who was doing it in a wheelchair.

They figured out a way to do it. That's pretty neat.

Special attention and education is needed to be able to instruct children with disabilities with HQM. This should be a part of the professional development provided to teachers.

It can be concluded that the challenges teacher face implementing HQM in the classroom can be addressed through professional development, school collaboration, and teacher leadership. The identified obstacles are push backs, fear of losing control, not a priority and not enough time for HQM, right amount of movement, communication and collaboration with teacher colleagues, and students' disabilities. These challenges and possibilities of implementing HQM can help navigate and plan professional development and teacher collaboration within the

school building and beyond. In chapter five the interpretations of the findings, implications, and limitations of this study are further discussed.

CHAPTER V

DISCUSSION, IMPLICATIONS, AND CONCLUSION

The aim of this study was to explore teachers' perceptions and perspectives of PA and HQM in their classroom practice within two charter school networks and a private school in the Northeast region of the United States. This research was warranted because PA and HQM integrated in the classroom have many advantages for students. Integrated on a regular basis, students may find benefits with their physical and mental health, cognition, and academic success. Based on the literature, in addition to all the mentioned benefits, HQM is a more appropriate way to let students be physically active in the classroom because academics and movement can be combined, and teachers do not "lose" time implementing movement (Donnelly et al., 2016; McMullen et al., 2016). In addition, students can learn the academic content through an embodied experience and the learning effect of the academic subject is increased (Bartholomew et al., 2018; Donnelly & Lambourne, 2011; Kirk & Kirk, 2016; Kirk et al., 2014; Mahar et al., 2006; Riley, 2015; Schmidt et al., 2015; Schmidt et al., 2019). Based on the literature and this research study, HQM and the embodiment of academics is a highly effective learning and teaching tool for students and teachers (Martin & Murtagh, 2016; 2107).

There were two distinct phases in this explanatory mixed method research study. First, a quantitative survey was administered to investigate teachers' perceptions and then the qualitative interviews were conducted to find out more about teachers perspectives of HQM in the classroom. Thirteen teachers were interviewed for the initial semi structured interview. A follow up interview was conducted with eight of the 13 participants in which teachers reflected on a lesson that teachers implemented in the classroom. At the end of analysis, the data was merged,

and the main mixed method research question was addressed: What do teachers need to support their future practice of teaching academic concepts through HQM and what challenges and possibilities do they face in implementing HQM? All data was collected by Qualtrics, audio recorded interviews, and artifacts. Data analysis resulted in five major themes: (1) Perspectives and reflection of PA and HQM, (2) Integration of pedagogical practices related to PA and HQM, (3) Contextual factors, (4) Support needed, and (5) Challenges and possibilities. The conclusions and the findings from the quantitative survey and the themes will be used to inform the discussion, implications, and conclusions of this study.

In this chapter, the researcher begins by discussing the key findings and their association to the current literature. Next, she offers the implications based on the findings, which include continuous professional development, teachers' collaboration in practice, and preservice teacher education. The researcher then explains the limitations of the study. Finally, she provides suggestions for future research.

Discussion of Findings

Engaging in movement on a regular basis, students may find benefits with their physical health (Annesi et al., 2017; Daniels et al., 2011; Gonzales-Gross & Meléndez, 2013; Honas et al., 2008; Honas et al., 2016; Strong et al., 2005;), mental health (Biddle & Asare, 2011; Fox, 1999; Kravitz, 2007; Larun et al., 2006; Rasmussen & Laumann 2013; Teychenne et al., 2015; Hrafnkelsdottir et al., 2018; Trinh et al., 2015), cognition (Cadenas-Sánchez et al., 2016; Chaddock et al., 2011; Hillman et al., 2008; Hillman et al., 2011), and academic success (Barnard et al., 2014; Barr-Anderson et al., 2011; Bartholomew & Jowers 2011; De Bruijn et al., 2018; Camahalan, 2015; Carlson et al. 2008; Castelli et al., 2007; Dalziell et al., 2015; Ericsson,

2008; Erwin et al., 2012; Fredericks et al., 2006; Haapala et al., 2017; Jaakkola et al., 2015; Käll et al., 2014; Kantomaa et al., 2015; Kibbe, 2011; Mead et al., 2016). This research was warranted because PA and HQM integrated in the classroom offer many advantages for students.

Based on the literature, in addition to all the aforementioned benefits, HQM is a more appropriate way to let students be physically active in the classroom because academics and movement can be combined, and teachers do not “lose” time implementing movement (Donnelly et al., 2016; McMullen et al., 2016, Martin & Murtagh, 2017). In addition, students can learn the academic content through an embodied experience and the learning effect of the academic subject is increased (Bartholomew et al. 2018; Donnelly & Lambourne, 2011; Kirk & Kirk, 2016; Kirk et al., 2014; Mahar et al., 2006; Riley, 2015; Padial-Ruz et al., 2019; Schmidt et al., 2015; Schmidt et al., 2019). Based on the literature and this research study, HQM and embodiment of the academics is a highly effective learning and teaching tool for students and teachers.

Based on this investigation, teachers want to implement more movement into the classroom and to do so, need to receive more training in this area. The issues with implementing HQM into the classroom is related to not having enough awareness and clarity, education and support within embodied experiences of academic concepts. This means that teachers are willing and have the motivation to implement HQM into the classroom, but often do not know how because they do not have enough training and the concept of HQM is not fully understood. Based on the quantitative and the qualitative data, teachers who have more training have more knowledge. Even teachers with training want to have further training in HQM. More precisely,

teachers wish for additional professional development, teacher collaboration, and pedagogical strategies and resources for their classroom in regard to HQM.

There were two key findings within this research study. First, the teachers did not have a full understanding of the term HQM. As mentioned earlier, the expression HQM was invented by the researcher based on experience, education, and a pilot study and is not an official term. Moreover, the concept and interpretation of HQM was also perceived diversely by teachers. Second, teachers need more support to successfully implement HQM by professional development, teacher collaboration, and resources like pedagogical strategies so that students can experience academic content physically. These two key findings are presented separately and are as follows: common understanding of the term and concept of high quality movement and support for teachers to implement HQM by continuous professional development and teacher collaboration within the school building and beyond. In addition, my discussion will establish how some findings support the current literature, while others offer new insights that expand upon previous research.

Common Understanding of the Term and Concept

First, based on the quantitative and qualitative data, it can be concluded that teachers do not have a common understanding of the term and concept of high quality movement. Paula, an experienced participant in HQM, mentioned that she used the term and the concept of “movement integration in the academics” during her education and was questioning the expression high quality movement because it can be interpreted as the movement needs to be beautiful and expressive. Cory, a third grade teacher, and Kelly, a science teacher in the lower grades, admitted that they did not know the term. The researcher was aware of the discrepancy of

the term high quality movement and decided beforehand to use it because there was not a consist expression and concept of high quality movement in the literature.

The term high quality movement was invented by the researcher of this study because the definition of this concept in the literature varies greatly. For example, McMullen et al. (2016) defines high quality movement as “academically-oriented movement integration lessons” or “movement lessons that are designed to be integrated with the existing curriculum” whereas Donnelly et al. (2016) defined high quality movement as “active lessons in relation to improved academic achievement” Another example by Webster et al. (2019) defined high quality movement as “movement integration” or “teaching academic lessons that incorporate PA” or “infusing PA into academic lessons.” The researcher chose the term high quality movement because in her view, based on experience, education, and the pilot study it best represented the concept of being physically engaged in the content. The term is also short and not complicated. However, after reading and engaging in the literature of embodiment, diving deep into the theoretical framework of Johnson, and collecting and analyzing the data in this research study, the researcher realized that high quality movement was not the term that helped the researcher to investigate the concept of embodied pedagogies in the classroom. A different term for the concept of embodied learning would help teachers, and all involved in education to understand the concept better.

Going back to the literature of embodiment and the theoretical framework it must be mentioned that the researcher engaged into it from early on in this research study, but it was too late to change the term from high quality movement to embodied pedagogy. Based on the literature, movement is the natural way to learn for children (Dewey, 1897/1908; Johnson, 2007;

Montessori, 1949/1995; Plato, 350 BCE/2007; Ratey, 2008; Rousseau, 1762/1979). Drawing on Merleau-Ponty's phenomenology, Satina and Hultgren (2001) define an embodied perspective of education as one that "recognize[s] the body as the subject of human experience" (p. 521). Dewey and Freire, Nguyen and Larson (2015) define embodied pedagogy as "learning that joins body and mind in a physical and mental act of knowledge construction" (p. 332). Embodied pedagogies are those that invite students to "construct knowledge in physical, sensing, or being approaches" (p. 334). They go on to identify three salient characteristics of embodied pedagogies: developing bodily and spatial awareness, unifying the mind and body in the learning process, and developing awareness of the body's role in socialization (Forgasz & McDonough, 2017; Nguyen & Larson, 2015).

Johnson (2007) explains that everything that is in the thoughts needs to be experienced through the senses. He writes, "Movement is one of the conditions for our sense of what our world is like and who we are. A great deal of our perceptual knowledge comes from movement, both our bodily motions and our interaction with moving objects" (Johnson, 2007, p.19).

