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A Study of Fourth-Grade Students' Perceptions on Homework Environment and Academic Motivation in Mathematics

Stefanie Harmon
Walden University

Walden University

College of Education

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Stefanie Anderson Harmon

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the review committee have been made.

Review Committee
Dr. Samson Lyman, Committee Chairperson, Education Faculty
Dr. David Falvo, Committee Member, Education Faculty
Dr. Amy White, University Reviewer, Education Faculty

Chief Academic Officer
Eric Riedel, Ph.D.

Walden University
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Abstract

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Stefanie A. Harmon

MA, Walden University, 2011

BA, Georgia Southern University, 2004

Doctoral Study Submitted in Partial Fulfillment

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Abstract

The problem at an elementary school is teachers' lack of knowledge and information on the perceptions and motivation of students to complete independent mathematics homework. The purpose of this study was to identify students' perceptions regarding their homework environment and academic motivation in mathematics. The study's conceptual framework, attribution theory, supported the examination of drivers of motivation for participants related to homework completion. Guiding research questions, supported by Keller's ARCS model, focused on the identification of students' perceptions of homework attention, relevance, curiosity, satisfaction, and their preferred homework environment. This qualitative research study obtained data from semistructured interviews with 44 fourth-grade participants. Data were analyzed using constant comparative analysis to identify motivational drivers of homework completion and students' preferred environment. Findings showed 48% of students preferred a traditional home environment, while 43% of students preferred a study hall environment. Despite these slight differences, students desired environmental conditions that were comfortable, offered resources, had teacher or other adult availability, and provided timely feedback as the primary motivational drivers of homework completion. The project, a white paper, should generate dialogue about understanding students' perceptions about motivation and homework. A proposed homework guide should be used to provide academic support, constructive feedback, and ways to create an environment that supports students' learning needs and work habits. This study may support social change within the community by creating awareness and action to improve student mathematics motivation.

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Dedication

This study is dedicated to all scholar-practitioners who committed to walking down this extremely rigorous and life-changing path. We should all take pride in knowing we are now a part of an elite class of educators and professionals. The change we want to see in education starts with us and it starts today.

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The information presented in this study holds more value than the years and hours dedicated to its completion. It represents how belief and faith can get you through anything. With that being said, I would like to give abundant praise to my Lord and Savior for providing me with strength and perseverance to achieve a lifelong dream.

Thank you to my beautiful daughter, Jalaiah, who is the driving force of everything I do, and to my amazingly supportive and intelligent husband, Brian, who has always believed in me and vowed never to leave my side during this journey. Without their understanding, patience, and much needed hugs, I would not have seen this through to the end. I am forever grateful for their love, which is why I will never settle for mediocrity and will always strive for excellence. Thank you, also, to my invaluable parents, Donald and Gayle, for being an amazing support system during this journey. Thank you for always being so understanding and supporting every decision I have made on this journey. I thank and love you more than words could say. To my encouraging big brother and baby sister, Mario and Amanda, thank you for being my biggest cheerleaders and always speaking so highly of me to everyone you meet. I love and thank you. Thank you to Dr. Shana Baird. You have been there from the beginning, encouraging me without fail. I am so lucky to call you my best friend.

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Section 1: The Problem

Controversy surrounds whether homework is effective because a growing number of students do not complete homework assignments or even attempt to do homework (Adams, 2014). Although local teachers, parents, and students understand the importance of homework, attitudes about homework completion continue to be less than enthusiastic and the inconsistencies in homework submission, specifically in mathematics, frequently haunt and frustrate local teachers (two fourth-grade teachers at Success Elementary School, personal communication, August 25, 2014). At the local level, teachers develop and provide homework assignments, but rarely have 100% of students returned the work, despite teacher accommodations to check for completion rather than accuracy. Teachers hope that checking homework for accuracy may result in students making an effort toward homework completion, even when the homework is not evaluated for quality (Galyon, Voils, Blondin, & Williams, 2015).

Homework is significantly and positively related to mathematics achievement (Fernandez-Alonso, Suarez-Alvarez, & Muniz, 2015; Maltese, Tai & Fan, 2012). Despite this fact, and according to the Georgia Department of Education (2016), mathematics scores in particular were the focal point of school improvement for teachers and leaders of the Success Elementary School (SES), a pseudonym for the school of interest. Standardized mathematics test data showed student performance scores have the lowest percentages of developing and proficiency compared to the other core content areas. It was for this reason homework was provided to students by classroom teachers as a way to improve their success, using content supported resources outside the classroom, while attempting to prevent the complete abolishment of students' motivation.

Homework is largely a learner-centered learning activity and in order to implement learner-centered homework fully, teachers and school leaders must understand students' preferred ways of doing homework and their sources of motivation to maximize the desired outcome (İflazoğlu & Hong, 2012). However, if a student is asked to perform in class all day, it is unknown if homework at home has influence on their achievement or motivation, particularly in mathematics. This idea firmly supported the purpose of this qualitative study regarding fourth-grade students' perceptions on homework environment and academic motivation in mathematics.

In the remainder of Section 1, a definition of the problem and rationale offer justification for the problem and its importance, along with the definition of terms used throughout the study. The significance of the problem and usefulness of the study to the local setting are discussed, followed by the study research questions. This section concludes with the review of literature further addressing the problem and with the implications of the study.