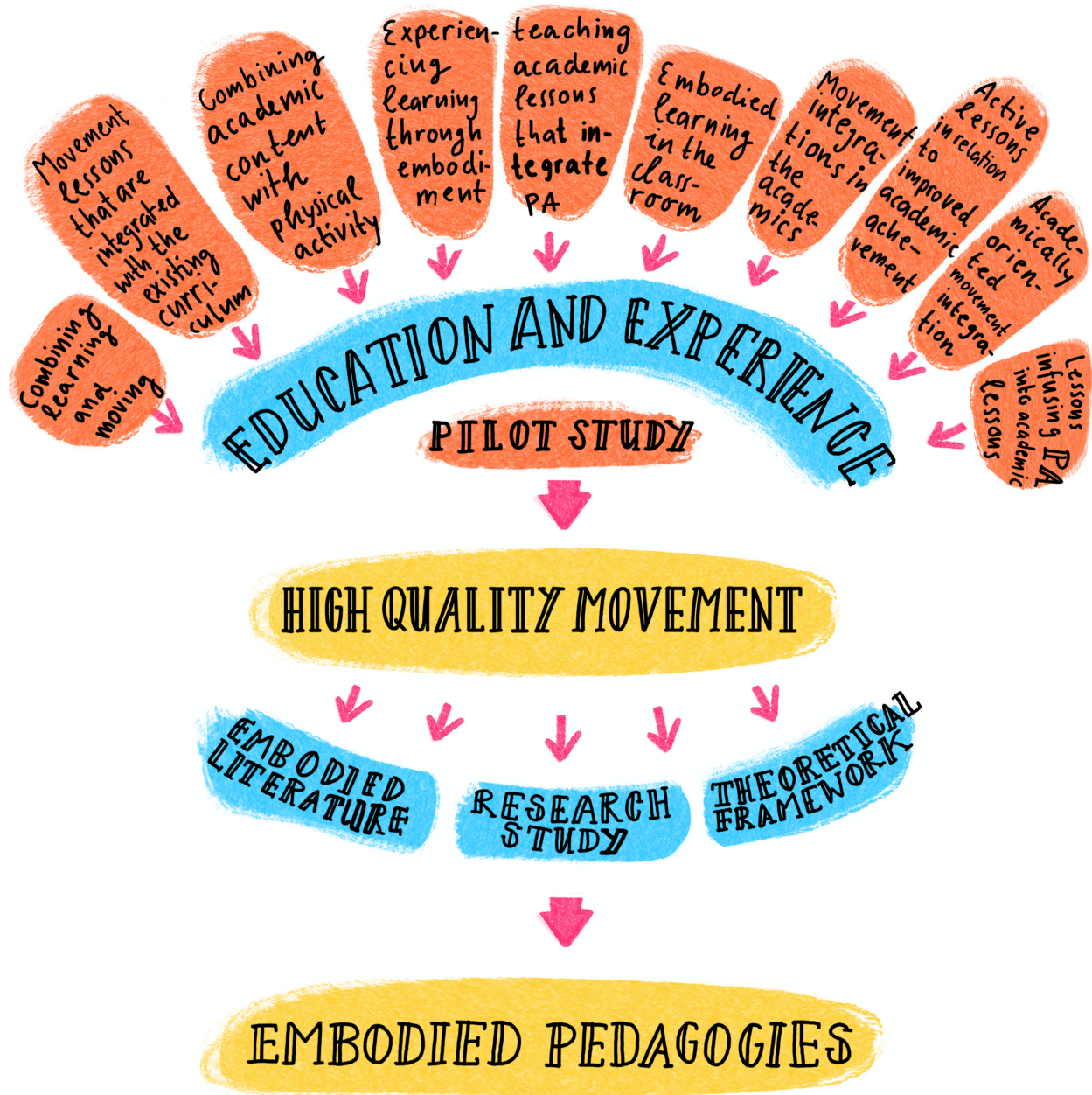
Johnson says that the body and mind cannot be separated, and that embodiment is crucial for learning. He states, "Movement is thus one of the principal ways by which we learn the meaning of things and acquire our ever-growing sense of what our world is like" (p. 21).

Johnson (2017) argues for the central importance of our bodies in everything we experience, mean, think, say, value, and do. The reason for choosing Johnson's theory for my own theoretical framework was because he synthesizes and updates earlier, important scholars such as John Dewey and Maurice Merleau-Ponty, making their theories more compatible with the contemporary discourse in the United States and other countries. Reembracing the theoretical

framework of Johnson, it can be more textualized that embodied pedagogies is the term or concept that the researcher wanted to be grasp from the teachers and studied in this investigation. Although looking through the theoretical lens of what Johnson meant by embodiment throughout this research study, the researcher did not use the accurate term that all participants could grasp the concept in the way the researcher hoped. Another reason was that the researcher thought that embodied pedagogies was too general. Based on all the findings and insights the researcher experienced through this research study, the researcher proposes to use the term embodied pedagogies for the concept that entails movement integration into academics. The process that the researcher went through can be found in Figure 4.

Figure 4

New Definition of the Term Embodied Pedagogies



Throughout this research study it became obvious that the term needs to be changed from high quality movement to embodied pedagogies so that educators have a better understanding of what is entailed in the concepts. Although, the researcher is aware that she has to identify the concept of embodied pedagogy. The researcher argues for embodied pedagogies become a universal expression when talking about integrating movement into academic content. This brings us to the second part of this first key finding, what was understood by the concept of HQM. The results of this mixed method research study show that teachers do not have a common understanding of the concept of HQM. Based on the literature, HQM, PA that is connected to academic content, or embodied academic experiences is an able learning and teaching tool. Besides all of the benefits for physical and mental health, cognition, brain development, and academic learning, teachers can educate based on students' needs and they do not "lose" time implementing PA. Therefore, implementing embodied pedagogies, or HQM as the researcher interpreted it, is more appropriate to PA because teachers need to cover an extensive curriculum and embodied pedagogies gives the teachers the opportunity to not only teach the academic content but also take care of students' movement needs (McMullen et al., 2016).

In a systematic review of literature, Donnelly et al. (2016) found embodied pedagogies, or HQM as the researcher interpreted it, allows students to experience the academic concepts physically appears to have the most consistent positive association in raising academic achievement compared to just brain breaks and PA in the classroom. Other research as well stated that moderate to vigorous HQM has the greatest effect on executive function (Bartholomew, 2019; Benzing et al., 2016; Jäger et al., 2014; Kubesch et al., 2009; Pesce, 2012).

There were similar perceptions and perspectives of teachers in this mixed method research study and participants overall thought that HQM has an increased effect of academic learning over just PA in the classroom. But in the literature and in this research study, teachers claimed that HQM is not a priority because when test scores are low, movement will be erased. For example, Ruth said, if test scores are dipping at her school then the newest implementation like movement would be erased again.

Because of all these factors, the concept of embodied pedagogies, or HQM as the researcher interpreted it, needs to be understood in the same way by educators. In this research study, it became obvious that this was not the case. For example, Ben the music teacher, grasped and practiced the concept in the way that the literature and the researcher understood the concept of HQM. Ben explained that in his domain learning the academic concept of music through a bodily experience makes a lot of sense. He explained that the terms of music, the rhythmic and the expressive dimensions ask for embodied experiences like dancing. He added that the different rhythm and characteristics of music demand and request for various kinds of dances like folk dance or more expressive dances like modern dance and ballet. These dances would bring out more emotions whereas folk dances are more about the experiences of rhythm. He stated that this was the start of his thinking about HQM. From this example it can be seen that based on education, professional development, and the nature of music, Ben views the concept of HQM that aligned with the definition, learning the academics through an embodied experience (Johnson, 2017). Furthermore, it can be identified that Theresa had a very similar understanding of the concept of HQM. She described that whenever her students had the chance to experience

the academic content physically it made it more meaningful to the students. She added that students take more ownership over the learned content and have more enjoyment learning it.

Some other teachers had a very different concept HQM as they defined it more as doing PA next to learning or engaging in academic content. Ruth gave an example that the researcher would not define HQM. One of her favorite PA exercises was that after students had a chance to work on texts independently, they would stand up and find someone in the classroom to share what they have learned. Therefore, standing up, walking around, and discussing the content with the other person was understood as HQM.

In this research study there were many different understandings of HQM, that the researcher would place somewhere between the two concepts just described. For example, there were the cases of very simple hand movements that reinforce the vocabulary. Lukas, a sixth grade science teacher explained, he is doing a lot of hand gestures and call backs that he described as HQM. He further elaborated that if he would say a word that the students would say it back with a hand gesture to deepen and reinforce the vocabulary. Jamie also stated that she has a daily routine of doing hand gestures for letters they learn. For example, if they are learning the letter A, the students do a hand gesture of eating an apple so that they can make a connection from the letter to the hand movement.

From these examples it can be identified that teachers have a great variety of concepts of HQM. It can be concluded that if the term changes to embodied pedagogies the understanding of the concept could change, and teachers would describe different examples. However, this needs further investigation. Moreover, through continuous professional development, the understanding of the concept can be clarified and reinforced so that students benefit for their

learning and development. Through continuous professional development, teachers learn what the concept of HQM or new embodied pedagogies exactly means. Moreover, by collaboration, teachers can support each other to implement the concept of embodied pedagogies, or HQM as the researcher interpreted it, in their classrooms and support each other in collecting and giving feedback about pedagogical strategies.

Support Needed

Based on this research study, it is not only necessary to develop a common understanding and concept of embodied pedagogies, or HQM as the researcher interpreted it, teachers also need continuous professional development and teacher collaboration to continuously develop in implementing embodied pedagogies in their classrooms. Moreover, educating preservice teachers in higher education teacher education programs could be another way to introduce the concept of embodied pedagogies, or HQM as the researcher interpreted it, to future educators. Therefore, preservice teachers would gain knowledge about the term and concept of embodied pedagogies and can integrate this teaching tool into their future classrooms based on the experience they have during their college education.

Professional Development

There are many arguments in the literature that support the implementation of PA and embodied pedagogies, or HQM as the researcher interpreted it, into the classroom. Increased physical and mental health for students who experience movement in the classroom are important to recognize. Several studies support that PA has a positive influence on cognitive function as well as brain structure and function of students (Cadenas-Sánchez et al., 2016; Chaddock, Pontifex, Hillman, & Kramer, 2011; Hillman, Erickson, & Kramer, 2008; Hillman,

Kamijo & Scudder, 2011) Childhood is an ideal period to implement behavioral interventions aimed at cognitive enhancement, because neural plasticity at this age is the norm rather than the exception (Moreau, 2015). Learning a new skill and acquiring new knowledge while being physically active appear to be especially promising in this regard (Gould et al., 1999). This means that embodied pedagogies, or HQM as the researcher interpreted it, can help integrating newly formed neurons within existing neural networks.

Overall, compared to PA and brain breaks, research shows that movement to teach academic content has the highest impact on academic learning (Benzing et al., 2016; Donnelly et al., 2016; Jäger et al., 2014; Kubesch et al., 2009; Moreau, 2015; Pesce, 2012). Teachers in this research study articulated that they had higher academic success and more involvement from students in their academics when integrating PA and HQM. Moreover, teachers found it crucial for students to understand and grasp the academic content in a different and meaningful way. Theresa said that after experiencing the clock physically by being the hour hand and minute hand, students had a better understanding of the time later on compared to teaching the same concept taught in previous lessons in different ways.

In some research studies, teachers reported that if embodied pedagogies, or HQM as the researcher interpreted it, are implemented throughout the curriculum, requirements could be accomplished and the material for standardize testing finished because movement and learning academic content could be combined (Finn & McInnis, 2014; Martin & Murtagh, 2017). But in most studies, teachers still preferred implementing brain breaks and were hesitant to change their instruction even though there are many benefits (Gibson et al., 2016; McMullen, et al., 2016; Stylianou et al., 2015). There is evidence in previous literature that some teachers did not see PA

and embodied pedagogies, or HQM as the researcher interpreted it, as a long-term way to instruct students because the instructors reported it was hard to go back to the 'normal instruction' and that teachers do not have the time for planning and bringing students back on track (Martin & Murtagh, 2017; McMullen, et al., 2016; Stylianou et al., 2015; Usher & Anderton, 2017). Clearly, teachers in these research studies are likely not well educated in implementing HQM and have problems in combining movement with the academic content. It would be in students' and teachers' interest to include movement into the classroom and at the same time learning the content for academic success and all the other benefits of movement.

In this research study it became also clear that teachers have more knowledge about PA and brain breaks and the concept of HQM is less clear and common. Moreover, teachers in the literature (Dinkel et al., 2017; Forana et al., 2017; Webster et al., 2011; Webster et al., 2016) and in this research study ask for more professional development and education. Therefore, the researcher proposes offering continuous professional development (CPD) that focuses on embodied pedagogies, or HQM as the researcher interpreted it, for teachers.

Teacher Collaboration

In the literature, teachers reported that students had better focus and engagement, more motivation for academic learning, and better atmosphere in the classroom (Gibson et al., 2008; Martin & Murtagh, 2017; McMullen et al., 2016; Stylianou et al., 2015). Furthermore, teachers expressed that students are more interested, have higher motivation to learn, improved concentration and retention of information, and have a higher enjoyment of learning if embodied learning is implemented (Finn & McInnis, 2014; Martin & Murtagh, 2017). These findings are very similar to this research study in which teachers clearly expressed that it is important for

them to nurture students' body and mind in their classrooms and that PA and HQM are important ways to differentiate instruction. Theresa stated that HQM is another way to differentiate instruction and that students really enjoy learning the academic content physically.

Teachers in this research study also realized that they have less education and pedagogical strategies available in HQM. Therefore, based on this research study and previous literature, it is clear participants' interest to receive CPD in HQM. It is in teachers interest to improve their classroom practice by becoming more proficient and knowledgeable in pedagogical strategies to enhance student learning.

The quantitative data clearly showed that teacher collaboration in regard to HQM was very prevalent for teachers in addition to professional development. Teachers (67.7%) asked for teacher collaboration to support implementing HQM into the classroom. Moreover, the qualitative data revealed that teachers learn a lot from colleagues within the school building and beyond. Theresa collaborated very closely with two teachers in her school building who were physically active and open to HQM. Moreover, she found them to be thinking outside of the box. In addition, she stated that it was her greatest resource talking through and therefore developing new pedagogical strategies with colleagues. She is convinced that multiple minds are better than one. She also explained that observations of other classrooms, PE lessons, and recess does inspire her to come up with new ideas.

Several studies reported that support from other teachers is crucial to implement PA successfully (Dinkel et al., 2017; Forana et al., 2017, Webster et al., 2016). But what should teacher collaboration look like and how should it be organized? While reflecting on which practice would serve teachers best to collaborate in implementing embodied pedagogies, or

HQM as the researcher interpreted it, it can be said that professional learning communities (PLCs) are commonly used in K-12 settings and Communities of Practice (CoPs) can be created and maintained beyond the school building to support each other. By using both practices, teachers' needs and recommendations from these research studies can be incorporated in order to improve their classroom practice of embodied pedagogies, or HQM as the researcher interpreted it, and to share pedagogical strategies in different subjects.

According to the literature, there are many subjects in which embodied pedagogies, or HQM as the researcher interpreted it, has an effect on academic learning. Bartholomew and Jowers (2011) found improvement in spelling and Mahar et al. (2006) and Riley (2015) showed better on-task behavior in 3rd and 4th graders in academic lessons like math. Studies that investigated pre-school children acknowledged that children learn the specific task faster and more in depth by being physically involved in the content because there is a significantly improved performance in literacy and geography skills (Kirk et al., 2014; Kirk & Kirk; 2016; Mavilidi, Okely, Chandler, & Paas 2016). Moreover, Schmidt et al. (2019) and Padial-Ruz et al. (2019) reported better learning of vocabulary by embodied learning. Participants from this research study agreed that HQM has a positive effect on learning the academic content and can be implemented in various subjects, but teachers feel most comfortable to implement HQM in their main academic subject. When the researcher asked Ruth where she implemented HQM the most, Ruth explained that she is most comfortable in her longest taught subject because she knows the curriculum and feels the most secure. She also added that she is able to implement HQM in her main subject spontaneously.

Knowing the content of the subject helped teachers to develop pedagogical strategies that involved HQM. There is great potential that through collaboration teachers could exchange proven pedagogical strategies that were previously conducted and practiced in their classrooms. Teachers collaboration in regard to embodied pedagogies, or HQM as the researcher interpreted it, should focus on the embodied experience each teacher makes in their own classroom practice and how this experience can be shared and contribute to knowledge development.

In the few existing investigations, teachers also reported obstacles in implementing PA and embodied pedagogies, or HQM as the researcher interpreted it, into the classroom. Participants described not enough time for planning and not enough access to resources (Gibson et al., 2008; Goh et al. 2017; Martin & Murtagh, 2017; McMullen et al., 2016; Stylianou et al., 2015). Participants in this research study reported very similar challenges but offered solutions to overcome these obstacles. Teachers in this research study asked for teacher collaboration and specific resources to successfully implement HQM. Teacher collaboration in the form of PLCs can help teachers to develop more resources and overcome obstacles. Based on teachers in this research study there are many who collaborate beyond the school building to implement PA, brain breaks and HQM. For example, Ruth connected through social media to other teachers throughout the country and the world to get access to pedagogical strategies of connecting academic content with movement. Teacher collaboration in the form of CoPs can connect teachers globally so that teachers are even more supported in the implementation of embodied pedagogies, or HQM as the researcher interpreted it.

Teacher Leadership within Collaboration Groups

Both in the literature and in this research study teachers asked for more support in implementing embodied pedagogies, or HQM as the researcher interpreted it. Support and the initiative to implement more embodied pedagogies is needed from the administration but teachers need to take over the leadership role within the PLCs and CoPs. Of course, skills need to be developed to become a teacher leader but there are certain characteristics of teachers in this study that inspired the researcher to propose the concept of teacher leadership in PLCs and CoPs embodied pedagogies, or HQM as the researcher interpreted it. There are some teachers that are very experienced in implementing HQM in the classroom. They collected valuable knowledge and pedagogical strategies over the years on HQM through education, practice in the classroom, and collaboration. For example, Paula, Theresa, and Liz are teachers that are very interested in HQM, understand the term and concept, and have a natural way to develop pedagogical strategies. These teachers showcase characteristics that is needed for this particular leadership within these teacher collaboration groups. The researcher proposes focusing on these teachers to become teacher leaders.

Teachers who do not feel secure and do not have a lot of experience in implementing HQM orient and look for collaboration with teachers that can guide them through the process of successfully implementing embodied pedagogies, or HQM as the researcher interpreted it. For example, Cory collaborated with Theresa and was glad to use her resources. Cory also mentioned that she could learn a lot from the PE teacher in her school building in regard to PA and HQM. Paula explained that the PE teachers in the school building implement academics when they play games and move in the gym. Moreover, in her school building, the PE teachers are always very

interested in what teachers are working on and partner with classroom teachers to include that particular content into their PE lessons. Therefore, the researcher sees potential in involving PE teachers in the collaboration groups because they are wealthy resources and advocates when it comes to embodied pedagogies, or HQM as the researcher interpreted it, and PA within the school building and beyond.