The Local Problem

Teachers commonly assign homework to students as a way to reiterate the important concepts taught in school and practice content related skills. The problem at SES is teachers' lack of knowledge and information collected on the perceptions and motivation of students to complete independent mathematics homework consistently. As local teachers express their frustration with students not submitting homework, it is worth considering the question of whether teachers would get a higher rate of homework submission if students were required to complete the homework in class, rather than taking it home to complete. It is also important to consider if environmental factors that

play a role in submission also affect students' motivation for successful completion and future success. It is important to consider the nature of homework, students' motivation to complete homework, and a possible connection between homework and achievement.

With recent pressure from district, state, and national officials following implementation of the Common Core State Standards, districts have seen not only an increased workload for teachers, but also for students to reinforce course standards inside and outside the classroom (Saban, 2016), specifically in the area of mathematics. Real-world mathematics is seen as a source of dread and avoidance by students who have yet to master foundational skills and mathematical fluency (Ahmed, Minnaert, Kuyper, & Van der Werf, 2013). While educational policymakers believe these standards will help implement rigorous and homogenized academic expectations nationwide (Hampton, 2010), local leaders believe these standards will help solidify basic mathematical skills and build stamina for facing academic complexities (SES administrator, personal communication, August 19, 2014).

Implementation of Common Core State Standards placed substantial emphasis on critical thinking and real-world application, making these new standards more heuristic than previous systems (ASCD, 2012; Kober & Rentner, 2012; Sawchuk, 2012; Shanahan, 2013). The local school district (CCPS) implemented uniform measures across the district to address problems of achievement, performance, test scores, and behavior issues; however, some other policies have not been adequately studied. One such policy is the 5% homework category that all content teachers are required to add to their gradebook. Though CCPS does not require teachers to assign homework, having the mandatory category does imply that homework should be given. Unfortunately, little recent research

has been conducted to examine the effect homework has on student achievement and motivation (Gascoigne, 2015). Most recently, local educators (two SES fourth-grade teachers, personal communication, August 25, 2014) felt that in order for the implementation to be successful and overall goals met, they must push students harder. This consisted of providing even more higher-order, hands-on, student-centered instruction inside and outside the classroom to help raise achievement scores, while still charged with the task of keeping students motivated to learn.

Math is among the subjects teachers typically assign the greatest number of homework assignments (Xu, 2015). Problems concerning student motivation toward learning are ongoing at the local level (SES administrator, personal communication, August 19, 2014). Motivation is often treated as a desirable outcome and a solution to improving understanding (Pantziara & Philippou, 2015). Many local students argue that as the school day comes to an end, they are tired and do not look forward to having additional work to take home, while some expressed if homework had to be assigned, their preference would be to complete their homework in the classroom while waiting to be dismissed (SES administrators, personal communication, August 25, 2014). One fourth-grade teacher reported, "On the average, out of 27 students, about 19 (70%) will complete their homework in the classroom when allowed….This is usually the only way I can really get most of my students to complete their work and turn it in the next day" (SES fourth-grade mathematics teacher, personal communication, August, 25, 2014). Another teacher reported:

> Even though I can't do it every day, I sometimes wrap up my lesson about 10 minutes before dismissal so students can start on their homework. Even though

> they all don't get finished before they have to leave, at least they are all motivated to do it because it's a whole class thing. Then by the next day, I'll probably have like three or four students, tops, who didn't take it home to finish it (84%–88%). So, out of like 26 students, I'll take that. (SES fourth-grade mathematics teacher, personal communication, August 25, 2014)

The problem at SES is teachers' lack of knowledge and information collected on the perceptions and motivation of students to complete independent mathematics homework consistently. Regrettably, there is a paucity of research conducted on students' homework environment preference and motivation; thus, it was the intent of the researcher to study students' perceptions on homework environment and academic motivation in mathematics by focusing on fourth-grade students in a local CCPS school.

Rationale

The problem at SES is teachers' lack of knowledge and information collected on the perceptions and motivation of students to complete independent mathematics homework consistently. SES educators acknowledge this as a growing problem with fourth-grade students (three SES fourth-grade mathematics teachers, personal communication, September 18, 2014). Researchers have argued both for and against the benefits of homework (Cooper, Robinson, & Patall, 2006). Although there are many educational issues affecting students, parents and teachers agree that homework is stressful (Katz, Eilot, & Nevo, 2014), further placing a strain on homework submission. Teachers at SES felt that this push toward rigor, along with the heavier workload, would result in students being unmotivated (two SES parents, personal communication, August 25, 2015), thus having a negative impact on academic achievement. Parents at the local

school site also expressed great concern that the homework would be even more difficult for students and they would not receive the help they really needed for the difficult tasks outside school (SES parent, personal communication, September 24, 2014).

Although students see the importance of doing homework, they also consider it time-consuming (Letterman, 2013) and boring at times (Gotz et al., 2012). The administrative team at SES was seeking new approaches to expand and inspire life-long learning for students and to increase parental contribution. Local students found it more difficult to keep up with the increasing pace of a much more rigorous mathematics curriculum due to the greater push in education aimed at the implementation and instruction of STEM studies, often leading to unattainable and unrealistic goals and student growth percentages (Ravitch & Riggin, 2016). Moreover, students felt weighed down and exhausted by the requirement of nightly homework completion (three SES fourth-grade students, personal communication, August 28, 2014).

Some SES parents expressed only a reasonable understanding of their child's homework obligations and did not feel confident that they could effectively support the students (SES parent, personal communication, August 27, 2014). With varying skillsets taught in fourth-grade mathematics classes, parents found the homework challenging and time consuming because they rarely use those same math skills in their everyday lives (two SES fourth-grade students, personal communication, August 27, 2014). Lange and Meaney (2011) reported that when students experience high levels of frustration, they often resist help or abstain from asking for it. This potentially results in students' reluctance to complete homework. When students experience personal frustration due to lack of skill proficiency, combined with the frustration of trying to explain mathematical

concepts to parents who also lack knowledge and skills, the results are often resistance to help, withdrawal, and emotional trauma (Jungbluth & Shirk, 2013).

In the local school district, classroom teachers reported that in a classroom of 25 students, approximately 15–18 students turn in homework (four SES fourth-grade mathematics teachers, personal communication, August 27, 2014); however, the work may be incomplete or inaccurate. Furthermore, local mathematics teachers expressed concern with the problem of student homework completion and submission (SES fourth-grade mathematics teachers, personal communication, August 27, 2014). Often students who struggle with homework do not complete their homework, complete it incorrectly, or are frustrated with the task (DuBois, 2011). Exhaustion, stress, and decreased motivation were also major concerns for parents (two SES parents, personal communication, September 18, 2014). Homework can be deemed ineffective if students are unable to complete their homework or work completed is inaccurate (Fisher, Lapp, & Frey, 2011).

With the lack of extended time to address rigorous content standards and skills, many parents, students, and even some teachers question the need to assign homework (three SES parents, personal communication, September 15, 2014). More recently, the strategy to maximize learning time has resulted in schools extending the school day or year to see significant gains in student growth and performance scores (Maltese, Tai, & Fan, 2012). However, this was not observed in the current study.

Local teachers are accountable for adhering to the instructional pacing guide regardless of a student's readiness level, creating challenges for teachers to plan effectively and differentiate homework assignments. When students practice mathematical techniques that are not doable for them, apply an incorrect solution or

problem-solving technique, and continue to practice it, mathematical skills can be damaged (Xu, 2013). Therefore, if homework tasks are not readily within the competencies of the students, it could cause anxiety for them and their parents (Grootenboer, 2009), in turn causing students to lose confidence in mathematics and other subjects, put forth a minimal effort in class participation, and neglect future homework assignments (SES fourth-grade mathematics teacher, personal communication, September 15, 2014).

When students consider homework assignments difficult, they lack motivation in mathematics, resulting in minimal class participation and little effort put forth in future homework assignments (SES fourth-grade mathematics teacher, personal communication, September 15, 2014). Additionally, some SES students feel their environment also plays a significant role in their ability to complete their homework successfully (two SES fourth-grade students, personal communication, October 9, 2016). Local students also state that when their environment is loud and lack resources and adult support, they often admit to struggling with completion (two SES fourth-grade students, personal communication, October 9, 2016).

For decades, homework has been thought to have beneficial purposes for student achievement and should be designed properly to meet the interests of all students while increasing recall and speed, and reinforcing use of content and skills (Dean & Marzano, 2013). With recent emphasis placed on rigor and explicit instruction, homework is given in an attempt to enhance students' knowledge and understanding of the content; however, on the local level, homework submission lacks consistency and student motivation is becoming more difficult to retain. As a result, controversy surrounds whether homework

is effective because a growing number of students do not complete homework assignments or even attempt to do homework (Adams, 2014). For that reason, the purpose of the study was to investigate the perceptions of a group of fourth-grade students about homework environment and academic motivation in mathematics.

Definition of Terms

The following terms have been provided to define and clarify terms used to support the research problem.

Academic motivation. The will to learn (as reflected in approach, persistence, and level of interest) despite judgement of proficiency against performance or excellence (Saeid & Eslaminejad, 2017).

Common Core State Standards. A set of shared goals and expectations regarding the knowledge and skills students need in numerous content areas and grades to foster long-term success in college, career, and life (Common Core State Standards Initiative, 2016).

Homework. Homework assigned to elementary students is used in order to elevate cognitive capacity in managing homework assignments (Tam & Chan, 2016). Opinions about the technical definition of homework differ somewhat among theoretical orientations (Lent, 2017). For this study however, homework was defined as "academic tasks assigned by teachers to be completed by students outside instructional time" (Cooper, Steenbergen-Hu, & Dent, 2012, p. 2).

Homework environment. For the purpose of this study, homework environment is the location in which a student works to complete any additional tasks assigned outside the normal school day. However, homework environment management (students' efforts

to deliberately select their preferred homework environment to minimize potential distractions and to stay focused on the task) is absent from current homework literature (Xu, 2012). The terms *homework environment* and *homework style* were used interchangeably in this study.

Mathematics achievement. For this study, mathematics achievement was defined as one's ability to demonstrate a level of mathematical skill attainment and application, typically measured by performance proficiency on an assessment tool (Nizoloman, 2013).

Significance of the Study

Many students view homework as a daily stressor (Katz, Buzukasvili, & Feingold, 2012). No matter the workload throughout the school day, it is expected that every student will complete some form of homework (Maltese et al., 2012). The results of this study may be beneficial for instructional designers, district leaders, teachers, parents, and students, and could possibly provide insight into the type of environment that affects work completion and academic motivation. In addition, the results could also provide a greater understanding regarding how a homework environment affects student performance levels in mathematics. The findings of this study could result in an increase in collaborative planning amongst the teaching community and allow teachers to design more customized classroom and homework assignments. Furthermore, findings could also help increase parental support in homework assignments, which may improve students' work completion, accuracy, academic motivation, and overall academic performance. The purpose of this study was to identify fourth-grade students' perceptions regarding homework environment and academic motivation in mathematics.