Higher Education Programs

Although teachers in this research study mostly asked for professional development and teacher collaboration, some of the teachers had considerable experiences learning about HQM during their college education. Moreover, it was recognized by the researcher that these teachers were especially experienced and knowledgeable in implementing HQM into their classrooms. Paula, a second grade classroom teacher who did her minor in physical education, reported that her professor was very knowledgeable in movement integration into the academics and was an important reason that she is educated on and became an advocate of HQM. Paula described how this professor motivated them to write lessons in which HQM were integrated. In addition, they learned background information about combining learning and moving and the research behind it. This experience during her teacher education was really important for Paula to make sense of the concept of embodied pedagogies, or HQM as the researcher interpreted it. Paula reported that she received feedback for her lessons in combining movement with the academics and this helped her to understand the concept.

From this example it can be seen how important preservice teacher education is in knowledge development. Teachers in the literature suggested that there is a lack of support and lack of gaining knowledge on embodied pedagogies, or HQM as the researcher interpreted it,

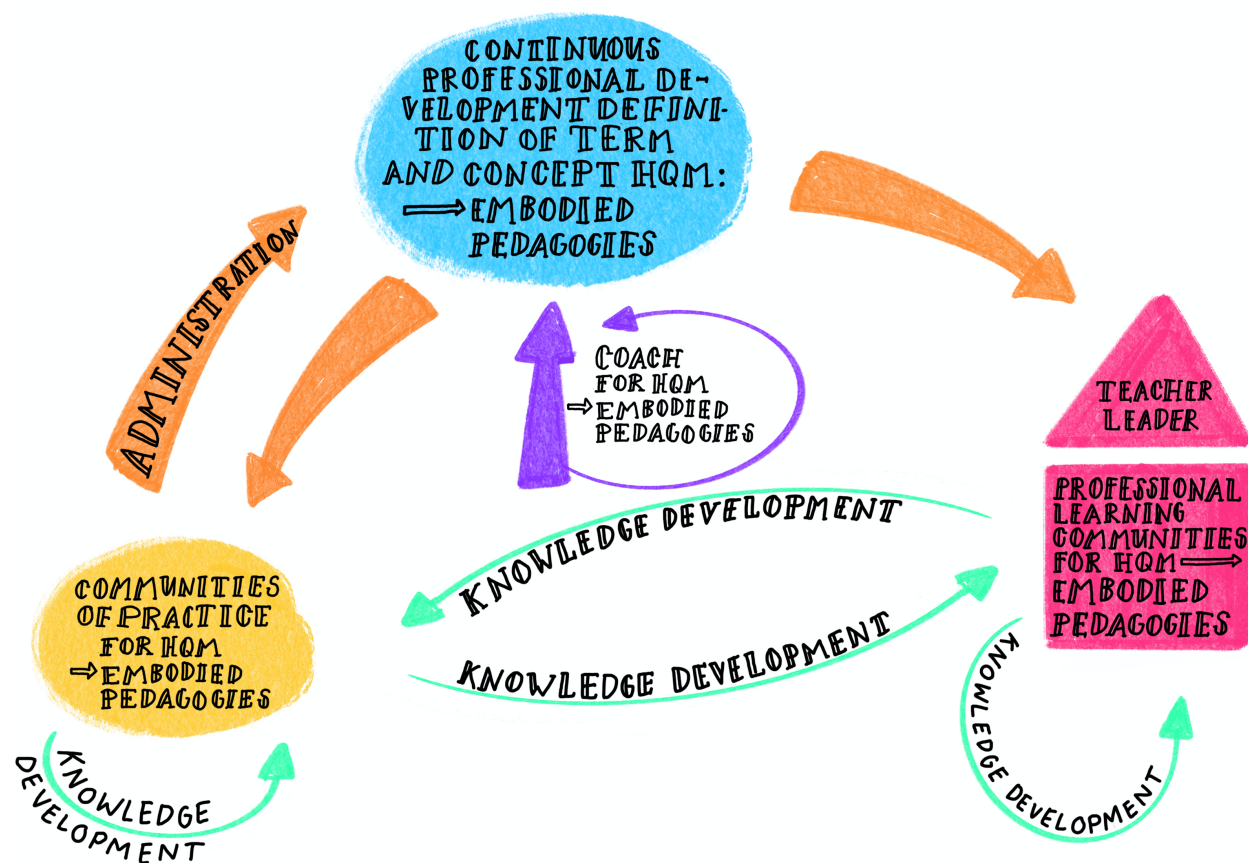
during training and developing competencies through experience (Gibson et al., 2008; Goh et al. 2017; Martin & Murtagh, 2017; McMullen et al., 2016; Michael et al., 2018; Stylianou et al., 2015, Webster et al., 2019). Based on all of these statements, there is a need to learn and practice embodied learning during college education so that teachers can start their profession with a fundamental knowledge and become advocates in implementing embodied pedagogies, or HQM as the researcher interpreted it, into the classroom.

Implications

The findings of the current research study can be used to inform the future support of teachers to successfully implement embodied pedagogies, or HQM as the researcher interpreted it, into the classroom. Based on the findings, it is necessary to focus on CPD, teacher collaboration by PLCs and CoPs, and teacher leadership to achieve a well-established implementation of embodied pedagogies, or HQM as the researcher interpreted it, in the classrooms within the school building and beyond. Moreover, focusing on preservice teacher education so that educators start their profession with an established knowledge of embodied pedagogies in the classroom can be an option to introduce teachers to the concept of embodied learning early in their careers. In Figure 5 the concept that the researcher developed to support teachers in implementing embodied pedagogies, or HQM as the researcher interpreted it, can be found.

Figure 5

Schema of Support to Implement Embodied Pedagogies



Continuous Professional Development

Based on teachers' perceptions and perspectives it is important that schools and school leaders are focusing to educate and support teachers in implementing embodied pedagogies, or HQM as the researcher interpreted it. CPD is an instrument to educate and support teachers further in realizing embodied pedagogies in the classroom. It is crucial that the structure of CPD supports teachers in their classroom practice. McMillan et. al (2016) state that based on a questionnaire the biggest motivator for teachers in regard to CPD is personal interest, choice for

career advancement, and to improve one's teaching. Based on this research study, it is clearly participants' interest in receiving CPD in HQM because it is in many teachers' interest to improve their classroom practice by becoming more proficient and knowledgeable in implementing HQM. In addition, through CPD the term and concept of embodied pedagogies, or HQM as the researcher interpreted it, can be further deepened and standardized. Because of all of these reasons, teachers need to play a more central and leading role in CPDs because teachers often are only passive recipients of CPD (Parker & Patton, 2016). In order to make CPDs more meaningful for teachers it is crucial to focus on the structure of CPDs. Based on this research study teachers want to be active participants in CPD that is focusing on embodied pedagogies, or HQM as the researcher interpreted it, by collaborating with other teachers.

Teacher Collaboration

A question that arises when focusing on a teacher-driven approach is how CPD is facilitated. Two frameworks for teacher-centered CPD may be found in the use of professional learning communities (PLCs) and communities of practice (CoPs). For the past two decades much has been written in education about the creation of PLCs and CoPs as vehicles for turning CPD to an ongoing development. Much has been written about how these two structures can build collegial relationships, are capacities for change, and to implement new pedagogical strategies (Blankenship & Ruona, 2007). This shift to these two structures of PLCs and CoPs helps teachers to be active participants and creators in CPD and be thriving forces (Goodyear & Casey, 2015). But what are the characteristics and the differences of these two teacher driven concepts and which concept would serve teachers best to improve, learn, and collaborate in embodied pedagogies?

First, PLCs are discussed because it is a very common structure to implement into the school setting. The use of PLCs can range from informal and teacher-driven to formal and facilitated by school, district, or university administration. The researcher argues that PLCs are a way for schools to diminish teacher isolation and learn together to create sustainable change. While some schools had measurable success in working toward this vision (Hord, 2004; Dufour & Eaker 1998; Morrissey, 2000; Murphy & Lick, 2004), some schools across North America as well as in other parts of the world have found the structures difficult to realize because of conditions existing both internally and externally related to school culture, organizational structure and leadership (Caldwell & Johnston, 2001; Scribner et al., 1999; Silins et al., 2002).

Second, CoPs are looked at more closely by Wenger et al. (2002). They define CoPs as “groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis” (p.4). Wenger et. al (2002) describe CoPs as having the following fundamental structures: domain, community, and practice. Communities of practice may take many forms; they may vary in size, life span, location (face-to-face vs. virtual), relationship to the organization, and composition (homogeneous vs. heterogeneous). In addition, they may be located entirely within an organization, or may span across organizational boundaries and expand globally. They may be organic or they may be intentionally formed by the organization. While Wenger et al. (2002) believe in the value of CoPs as a structure for creating and developing knowledge, they also recognize that there are disadvantages to CoPs. Some of the problems associated with CoPs relate to the hoarding of knowledge, clique formation, limitation of innovation, and exclusiveness with regard to membership.

According to Blankenship and Ruona (2007), PLCs place more emphasis on the critical roles that leadership and school culture play in the formation of PLCs. The CoPs, on the other hand, emphasizes the importance of the social aspect of learning in the formation of new knowledge, and does not seem to place as much attention to the role of leaders external to the community or on the culture outside of the community. According to Blankenship and Ruona (2007), neither body of literature they reviewed in regard to PLCs and CoPs actually fully analyze the specific ways members engage in knowledge development.

Another view is that PLCs are just a more precise definition of CoPs. According to Kwong (2016), there are several characteristics that distinguish PLCs and CoPs. PLCs are more focused on a school building or organization and are initiated by the school principal whose purpose is to implement certain goals or tasks. These groups meet indefinitely and disassembles at a certain point, hopefully when the goal is achieved. Whereas CoP members are not specified for a school building and they form more because they have the same interest and can exchange knowledge. CoPs exist beyond the school building and are continuously engaged (Kwong, 2016).