Research Questions

Homework is a growing, yet minimally researched part of young children's everyday lives (Farrell & Danby, 2015). While interest-related and relevant homework assigned appropriately attracts students' interests, an overload of homework minimizes students' interests and results in exhaustion. As the United States struggles each year to regain its international economic standing, there is a strong determination to raise student achievement scores in mathematics for students to compete successfully on a global scale. The guiding research questions are as follows:

RQ1. What strategies do fourth-grade students believe help arouse and sustain their mathematics curiosity and interest?

RQ2. What strategies do fourth-grade students believe help support their individual mathematics needs?

RQ3. In what ways do fourth-grade students feel motivated to develop a positive expectation for successful mathematics achievement?

RQ4. In what ways do fourth-grade students feel they are provided motivational reinforcement for effort?

RQ5. What type of homework environment do fourth-grade students prefer?

Review of the Literature

The purpose of this study was to identify fourth-grade students' perceptions regarding homework environment and academic motivation in mathematics. The literature review is an overview of historical and current literature on the topics of homework and motivation and consists of scholarly and peer-reviewed resources. Several databases located at the Walden Library were used to develop this review. These

resources included but were not limited to ProQuest Central, Academic Search Complete, EBSCOHost, Education Source Complete, and ERIC. Primary search terms used to support the development of this literature review included *homework*, *environment*, *motivation*, and *achievement.* In this section, the conceptual framework is presented, after which the review of current literature is organized into the major themes of learning environment, motivation, mathematical curiosity, and individual learning needs.

Conceptual Framework

Ravitch and Riggan (2017) defined conceptual frameworks as a rationalization about why a specific study is appropriate. Attribution theory was used to ground this study and supports the focus on understanding what attributes motivate students in an educational setting. The conceptual framework is further supported by the incorporation of Keller's (1983) ARCS model of motivation for instructional design to help educators measure the relationship between student motivation and academic achievement. Learning is about more than just knowing isolated facts; neither learning nor motivation should be viewed through a one-size-fits-all lens. Instead, educators should motivate learning by teaching concepts in a way that allows learners to understand, transfer, apply, and extend their knowledge. Attributes are often thought of as the cause to an effect or outcome and once identified by a teacher, these student characteristics can offer great insight into what drives students' motivation to learn.

Attribution theory. Attribution theory was originally presented by Weiner (1985) to focus on the analysis of factors associated with success and failure. The main idea behind attribution theory is that most people search for factors influencing previous successes or failures. When faced with a similar success or failures, people are motivated

by those influences to either avoid future failure or increase their chances of success (Csaba & Esther-Gutierrez, 2015). Motivation can be considered the logical connection among key elements of the framework because it helps narrow the scope of understanding which factors influence an individual's perceptions and experiences.

Weiner later narrowed his focus on academic achievement and identified ability, effort, task difficulty, and luck as the key factors people ascribe for their achievement (Gabillona, 2013). According to those key factors, attributions can then be categorized into one of three fundamental dimensions: locus, stability, and controllability. According to Fishman and Husman (2017):

> Locus refers to the location of a cause, whether it originated from an internal or external source; stability refers to the duration of a cause, whether it is considered lasting (stable) or temporary (unstable); controllability refers to the degree to which the cause can be volitionally altered. (p. 560)

The way these causes are identified and interpreted helps determine individuals' most probable future attitudes and actions.

Attribution theory emphasizes the idea that students are affected by external and internal factors, and are strongly motivated by self-perceptions. Attribution theory is often viewed as a motivational theory examining various influential aspects influencing human behavior (Dörnyei & Ushioda, 2013). The theoretical focus on motivation closely supports the aim of the study to understand the factors motivating students' preferred homework completion environment.

ARCS model. Countless interpretations of achievement motivation are used in educational research. Atkinson and Reitman (1956) referred to motivation as "the

tendency of a person to want to achieve" (p. 4). Motivation, curriculum, and homework assignments should not be viewed independently of one another; however, all factors that influence motivation affect the outcomes of student performance and accuracy. When the effort is put forth by the teacher to recognize how individual students learn, homework can be relevant, problems can be minimized, and experiences can be positive for the student and teacher (Hong, Wan, & Peng, 2011).

The conceptual framework supporting this study is further supported by the incorporation of Keller's ARCS model of motivation for instructional design. The ARCS model was developed to assist educators in measuring the relationship between student motivation and academic achievement. Keller (1983) identified four essential strategy components for motivating instruction:

- [A]ttention strategies for arousing and sustaining curiosity and interest;
- [R]elevance strategies that link to learners' needs, interests, and motives;
- [C]onfidence strategies that help students develop a positive expectation for successful achievement; and
- [S]atisfaction strategies that provide extrinsic and intrinsic reinforcement for effort. (p. 383)

Attribution theory conceptually aligns with the purpose of the study. The research on attribution theory supports this study of fourth-grade students' perceptions on how the work environment affects their motivation to complete mathematics homework. Attribution theory relates to the approach of the study by exploring how motivational drivers affect students' perceived academic motivation for completing mathematics

homework. It also provides the reader further information about these findings according to how they reflect one of four influential factors (ability, effort, task difficulty, and luck) to better comprehend students' perceptions regarding sustaining their mathematical curiosity, receiving mathematical support, their expectations for achievement and effort, and their preferred homework environment.

Historical Background and Purpose

At the start of the 20th century, there were many controversies and arguments concerning homework (Vatterott, 2009). In the early 20th century, there were harsh criticisms of homework in education regarding the amount assigned to students in relation to the value it gave toward achievement. In the 1940s and 1950s, homework was thought to be a mental strengthening activity to promote problem solving and accelerate knowledge acquisition (Cooper, 2001). Then in the 1960s, Wildman (1968) wrote that homework was perceived as needless pressure, interfering with the basic social and physical necessities of adolescents. Decades later, in the 1980s, homework was once again viewed favorably as a way to end the mediocrity in educational institutions in the United States. This attitude continued into the 1990s as states implemented more rigorous academic standards (Valle, Pan, Núñez, Rosário, & Rodríguez, 2015).

Homework has always been assigned with the intention of reinforcing academic skills to be completed during non-instructional time. In addition to its academic benefits of improved achievement, homework was thought to have other nonacademic benefits, such as fostering independence and personal responsibility and increasing parental involvement (Tam & Chan, 2016). At the beginning of the 21st century, a majority of teachers, parents, and researchers believed that practice and repetition helped students

learn best and retain important academic information. Homework then developed as a potential vehicle to enrich achievement. Bempechat et al. (2011) found that both parents and students were equally understanding of the intent of homework, yet students were more focused on how these tasks impacted their grades and pleased their parents and teacher. Patall, Cooper, and Wynn (2010) reported that, "More than 80% of teachers and parents, and 77% of students agreed that homework is very important or important" and "teachers and parents (90%), and 69% of students believed that homework can help students to learn more in school" (p. 903). More recently, parents reported not only their support for homework (Maltese et al., 2012), but also supported schools calling for increased homework to meet the demands of global competition in schools and the workforce. Despite the varying perspectives of the benefits of homework and sustaining motivation, increasing student achievement has always remained at the top of nearly every educational platform and school agenda.

Review of the Broader Problem

In addition to the conceptual framework supporting this study of fourth-grade students' perceptions of homework environment and mathematics motivation, the literature review provides a critical review of the local problem, along with a broader look at what research says about homework completion, the learning environment, and mathematics motivation. The broader question should not seek to answer if there are benefits to homework because this has been shown to be true (Cooper et al., 2006; Marzano & Pickering, 2007; Van Voorhis, 2011). Instead, Carr (2013) suggested that homework can be enhanced to be more effective, doable, and motivating for students. Many studies have confirmed the importance of homework (Vandenbussche, Griffiths, &

Scherrer, 2014); however, the literature, research, and data supporting the connection between motivation, environment, and homework completion are lacking. Getting students to complete and submit homework has been a challenging task for teachers for years. Yet, few researchers have studied the possible causes of this problem, nor have studies been conducted to understand better the motivational drivers of homework completion for elementary students.

Rationale from Past Researchers

The purpose of this study was to identify fourth-grade students' perceptions regarding homework environment and academic motivation in mathematics. Many researchers still view the beneficial and consequential connection between homework and achievement as ambiguous. Cooper et al. (2006) revealed decades of evidence proving a positive association between completed homework and academic achievement. Zimmerman and Kitsantas (2005) showed continuous completion of homework is closely associated with academic achievement. Valle et al. (2016) also found a connection between homework completion and academic accomplishment, demonstrating the more homework a student completes, the greater the achievement.

A combination of effective instructional practices, classroom engagement, and homework helps to increase student achievement (Patall, Cooper, & Robinson, 2008). Effective homework provides the opportunity for students to practice the skills necessary to strengthen their knowledge and deepen their understanding of the content. For students to even attempt to put forth their best effort and make the conscious decision to choose excellence, classwork and homework must be relevant, doable, and most importantly, motivating. Bembenutty (2011) also found positive relationships exist between

homework, self-efficacy, goal setting, time management, managing their environment, and active engagement. Not only does homework have potential academic benefits, but it can also positively affect children's ability to believe in their own personal success through hard work and skill mastery.

Current Research Literature

Attention has shifted toward assisting students to mature as multifaceted thinkers and imaginative problem solvers (Partnership for 21st Century Skills, 2015). Fernandez-Alonso et al. (2015) found that homework is positively related to math achievement. While a range of indicators have been used in previous research on homework, including homework time, frequency, completion, effort, and grades, different studies may have used different indicators, which may have contributed to the inconsistent findings regarding the relationship between homework and achievement (Fan, Xu, Cai, He, & Fan, 2017). Attempts to determine the causes for these inconsistencies have recently been reintroduced to empirical research (Katz et al., 2012; Katz et al., 2014). Though numerous studies have been conducted on various aspects of homework, the complexities of homework, especially the cultural context in which it is completed, still eludes the academy (Rudman, 2014).

Minimal evidence exists on homework completion over time (Danko, Brown, Van Schoick, & Budd, 2016). One must consider the level of engagement, the complexity of the homework, and required resources that may help or hinder students' motivation for completion. When students are provided homework assignments that relate to personal values, satisfy their immediate needs, and allow them to see long-term benefits, their attention is captured and motivation is enhanced.