While reflecting on which practice would serve teachers best to collaborate in implementing embodied pedagogies it can be said that PLCs are more commonly used in K-12 settings and CoPs can be developed beyond the school building. By using both practices, teachers have the potential to meet their needs in order to improve their classroom practice of embodied learning and to share pedagogical strategies. Communities of practice that focus on embodied pedagogies could exist on a virtual level so that teachers have collaboration and are supported beyond the school building, while PLCs could exist within the school building and are

initiated and supported by the school leadership. To make an indefinite and concrete plan there needs to be more research about what teachers need when collaborating within their CPD for a possible model to be developed.

According to Blankenship and Ruona (2007), neither practices focus enough on specific ways members engage in the knowledge development cycle, which would be a central part of professional development and teacher collaboration in regard to embodied pedagogies. Teaching practices and focusing on how teachers can share knowledge through teacher collaboration brings us to a research paper that looks more closely into the role of teachers' classroom practice. Riveros (2012) found how embodied experiences of teachers in the classroom can help to inform PLCs and CoPs and enrich them with knowledge and pedagogical strategies. The researcher of this research study uses Riveros' (2012) findings to make the connection to the practice of embodied pedagogies and the implementation in the classroom. Teachers collaboration in regard to embodied pedagogies should focus on the embodied experience each teacher makes in their own classroom practice and how this embodied experience can be shared and contribute to knowledge and practice development.

Riveros' (2012) argument can help complementing the implementation of PLCs and CoPs by putting teacher practices and knowledge development in the center of continuous professional development. Riveros (2012) argues that PLCs and CoPs are not engaging enough in teacher practices and therefore does not focus enough on teachers' knowledge exchange through PLCs or CoPs. He argues that by looking into Merleau-Ponty's analysis of conversation to support the idea that embodied professional learning also occurs outside formal or prescribed scenarios of professional development. He suggested that the question about the nature of

professional knowledge in schools can be further explored by proposing an ontology of teaching practices (Riversos, 2012). Thus, Riveros's (2012) arguments could complement the idea of PLCs and CoPs and make the theory of CPD as a more practical strategy to help teachers to successfully implement embodied pedagogies into their classrooms.

When developing CPD in regard to embodied pedagogies the embodied practices and experiences that teachers do in the classroom needs to be considered and play into the planning of teachers collaboration. Riveros (2012) argues by using Merleau-Ponty's theory that action cannot be detached from learning and also shows that we tend to refine our embodied sense-making abilities by acting in the context of culturally bounded situations, such as teaching in the classroom, or through informal conversation with colleagues and students. The interpretation of this theory means that classroom practice, the learning that teachers experience there, the informal conversations with and observations of other teachers need to be a part of the PLCs and CoPs in a meaningful way. Following Merleau-Ponty's conceptualization of learning it can be said that teacher learning is a rich embodied process that spans over a diverse context of practice. It is the classroom practice and experience in regard to embodied pedagogies that are the basis of professional development and of teachers collaboration and that knowledge development of pedagogical strategies can occur. Riveros (2012) argues that

The teacher's expertise is shown in her actions, such as classroom work, class planning, conversation with colleagues and students, in-class problem solving and improvisation, to name a few. The teacher's actions configure further opportunities for PLCs and CoPs and acting, so in order to understand teaching practices in schools we must acknowledge the embodied and situated character of practitioners. (p. 606)

There is no question that through teachers' collaboration in the form of PLCs and CoPs an ongoing learning and professional development can be assured. What needs to be considered is that the practice in the classroom in regard to embodied pedagogies needs to be a crucial part of the CPD and plays a central role of teachers' knowledge development and pedagogical strategies in regard to embodied learning. As Riveros (2012) stated,

An examination of teaching practices, their constitution and dynamics, will offer us substantial insights into teachers' professional learning and knowledge because the being of the teacher is manifested in multiple scenarios and it is not only circumscribed to the work of collaborative groups. (p. 610)

It is important that teachers' knowledge and practice is acknowledged and planned into teachers' collaboration and that administrators who are mostly the initiatives of CPD are informed and aware about best practices when it comes to CPD of embodied pedagogies.

The Role of Administration

Continuous professional development and the implementation of embodied pedagogies in the school building and beyond need involvement from the administration. The involvement of the school principal is most present in inviting experts and initiate and guide the communities. Experts could be teachers, administrators, or coaches that are educated and experienced in embodied pedagogies. Moreover, higher education faculty that are looking for collaboration with schools and can educate the teachers in the school building could also function as experts. Administration needs to be interested and supportive of embodied pedagogies. In order to create a collaborative environment for teachers, principals should have basic knowledge and skills about PLCs and CoPs and provide teachers with the opportunity to engage in such communities.

According to Balyer et al. (2015), school principals know what PLCs are and are also aware of their benefits. However, they think that they cannot perform this role adequately due to their excessive administrative roles that they have to conduct on a daily basis. It can be concluded from this research that principals can describe these communities and also find these communities beneficial. However, in order to make them work properly, principals should guide communities toward self-governance. Although principals may take the lead in arranging collaboration at first, administration should motivate community members to assume prominent roles. Based on the investigation of Balyer et al. (2015), self-governance will both help PLCs continue and motivate teachers in their professional development. These results are important to recognize and it is necessary that the initiation of PLCs is minimal for the school principal and that teacher leaders take over the role as soon as possible. To be more precise and accurate of the involvement of the leadership in regard to embodied pedagogies more research needs to be conducted.

There is research to support giving teachers more leadership roles within PLCs and CoPs. Murphy et al. (2009) argue that distributed leadership helps change instructional practices. Similarly, Heck & Hallinger, (2005), Leithwood et al. (1998), and Sergiovanni (1998) indicated that shared leadership can make a difference in terms of student learning at their schools. All teachers work on improving their own instruction as they exercise their right to lead, and the designated leader's role is to facilitate these processes (Mullen & Huting, 2008; Murphy et al., 2009). In this manner, in order to create a collaborative environment, school principals and leaders must initiate PLCs, group teachers into teams for effective collaboration, believe in the inherent ability of teachers to serve in leadership capacities, provide, encourage and expect

participation opportunities for staff involvement in important decisions, empower leadership teams to make decisions and encourage risk-taking (NSDC, 2003; Pounder et al., 1995; Marks & Printy, 2003; Marzano et al., 2005).

In regard to embodied pedagogies, the school leader needs to guide these groups through the process and if problems occur. Of course, as already mentioned, it is necessary for the principal to initiate the CPD but needs to be a background person as soon as possible. Shared leadership in regard to PLCs and CoPs of embodied pedagogies is an effective way to change and improve instruction in the classroom.

Teacher Leadership

Based on the results of this research study, teachers want to have more professional development and teacher collaboration to improve in implementing HQM in their classroom practice. CPD that include PLCs and CoPs that focus on the classroom practice of teachers and their knowledge development and pedagogical strategies are suggested methods to promote and foster embodied pedagogies, or HQM as the researcher interpreted it, in the school building and beyond. It is important that experienced teachers and PE teachers can take over a leadership role within these groups to organize, collect and promote knowledge development and pedagogical strategies. In this way, teachers feel supported during the implementation and improvement of embodied pedagogies in their classroom.

Silva et al. (2000) describe teacher leadership as having evolved through three waves. In the first wave, teachers played formal roles such as department heads. In the second wave, they acted in a capacity that exploit on teachers' expertise to implement mandated curriculum. In the third wave, teachers were asked to be assistants of school reculturation and systemic change by

leading PLCs to support collegial collaboration and mutual learning. Berry et al. (2013) argue for a fourth wave of teacher leaders, whom they call teacherpreneurs. These teachers soften the line between teaching and leading and producing solutions. The definition by York-Barr and Duke (2004), based on their comprehensive literature review, captures the essence of teacher leadership:

[Teacher leadership is] the process by which teachers, individually or collectively, influence their colleagues, principals, and other members of school communities to improve teaching and learning practices with the aim of increased student learning and achievement. (pp. 287-288)

A study that compares the functions of non-administrator leaders, school administrators, and district leaders by Leithwood et. al (2007) affirms that teacher leaders performed the following activities: motivating others, providing individual support, modeling appropriate values and practices, building collaborative processes or teamwork, building communities in school, and managing programs, committees, and meetings. Because teacher leaders often are more professional in instructional and curricular questions, they unpack standards, develop curriculum, and differentiate instruction (Crowther et al., 2009; Drago-Severson, 2009; Harrison & Killion, 2007; York-Barr & Duke, 2004). Moreover, they are leading and initiating conversations in collaborating teams to discuss what to teach, what to assess, and what constitutes student success.

Based on the literature and this research study, teacher leaders within PLCs and CoPs in embodied pedagogies, or HQM as the researcher interpreted it, could take over an important role in knowledge and pedagogical strategy development. In addition, they can establish ongoing

support and monitor students' learning. Of course, skills need to be developed to become a teacher leader but there are certain characteristics of teachers in this study that inspired the researcher to propose the concept of teacher leadership in PLCs and CoPs of embodied pedagogies, or HQM as the researcher interpreted it.

There were some teachers that were very experienced in implementing HQM in the classroom and collected valuable knowledge and pedagogical strategies over the years through education, practice in the classroom, and collaboration. These teachers brought characteristics that is needed for this particular leadership within these teacher collaboration groups. Based on the literature and this research study there are many advantages of teacher leaders within the collaborating groups and it is clear that this strategy needs to be used to successfully implement more embodied learning in the classroom.

Several teachers in this research study mentioned that they could learn from PE teachers in regard to PA and HQM. Moreover, PE teachers are advocates and professionals when it comes to PA and embodied pedagogies. Therefore, the question remains if PE teachers could take a leadership role within the PLCs and CoPs of embodied pedagogies because they are important resources and knowledgeable educators in promoting and advocating for PA. Yet, since classroom teachers know the academic content best, a collaboration between the classroom teachers and PE teachers may be the ideal combination.

Physical Education Teachers as Teacher Leaders

As already mentioned, teachers in this research study got inspired by PE teachers in their school building and during their education. This provides a good reason to investigate the literature and find out what scholars think about the collaboration of PE teachers and classroom

teachers (CT) to promote movement in the classroom. It needs to be mentioned that no literature was found about PE teachers promoting embodied pedagogies in the classroom. Two articles were found about how PE teachers could promote PA in the classrooms although the recommendations were rather general.

First, PE teachers can build support for PA by implementing a set of advocacy skills (Goh et al., 2013). One way to do this is by talking about the benefits of PA and movement for student academic performance. By doing that, PE teachers lead by example and can also help classroom teachers become advocates for PA themselves (Hall et al., 2011). Other suggestions are that physical educators can provide training sessions for CTs and collaborate with them to integrate PA with academic content. Physical educators can also provide CTs with a variety of resources to help them promote PA to their students (Russ, 2015). Additional ways to provide CTs with pedagogical strategies may be to direct them to websites or resources that are known and used regularly by PE teachers. Of course, these resources are mostly PA and brain breaks that are not connected to the academic content but maybe these resources still inspires CTs to develop new ideas in embodied learning. Physical educators can help make CTs feel supported by rewarding them for trying new ways of promoting PA, promoting the increase of school support for PA by getting the administrators and other employees to buy into the school-wide approach, and providing equipment and space for PA opportunities (Webster et al., 2013). All these recommendations from the literature suggest that CTs still need to take over the leadership role in PLCs and CoPs in embodied pedagogies, or HQM as the researcher interpreted it, but could collaborate closely with PE teachers. Collaboration between PE teachers and CTs assure that pedagogies of movement and classroom content can be included when implementing

embodied learning. Therefore, both parties and resources are needed to successfully create knowledge development in embodied pedagogies.

Moreover, there needs to be education within physical education teacher education (PETE) programs on how they could act as advocates and collaborators within PA across the curriculum and especially embodied learning. Based on the lack of research on how to promote embodied pedagogies within the school building this needs to be further investigated and promoted within PETE programs with pre-service teachers so that they have a fundamental knowledge about embodied learning.

Teacher Collaboration Beyond the School Building

According to teachers in this research study there were many who collaborate beyond the school building to implement PA, brain breaks, and HQM. These collaboration groups will also be the future to connect beyond the school building to exchange pedagogical strategies, ideas, and more so that embodied pedagogies becomes a global instrument to teach academic content. There are many social media platforms in which collaboration already takes place. It needs to be investigated how collaboration beyond the school building can exist and which platforms are most suitable and supportive for teachers.

Social researchers suggest that using social networking as a means for developing and operating CoPs has a wide range of benefits for the teachers and it may eventually lead to improvement of their teaching practices (Duncan-Howell, 2010; Lieberman & Pointer Mace, 2010; Ranieri et al., 2012). Moreover, there is a positive attitude towards this direction among teachers (Davis, 2015). The potential of using such online communities is high because teachers have the option to get involved in cooperative and interactive activities from diverse locations at

minimal cost. Furthermore, such communities offer potential advantages for the teacher participant because they can accommodate their interaction with the online community at their own pace, according to their habits, and daily needs (Gorozidis et al., 2020). These e-communities are promising as this approach integrates successful elements of previous effective interventions such as flexibility, accessibility, collaboration with and support from colleagues without the limiting effects of potential common setbacks as time, location, absence from work and participation costs (Armour & Yelling, 2004; 2007). Moreover, during the time of COVID-19 these e-communities have become even more prevalent because of all the remote and online options that are much more in focus at the moment. Clearly online CoPs are the future of collaboration and exchanging ideas in embodied pedagogies. But what exactly is involved in these forms of CoPs needs to be further investigated.

Preservice Teacher Education

There is a need for embodied pedagogies to be implemented in teacher education programs so that future teachers gain knowledge in embodied learning. Although teachers in this research study mostly asked for professional development and teacher collaboration, some of the teachers had considerable experiences in HQM during their education. Moreover, it was recognized by the researcher that these teachers were especially experienced and knowledgeable in implementing HQM into their classrooms.

From these examples it can be seen how important preservice teacher education is in knowledge development. In this research study, participants mentioned that PE professors played a central role of educating them in PA and HQM. In the literature, it was found that mostly PE professors take over the role in educating preservice teachers (PSTs) in PA; although, there is a

lack of research that looks into PST education on embodied pedagogies. Preservice teacher training is an important setting for change, as teachers' thoughts about educating and learning, and their instructional practices, might be more flexible early in their career versus later (Cothran, et al., 2010). Preparing PSTs with knowledge and skills for movement integration into the classroom might help to establish attitude and behavioral patterns that help to develop PA and embodied pedagogies as part of routine classroom practices in schools (Michael et al., 2018). Previous studies with PSTs support the value of movement integration in preservice teacher education. PSTs who had taken university coursework in school-based PA promotion reported higher perceived competence for PA, brain breaks, and embodied pedagogies than their counterparts who had not taken such coursework (Webster, Monsma, & Erwin, 2010). This finding can also be affirmed by this research study. Teachers who understood the concept of HQM had more knowledge in implementing it and talked about being educated during their college years.

When PSTs were trained to use PA and embodied pedagogies, positive changes were found in participants' attitudes and perceived competence related to movement integration (Webster, 2011), feelings of empowerment to implement PA (Goh et al., 2013), as well as efficacy beliefs related to movement, perceived barriers to movement integration, and willingness to integrate movement (Vazou et al., 2012). All of these findings support the focus on learning about movement integrating in PST education but clearly the focus needs to be more on embodied pedagogies. How can this shift be made?

Teacher collaboration can also take the form of partnering with universities to help and mentor not only teachers with membership in the profession but also PSTs teachers or interns at

the periphery (Drago-Severson, 2009; York-Barr & Duke, 2004). In this respect, Michael et al. (2018) investigated in service learning in PSTs' education as a way to learn about PA in the classroom. PSTs were learning about movement integration guided by university professors. PSTs could develop knowledge about PA and brain breaks but embodied learning, in which teachers integrated movement into academic lessons to experience the content physically, became much less doable. The reason was that CTs were less willing to give up control of their academic content lessons. Moreover, another study reported that PSTs and CTs preferred easy movement integration that could be administered quickly and spontaneously (Webster et al., 2013). McMullen et al., (2014) found that elementary and high school classroom teachers preferred movement activities that were easy to manage. Of course, it is important that brain breaks and PA are a part of PSTs education, but embodied pedagogies needs to be more in focus even if it is more challenging to learn and implement into the classroom.

Based on previous research, teachers and students tend to integrate movement detached from the academics because it is easier to administer. Another reason could be that professors and CTs are not educated enough in embodied pedagogies. A solution to this could be that experienced professors and CTs in embodied pedagogies collaborate and partner so that PSTs have a chance to practice implementing embodied learning in the classroom during their college education. It is essential that professors and CTs are knowledgeable on how to implement and improve embodied pedagogies, only in this way the PCTs can learn how to successfully implement it.

Again, there is an impression that PA and brain breaks are more known, widespread, and common among educators and even researchers. It seems that they are easier to implement and

administer in the classroom. Moreover, there are more resources and accessible pedagogical strategies when it comes to PA that is not connected to the academic content. Based on the literature and this research study it must be mentioned that professional development, teacher collaboration and education must be more focused on embodied pedagogies, or HQM as the researcher interpreted it, so that students in the classroom can experience all its advantages.

Limitations

There are a few limitations to the current study. First, this study is restricted to charter and private schools. Conducting research at public schools may reveal different findings. The researcher sought to include public schools into her research but could not gain access. Another limitation was that the term HQM and the concept of it was not understood by all teachers in the same way. The researcher invented the term HQM, and it was obvious that participants did not understand it correspondingly. In regard to the perception of the concept of learning the academic content in an embodied way it must be mentioned that the researcher introduced the study in the private school during a whole staff meeting. This fact could have affected the perception of the term and concept of HQM and the high rate of participation in that school. However, the researcher made sure to verbalize the same words that were also used in the consent form at the beginning of the survey. In addition, during the qualitative interviews there was the same protocol for all of the participants.

The researcher used the research journal and peer debriefer to reflect on experiences to unveil any bias the researcher had throughout all phases of the research study. Nevertheless, the researchers' biases need to be taken into account when reflecting on this research study. Lastly, it needs to be recognized that the research was conducted partly when the COVID-19 pandemic

was conquering the world. The data collection method needed to be changed from the original plan as the researcher could not observe teachers in the classroom. Moreover, all the interviews needed to be transitioned to phone or video chat. The researcher tried to make sure that teachers could reflect on their implementation of HQM based on a lesson plan that was previously sent to me.

Areas of Further Study

Future research needs to be conducted in public schools to investigate if there are similar outcomes of teachers' perceptions and perspectives of HQM in the classroom. Moreover, the current study revealed that the term HQM is not understood and perceived by participants in the same way. The researcher proposed a new term earlier in this chapter. Thus, more research on teachers' understanding of the term embodied pedagogies needs to be considered. Investigations need to be conducted to find out if this new term holds its promise and can be solidified.