A dissimilarity between homework and classwork is that homework is typically done without supervision and with fewer distractions (Katz et al., 2012). Compelling homework assignments enhance content and skills, are cognitively challenging, and require meaningful application of knowledge and skills (Alleman et al., 2010). Mathematics skill mastery is an essential part of being prepared global citizens in the current technological world. For that reason, it is imperative to recognize the importance of improving homework's effectiveness on learning and achievement (Rosário et al., 2015). This is particularly essential to mathematics, a content area with usually high levels of homework (Xu, 2015). With mathematical mastery, students can think logically and critically, problem solve, and have greater options for continued education and careers. It is critical that students know how, when, and where to use these academic concepts and processes, and designing and assigning the proper homework helps students with this understanding.

Learning environment. When teachers allow students to learn in environments and under conditions they prefer, they perform better in school, are more motivated to learn, and have an overall improved attitude (Dunn & Dunn, 1993). Traditionally, take home assignments have been said to offer great benefits for students, particularly at the elementary level. Conditions for learning in the home environment may produce different motivational patterns compared to those observed in the classroom (Hong, Mason, Peng, & Lee, 2015). In contrast, factors such as teacher-student interactions and classroom dynamics affect learning at school. Historically, it was assumed that many students prefer a quiet environment to better focus on challenging material, while rarely did students express the ability or desire to work with noise in the background (Pizzo, Dunn, & Dunn,

1990). Xu (2015) stated that, "Further anecdotal evidence gleaned from primary school teachers' conversations with parents show that many believe that a quiet room was the only place for their child to do homework properly. However, research findings dispute the efficacy of this" (p. 307).

Teachers are essential to establishing the culture and climate of the learning environment (Eccles & Roeser, 2011), which includes enhancing and sustaining student engagement and motivation. To maintain a progressive impact on student achievement and motivation, the working environment must be conducive to work productivity. Environment differentiation is customizing the environment so that it is conducive for students' learning (Davis, 2013). It can mean providing a quiet space for students, allowing movement for some students, or as a place for students to work sitting still (Sondergeld & Schultz, 2008). Little evidence is known regarding the contexts that early childhood learners would prefer to learn mathematics (Kazima, 2015) or in which environment they perceive to be most beneficial to their success. This lack of literature on what students find interesting as contexts in learning mathematics or environment preference motivated this qualitative study on fourth-grade students' perceptions of homework environment on academic motivation in mathematics.

Motivation. Watter and Ginns (2000) defined motivation as "a complex psychological concept, associated with curiosity, learning, and performance" (p. 218). Therefore, teachers must acknowledge that the type of motivation required for successful homework completion in a non-school environment can be vastly different from how students are motivated to complete in-class tasks (Katz, Kaplan, & Gueta, 2009). From the perspective of the student, any assigned homework should have obvious, measurable,

and real-world benefits in order to be considered motivating, especially for the struggling learner (Carr, 2013). Educational gaps created during the early stages of a learner's academic career pose challenges both for students and those attempting to bridge them; therefore, it is crucial to identify relevant factors contributing to motivation, as it sets the stage for academic achievement, and more importantly, life-long learning (Bodovski, Nahum-Shani, & Walsh, 2013). If homework is assigned that challenges students to think critically and use the skills they were taught, evidence of growth achievement and motivation could be seen (Ahmed et al., 2013).

Students' thinking styles and their attitude toward school are two major determinants of their learning and academic success (Ramzan, Ahmad, Ali, & Amjad, 2016). Additional research has also expanded on self-efficacy in mathematics, arguing that the higher the self-efficacy in a specific content, the more successful the student is likely to be that content area (Fast et al., 2010; Klassen, 2004; Stevens, Wang, Olivárez, & Hamman, 2007). In other words, the greater the level of confidence a student possesses for a given content area, such as mathematics, the greater the likelihood of success.

In addition to self-efficacy, teachers' motivational behavior also affects students' perception of positive expectations for achievement. Motivational behavior is comprised of three dimensions: (a) the interpersonal relationship between the teacher and student, (b) the structure of communication and instructional delivery, and (c) autonomy support (You, Dang, & Lim, 2016). Additionally, the level of support provided by a child's teacher plays a significant role in students' self-efficacy, motivation, and achievement (Maulana, Opdenakker, & Bosker, 2014; Maulana, Opdenakker, Stroet, & Bosker, 2013). Therefore, research has found that when a teacher offers positive reinforcement, praise,

and feedback, students adopt a more positive perception of the teacher, and in turn, engagement and motivation are increased.

To further stimulate motivation in students and improve the quality of the tasks, inclusion of students in the design process should be strongly considered. Assignments created without considering the interests, needs, and preference of students can lead to boredom or possible frustration (Carr, 2013). When the teacher takes the time to listen to students' perceptions of homework, identify the attributes of motivation, and acknowledge the preference of environment, homework can be designed with greater intention on meeting the needs of the student, possibly resulting in increased motivation and achievement. As a result, when students are motivated, the chances of raising student achievement are greater. To date, no researcher has studied elementary students' motivation toward homework.

Mathematical curiosity. Academic persistence enables students to engage in academic tasks even when facing challenges and is associated with mastery of skills and content areas (Véronneau, Racer, Fosco, & Dishion, 2014). Véronneau et al. (2014) surveyed two cohorts of 997 adolescents and concluded that mathematical curiosity and effortful control were directly associated with educational attainment. These results support the idea that the more attention given to fostering and supporting students' mathematical curiosity, the greater student motivation and content retention.

Butler-Barnes, Varner, Williams, and Sellers (2017) also conducted a longitudinal study of 262 adolescent participants on academic persistence. Their findings indicated academic curiosity was positively associated with academic persistence and that high academic curiosity may indicate intrinsic motivation to learning. Given the longitudinal

nature of this relationship, Butler-Barnes et al. suggested early fostering of academic curiosity and intrinsic motivation for learning may be important for fostering stable academic persistence over time.

Further studies have shown that academic curiosity and engagement are associated with academic persistence as well as other academic outcomes (Renaud-Dubé, Guay, Talbot, Taylor, & Koestner, 2015; Vallerand & Bissonnette, 1992). Te Wang and Holcombe (2010) also implied that adolescents who believe in the importance of doing well in school demonstrate higher engagement and achievement, and connect this to future success. Therefore, academic curiosity and persistence may be related across time because high academic curiosity may indicate intrinsic motivation to learn.

Individual learning needs. Students' ability levels in public schools vary considerably according to their ability, cultural background, previous experiences, and learning style (Hepworth, 2014). As a result, teachers are responsible for providing the necessary support to meet the individual learning needs of students, which includes the implementation of appropriate design and effective strategies for all learners. Carr (2013) further supported this by saying while homework is valuable tool, teachers must understand the challenges students faced by students who are below grade level. Therefore, teachers should be cognizant of students' preferred learning styles in order to make homework assignments more purposeful for the learner (Carr, 2013).

Differentiation is an essential component of teaching and learning. Tomlinson and Imbeau (2012) reported that, "Differentiation consists of elemental pathways, assignments, assessments, and/or homework for students' individualized needs in a heterogeneously academic leveled class" (p. 18). Differentiated homework assignments

provide an opportunity for all students to be successful. Proper differentiation includes individualization of the content, process, products to meet the needs of all learners (Tomlinson & Imbeau, 2012). To achieve mastery of the standards and maximize achievement, there must be increased efforts to differentiate for "the wide ranges of ability levels, learning styles, and cultural/linguistic backgrounds" (Lawrence-Brown, 2004, p. 36). Differentiation should be considered a way to focus on supporting the individualized needs of students, rather than separating the various learning styles and abilities (Smeeton, 2016). In order to do this, proper planning is important. Smeeton (2016) noted that for these plans to be most effective, teachers must take the time to plan appropriately to provide assignments and learning experiences that align with their students' level of understanding. Adlam (2007) found that teachers in the same grade level need adequate time to collaborate to establish best practices that employ differentiation to meet individual learning needs. Tomlinson (2012) noted that although teachers understand the value of differentiation, they often lack the ability to implement it effectively. This lack of ability primarily includes limited resources and the time one must invest for proper implementation of differentiation. However, research shows that differentiated planning recognizes and supports peers in a way that their learning style can be nourished as individual learners, regardless of whether they find school easy or difficult (Lawrence-Brown, 2004).

Epstein and Van Voorhis (2001) stated that, "When teachers design homework to meet specific purposes and goals, more students benefit and complete their homework" (p. 191). Hall (2002) also believed that differentiated instruction requires teachers to be responsive and flexible in their instructional approach and adjust the content delivery,

processes, and assignments of the curriculum, as opposed to expecting learners to modify themselves for the curriculum. When this becomes the paradigm and planning is differentiated, it can help maximize content attainment and provide adaptive curricula for students challenged by learning concepts.

Implications

The study findings may provide educators, school leaders, and policymakers insight about a district homework policy better aligned with students' academic and motivational needs. Schools work to establish a culture that values homework and views completion as a standard, rather than a goal (Watkins & Stevens, 2013). Although many classrooms and schools currently implement and adhere to their own homework policy, research results may be beneficial to the local site as well as other schools in the district that are facing the same problems addressed in the current study.

In response to motivation, achievement, and individual learning styles, stakeholders are continuously searching for ways to implement best practices to meet the needs of all learners (Davis, 2013). Because improved mathematical achievement is a district focus, the study could offer relevant information about which homework environment is preferred and which yields higher levels of motivation and positively affects mathematics achievement. As a result, a policy paper was completed, with recommendations to modify current homework practices to motivate and support the learning needs of SES students, thus ultimately having a positive effect on achievement.

Summary

Student preference for homework, homework environment, and its potential influence on academic motivation was outlined in this section. The rationale for the study

was presented for both the local level and beyond. The research questions were designed to focus on the identification of strategies that sustain student curiosity, support their learning needs, and foster motivation for success and effort, and to describe students' preferred homework environment. The attribution theory was identified as the conceptual framework used to provide valuable information supporting academic motivation and to identify its influence on homework completion and preference of environment. Finally, past research combined with current research suggest the potential benefits of homework design, environment, and motivational factors relating to overall academic success.

Section 2 contains a description of the research study, the setting and sample, and how data were collected. Results of the data analysis are presented. The third section, the project, is a description of the researcher's solution to the problem as it was informed by the research findings. The researcher's reflections on project strengths and limitations in addressing the problem and recommended ways to address the problem are presented in Section 4. An analysis of what was learned and a reflection on the importance of the work is presented.