In addition, teachers in the literature and in this research study asked for professional development and teacher collaboration in regard to embodied pedagogies, or HQM as the researcher interpreted it. Based on all the data the researcher found the best solution and strategies to educate and train teachers is during their profession and through higher education programs. Continuous professional development that includes professional learning communities and communities of practices that are led by teacher leaders are the best way to support teachers in their embodied pedagogies practices. However, there needs to be further investigations about the more precise organization of these groups and how to plan the content in more detail with the intention of implementing embodied pedagogies. Additional research in this area could provide

teacher education professors and coaches information about how to plan instruction and train PSTs and K-12 teachers in implementing embodied pedagogies.

Another area of future investigations are how interested, informed, and educated school leaders are to implement embodied pedagogies within their school building. It is crucial that school principals are supportive of embodied learning because even though they are not centrally involved in the process of educating teachers, they are key persons when it comes to access to schools. The literature and the researcher of this study sees great potential in including PE teachers in these collaborating groups because they are wealthy resources for advocating and implementing movement. Future research is needed to investigate the role of PE teachers in promoting embodied pedagogies in the classroom. Moreover, future studies need to investigate what qualities and resources teacher leaders need and how the communities are organized in detail so that all parties that are involved within these communities benefit for their classroom practice in regard to embodied pedagogies.

Conclusion

The literature strongly advocates for implementing movement that supports academic learning (which the researcher termed and understood as HQM), because of various reasons. In addition, previous investigations and this research study show that teachers are interested in implementing embodied pedagogies, or HQM as the researcher interpreted it. However, there are many obstacles and challenges to overcome. Based on the literature and this research study teachers tend to be more comfortable and knowledgeable about PA and brain breaks. Moreover, teachers reflected that it is very challenging to teach academic content through movement. This is problematic because clearly, it is in children's nature to learn by being physically engaged,

which offers potential in implementing HQM. However, a term that better represents experiencing academic content through physical engagement needed to be identified. In addition, this mixed method study exemplified why more research in educating and training teachers in how to implement embodied pedagogies into their classroom is warranted.

The literature and this research study show that the challenges can be mastered and that teachers have valuable and creative possibilities and solutions available so that through CPD, PLCs, CoPs, teacher leadership, and collaboration with PE teachers, embodied pedagogies can be realized and established within the school setting so that students can learn through embodiment. Therefore, it is hopeful that based on the study's findings and implications more in depth strategies can be established to educate teachers and to motivate researchers and educators to develop more knowledge in implementing embodied pedagogies.

APPENDICES (5)

APPENDIX A
QUANTITATIVE SURVEY

Appendix A
Quantitative Survey



https://kent.qualtrics.com/jfe/form/SV_5jNgJK4oc2P0biJ

Physical Activity and Movement While Learning

Welcome to the "Physical Activity While Learning" survey. I am very interested in your perception and perspectives on how physical activity and movement relate to your classroom teaching and practice. When asked about physical activity or movement, the focus is on the actual body involved in learning and/or within your instruction. Filling out the survey will only take you about 10 minutes. Before taking part in this study, please read the consent form on the next page and click on the "I Agree" button at the bottom of the page if you understand the statements and freely consent to participate in the study.

Consent Form

If you agree to participate in this study, you will complete a brief online survey lasting approximately 10 minutes. You will be asked questions about teaching and your perception and perspectives about physical activity and movement in your classroom. Upon completion of the survey, you will be offered the opportunity to participate in a voluntary audio recorded face to face interview that lasts 45-60 minutes conducted at a later date and time that is most convenient for you. The study is being conducted by Franziska Widmer of Kent State University, and it has been approved by the Kent State University Institutional Review Board. All responses are treated as confidential. All data will be pooled and published in aggregate form only. Participants should be aware, however, that the experiment is not being run from a "secure" https server of the kind typically used to handle credit card transactions, so there is a small possibility that responses could be viewed by unauthorized third parties (e.g., computer hackers). Participation is voluntary, refusal to take part in the study involves no penalty or loss of benefits to which participants are otherwise entitled, and participants may withdraw from the study at any time without penalty or loss of benefits to which they are otherwise entitled. If participants have further questions about this study or their rights, or if they wish to lodge a complaint or concern, they may contact Franziska Widmer at fwidmer@kent.edu or (216) 767-6300 or the Kent State University Institutional Review Board, at (330) 672-2704. If you are 18 years of age or older, understand the statements above, and freely consent to participate in the study, click on the "I Agree" button to begin the survey.

I Agree

First, I would like to ask some questions about yourself.
Please remember that all information you share with me will be kept strictly confidential.

Your gender: _____

Your racial/ethnic affiliation: _____

Your age: _____

Please indicate your current level of education:

- Bachelor's degree
- Bachelor's degree, but enrolled in graduate school program (i.e., Masters)
- Master's degree
- Education specialist degree
- Doctoral degree

Which grade levels do you currently teach? (select all that apply):

- Kindergarten
- 1st grade
- 2nd grade
- 3rd grade
- 4th grade
- 5th grade
- Other, please specify: _____

How many years have you been teaching? _____

What is the name of the school you are teaching?

What subject(s) are you teaching? (select all that apply):

- Math
- Language Arts

- Science
- Social Studies
- Music
- Art
- Physical Education
- Foreign Language
- Special Education
- Others, please specify: _____

In this section, I would like to ask some questions about your perceptions, feelings, beliefs and practice when it comes to physical activity and movement in your classroom. When asked about physical activity or movement, the focus is on the actual body involved in learning and/or within your instruction.

The following distinctions are made in the remaining sections:

Physical activity means: brain breaks, or physical activity in the classroom that is not connected to academic content.

High quality movement means: physical activity is implemented into the classroom to teach academic concepts.

Creating opportunities for my students to participate in physical activity and high quality movement in the classroom while learning is important to me because I think we need to nurture body and mind.

- Strongly Disagree
- Disagree
- Somewhat disagree
- Somewhat agree
- Agree
- Strongly agree

I implement more high quality movement than physical activity in my classroom.

- Strongly disagree
- Disagree
- Somewhat disagree
- Somewhat agree
- Agree
- Strongly agree

I currently utilize high quality movement to help teach concepts in the classroom.

- Strongly disagree
- Disagree
- Somewhat disagree
- Somewhat agree
- Agree
- Strongly agree

I believe that integrating high quality movement helps students to learn academic concepts better.

- Strongly disagree
- Disagree
- Somewhat disagree
- Somewhat agree
- Agree
- Strongly agree

I believe that integrating physical activity in my classroom has a positive effect on students.

- Strongly disagree

- Disagree
- Somewhat disagree
- Somewhat agree
- Agree
- Strongly agree

I don't think that integrating physical activity and high quality movement in my classroom would cause class management issues and would be disruptive.

- Strongly disagree
- Disagree
- Somewhat disagree
- Somewhat agree
- Agree
- Strongly agree

I integrate high quality movement when I teach the following subject(s) (select all that apply):

- Math
- Language Arts
- Science
- Social Studies
- Music
- Art
- Physical Education
- Foreign Language
- Special Education

Others, please specify: _____

Please answer the following questions as to why you do or do not implement physical activity and movement into your classroom.

I am comfortable integrating physical activity in my classroom.

- Strongly disagree
- Disagree
- Somewhat disagree
- Somewhat agree
- Agree
- Strongly agree

I am comfortable integrating physical activity in my classroom because (select all that apply):

- I learned it during my education
- I received professional development
- I educated myself
- It just comes naturally
- Other reasons: _____

I am comfortable implementing high quality movement in my classroom to teach academic concepts.

- Strongly disagree
- Disagree
- Somewhat disagree
- Somewhat agree
- Agree

Strongly agree

I am comfortable implementing high quality movement because (select all that apply):

I learned it during my education

I received professional development

I educated myself

It just comes naturally

Other reasons: _____

I think that high quality movement that is combined with academic learning has a stronger effect on academic success than physical activity.

Strongly disagree

Disagree

Somewhat disagree

Somewhat agree

Agree

Strongly agree

I think physical activity in the classroom has a positive effect on physical health.

Strongly disagree

Disagree

Somewhat disagree

Somewhat agree

Agree

Strongly agree

I think that implementing physical activity in the classroom has a positive effect on students' mental health.

- Strongly disagree
- Disagree
- Somewhat disagree
- Somewhat agree
- Agree
- Strongly agree

The reason why I implement high quality movement in the classroom is because it helps students to learn.

- Strongly disagree
- Disagree
- Somewhat disagree
- Somewhat agree
- Agree
- Strongly agree

The reason why I implement high quality movement in the classroom is because it helps students to concentrate.

- Strongly disagree
- Disagree
- Somewhat disagree
- Somewhat agree
- Agree
- Strongly agree

The reason why I implement high quality movement in the classroom is because it helps students to learn about a healthy lifestyle.

- Strongly disagree
- Disagree
- Somewhat disagree
- Somewhat agree
- Agree
- Strongly agree

And in the last section of this survey, I would like to know if you think you have enough knowledge to implement physical activity and high quality movement in the classroom. I would also like to know if you think education in college and/or professional development is helpful or needed.

I have enough knowledge to implement physical activity in my classroom.

- Strongly disagree
- Disagree
- Somewhat disagree
- Somewhat agree
- Agree
- Strongly agree

I have enough knowledge to implement high quality movement in my classroom.

- Strongly disagree
- Disagree
- Somewhat disagree
- Somewhat agree
- Agree
- Strongly agree

I am trained to implement physical activity in the classroom.

- Strongly disagree
- Disagree
- Somewhat disagree
- Somewhat agree
- Agree
- Strongly agree

I am trained to implement high quality movement in the classroom.

Strongly disagree

- Disagree
- Somewhat disagree
- Somewhat agree
- Agree
- Strongly agree

I would like to receive professional development for high quality movement in the classroom.

- Strongly disagree
- Disagree
- Somewhat disagree
- Somewhat agree
- Agree
- Strongly agree

During my education in college, physical activity in the classroom was part of the discussion.

- Strongly disagree

- Disagree
- Somewhat disagree
- Somewhat agree
- Agree
- Strongly agree

During my education in college, high quality movement in the classroom was part of the discussion.

- Strongly disagree
- Disagree
- Somewhat disagree
- Somewhat agree
- Agree
- Strongly agree

The following support would help me implement physical activity in my classroom (select all that apply):

- Professional Development
- Classes during my education at college
- More administrative support
- Other teachers and colleagues
- I am not interested in implementing more physical activity into my classroom

The following support would help me implement high quality movement in my classroom to teach academic concepts (select all that apply):

- Professional Development
- Classes during my education at college

- More administrative support
- Collaboration with other teachers and colleagues
- I am not interested in implementing high quality movement into my classroom

Please enter your email address for the Amazon gift card raffle

Would you be interested in being contacted for two follow-up audiotaped face to face interviews and two observations at a later date and time?

- Yes
- No

Please leave your

- Name: _____
- Name of the School: _____
- Email address: _____

Thank you so much for your participation and your time!

APPENDIX B

INTERVIEW 1

Appendix B

Interview 1

I included all the questions that I think are important for the interviews to investigate teachers' perspectives. Based on the pilot study that was conducted in Spring 2018, I erased questions that triggered repetitive answers. Moreover, I included questions that I thought are more meaningful and will give more detailed data.

Interview Protocol #1

Background questions of their educational experiences the grade that they teach, prior experience teaching other grades, etc.

- What do you think of when you hear the phrase “movement in the classroom” or “classroom-based PA”?
- How do you understand the connections between movement and learning?
- How do you think about movement experiences and learning?
- How do you believe children’s movement experiences related to academic success?
- Why do you think teachers should/should not integrate movement into the classroom?
- What types of settings would be most supportive of children’s movement experiences?

Questions related to teaching:

- Please describe a lesson that reflects your instruction in the classroom. Describe a typical day you think reflects your perspective of combining PA and learning.
- How does your perspective about movement and PA align with your lesson you just described?
- What is your experience with high quality movement to teach academic content?

- What about your education during college? Can you tell me what you learned about PA and movement in the classroom?
- What are the reasons that you do/do not implement PA in your classroom?
- What challenges exist related to supporting children's movement experiences and what strategies might be used to overcome those challenges?
- How does teaching to the test influence your instruction style?
- What types of supports or resources would you want and/or need in order to incorporate movement into your classroom? To help you be more effective in implementing movement experiences.
- How does technology influence the PA of children in your classroom?
- Have you had any professional development in PA and movement while instructing in the classroom? If yes, can you describe the PD that you had?
- Would you like to have professional development? Why/why not?
- If you had professional development, what did you get out of it and how are you using it in your own teaching?
- How do parents support PA while learning?
- How does the school administration support PA while learning?

APPENDIX C

EXAMPLE OF ARTIFACT

Appendix C

Example of Artifact

Lesson: Human Clock

Second Grade

Learning Target: "I can show time on an analog clock to the nearest 5 minutes"

Previously learned skills:

- conceptual understanding of the passage of time and the use of hours, minutes, seconds
- understand that the numbers 1-12 on the clock stand for 12 hours of a day and another 12 hours (am/pm) to make a total of 24 hours
- understand there are 60 minutes in one hour
- familiar with the two hands on an analog clock for hours and minutes

Teach:

-review the 60 minutes in one hour. Use brain pop jr video, hand out yellow teaching clocks for students to manipulate, review hours on clock, build a clock & use your body to physically be the clock minute hand.

Building clock (teacher guided/modeled)

-hand out 60 popsicle sticks (or other markers could work) & working in pairs students create a larger "life size" clock where each popsicle stick marks 1 minute. (Make sure it's round and not too oblong), then using squares of colored paper write down each 5 minute interval (ex count 5 minutes then write 1, count another 5 so at 10 minutes mark 2, count another 5 so at 15 minutes mark 3...until get to 12)

-have students do a quick walk to look at the clocks of their peers

-teacher models using arms and turning body to point to minutes

-with a partner one stands inside the clock and one stands out as the checker, teacher calls out minutes (like 25 minutes) and student inside the clock turns their body and points with their "long minute arm" to where 25 minutes is (at the 5), teacher should continue to review ways to do this by noticing strategies students are using and asking them to share (could count by ones each mark until get to 25, count by 5s, using benchmarks like 30min at the 6 going back 5 etc.), checker partner checks and switches with inside partner, teacher continues to call out minutes and students switch... eventually release to students calling their own with their partners.

Modifications: extend by having students use a long arm and a short arm to show the hour & minutes (ex: show 2:30, point short arm at 2 and long arm at the 6)

APPENDIX D

INTERVIEW 2

Appendix D

Interview 2

After the need of change of methods due to the pandemic, I suggested to reflect on a lesson plan in regard to PA and HQM for the second interview. The interviews were conducted on the phone or by video chat and lasted between 30 and 60 minutes.

Interview Protocol #2

- Let's talk about the lesson. Can you take out your lesson plan and we go over it and talk about the movement and physical activity?
- Always ask: What are you doing/What is the teacher doing?
- Always ask: What are the students doing?
- What academic concepts did you teach during the lesson?
- Why did you put a movement break at exactly that part of the lesson?
- How did the children react, can you remember the situation?
- Were there any challenges or things that you would do differently?
- Can you describe the reasons why you implemented this movement session?
- What in your classroom supports high quality movement to teach academic concepts, can you describe the material and equipment you use to implement moving sessions like this?
- If you look back on our discussion would you like to implement more high quality movement?
- If you look back on our discussion would you like to implement more physical activity?
- What kind of support would you need to implement high quality movement into your classroom?

- What else would help you to implement more high quality movement to teach academic concepts?

APPENDIX E
CONSENT FORM

Appendix E

Consent Form



Informed Consent to Participate in a Research Study

Study Title: A Sequential Explanatory Mixed Method Research Study of Teachers' Perceptions and Perspectives of High Quality Movement in the Classroom

Investigators: Jennifer Walton-Fisette (Principal Investigator), Franziska Widmer (Co-Investigator)

You are being invited to participate in a research study. This consent form will provide you with information on the research project, what you will need to do, and the associated risks and benefits of the research. Your participation is voluntary. Please read this form carefully. It is important that you ask questions and fully understand the research in order to make an informed decision. You will receive a copy of this document to take with you.

Purpose of study: to explore K-5 teachers' perspectives and perceptions of physical activity and movement in education and how it influences learning and instruction.

Procedures: If you agree to participate in this study, you will complete a brief online survey lasting approximately 10-15 minutes. You will be asked questions about teaching in your classroom and your perspectives about physical activity and movement in your classroom. Upon completion of the survey, you will be offered the opportunity to participate in a voluntary audio recorded face- to-face interview conducted at a later date and time that is most convenient for you.

Audio and Video Recording and Photography: If you agree to the **optional** interview to be conducted at a later date: You will be asked to participate in a 45-60 minute audio-recorded interview that will examine your experiences related to your teaching. The audio recording of the interviews is for transcription purposes only. The purpose of the interview is to help us to better understand your perspectives and perceived practice about physical activity and movement in your classroom.

Observation with Photo Elicitation: The next step is to observe you in the classroom. While observing the researcher is taking pictures of you and how you instruct students being physically

active. The pictures are only used for the interviews after the observation and will not be seen by anyone else except the researchers. They will be erased after the data analysis.

Benefits: It is not likely that there will be any direct benefits for participating in this investigation. However, potential benefits include increased self-awareness of your instruction and teaching style and your perspectives about movement and physical activity while learning. By becoming more self-aware how you instruct students, you might reflect more on your practice.

Risks and Discomforts: While participating in the study, the risks for you are minimal but may include:

- Discomfort in responding to survey or interview questions related to physical activity and movement in education.
- Breach of confidentiality is a risk, but safeguards are in place to minimize this risk as outlined in the confidentiality section below.

Privacy and Confidentiality: Your study related information will be kept confidential within the limits of the law. Any identifying information will be kept in a secure location and only the researchers will have access to the data. Research participants will not be identified in any publication or presentation of research results; only aggregate data will be used. Your research information may, in certain circumstances, be disclosed to the Institutional Review Board (IRB), which oversees research at Kent State University, or to certain federal agencies. Confidentiality may not be maintained if you indicate that you may do harm to yourself or others.

Compensation: *You will not receive payment for taking part in this study.*

Voluntary Participation: Taking part in this research study is entirely up to you. You may choose not to participate, or you may discontinue your participation at any time without penalty or loss of benefits to which you are otherwise entitled. You will be informed of any new, relevant information that may affect your health, welfare, or willingness to continue your study participation.

Contact Information: If you have any questions or concerns about this research, you may contact Franziska Widmer at Kent State University at (216) 767-6300 or fwidmer@kent.edu. This project has been approved by the Kent State University Institutional Review Board. If you have any questions about your rights as a research participant or complaints about the research, you may call the IRB at (330) 672-2704.

Consent Statement and Signature: I have read this consent form and my completion and return of this survey will be indicative of my consent to participate in this research study. I may print a copy of this consent statement for future reference.

Participant Signature

Date

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