Section 2: The Methodology

Georgia school districts transitioned from the Georgia Performance Standards to the Common Core Standards for education, which pushed teachers to try and motivate students to work harder by increasing instruction in class and at home to reach desired test scores (Ramdass & Zimmerman, 2011). Even with the increase in instructional minutes for core content areas, teachers still rely on homework to support the reinforcement of lessons taught in the class, as it is commonly believed that homework provides that support (Zhu & Leung, 2011). The purpose of this qualitative study was to identify fourth-grade students' perceptions regarding homework environment and academic motivation in mathematics. The following research questions guided this study:

RQ1. What strategies do fourth-grade students believe help arouse and sustain their mathematics curiosity and interest?

RQ2. What strategies do fourth-grade students believe help support their individual mathematics needs?

RQ3. In what ways do fourth-grade students feel motivated to develop a positive expectation for successful mathematics achievement?

RQ4. In what ways do fourth-grade students feel they are provided motivational reinforcement for effort?

RQ5. What type of homework environment do fourth-grade students prefer?

Included in Section 2 are details about this study, including a rationale for the research design, the setting, population, sample, and the data collection procedures. Also included are the results of the analysis and evidence of its trustworthiness. Finally, the assumptions, limitations, scope, and delimitations of the study are presented.

Qualitative Approach

The purpose of this study was to identify fourth-grade students' perceptions regarding homework environment and academic motivation in mathematics. The data were the transcribed interview responses from student participants who provided their personal experiences regarding homework, discussed what motivates them academically, and offered perspectives on three different homework settings. A qualitative research method was the chosen approach for this study. Qualitative research is based on the phenomenological position that seeks to make meaning of the perspectives of participants (Denzin & Lincoln, 2018). Qualitative methods provide an opportunity for the researcher to conduct interviews and focus on the process of interpreting and understanding participants' experiences (Yilmaz, 2013). Direct quotations through the interviewing provide detailed and variable content, adding depth to document responses.

Qualitative research isolates target populations to gain rich insight regarding participant perceptions (Denzin & Lincoln, 2018). In contrast, quantitative research emphasizes the necessity of having a large population sample in order to draw conclusions about phenomena based on statistical data. Qualitative research was more suitable for this study because it focused on the social context of participants' personal experiences that are accurate and reliable through verification and cannot be simply reduced to numbers (Denzin & Lincoln, 2018). The quantitative researcher prefers to accumulate facts through careful isolation to test a theory, while a qualitative researcher focuses on participants' experiences (Park & Park, 2016). Therefore, the qualitative method was the most applicable method of obtaining the perspectives of participants related to motivation and homework completion.

The problem at SES is teachers' lack of knowledge and information collected on the perceptions and motivation of students to complete independent mathematics homework consistently. Therefore, the purpose of this study was to identify fourth-grade students' perceptions of homework environment and academic motivation in mathematics. Interviews were the chosen qualitative research method in order to provide the researcher the opportunity to obtain rich data regarding the perceptions of this particular group of students. In the current study, the data were analyzed using the constant comparative method that showed relationships between categories created to define the students' perspectives on how homework motivated them. Through the constant comparative method, the researcher integrates these categories into a model that helps explain the social processes found in groups of people (Denzin & Lincoln, 2000). These findings were used to to provide better insight into the inconsistencies of homework completion for school leaders, teachers, and parents.

Setting and Sample

The research study took place at SES, which has a population of approximately 850 students. The school's population is racially, ethnically, and economically diverse (84% are recognized as economically disadvantaged and 87% receive free/reduced lunch). The study population included African American students (70%), Hispanic students (12%), Asian and Pacific Islander students (13%), and Caucasian students (5%). Forty students received special education services and 128 students had limited proficiency in English. This school was also identified as a Title I Distinguished School.

A purposive sample was selected from approximately 132 fourth-grade students. The criteria for inclusion in the study were that the students (a) be fourth graders, (b)

have their parents' permission, and (c) provide their assent. The fourth grade was chosen because I believed teachers were more likely to be flexible in their homework policy because there was no end-of-the year state-mandated testing. Without the pressure of standardized testing, these teachers were more able to improvise when assigning homework. The fourth-grade teachers were also the most vocal about students who did not submit homework or did not complete the assignments correctly.

Initially, a mixed methods study was planned that included quantitative data that would be analyzed by the type of homework environment to which the students were exposed. The quantitative component of the mixed methods study could only be conducted if at least 30 students were in each group (n = 90 or approximately 68% of the students). However, of approximately 132 students invited to participate in the study, only 44 (33%) returned both assent and consent forms, despite several attempts by the researcher to resend forms and extend submission deadlines. Due to the small sample size, there was an insufficient amount of quantitative data to support the initial purpose of the study. Therefore, the focus of the study was redirected to address the rich qualitative data provided by participants.

The three participation groups included a traditional environment, students who were assigned traditional take-home homework each night (n = 9); a study hall environment, students who completed assignments in either a before or after school setting (n = 20); and the optional environment, students who were assigned the optional mathematics homework setting (n = 15). These students were selected according to availability and willingness to participate in the study. Their assignment to each group was based on their homeroom assignment.

The students were informed that they would participate in two interview sessions approximately 20 minutes long. Protecting the rights and privacy of participants in this study was a top priority. Following Institutional Review Board approval and prior to data collection, informed assent was requested and obtained from all willing participants, along with a parental consent form. The forms included information stating participation was voluntary, names and identities would remain confidential, and participant rights would be protected.

Protecting the rights and privacy of participants in this study was a top priority. To ensure the students' confidentiality, each classroom was identified using an alphanumeric code (i.e., Group E1a, E1b, E2a, or E2b) and each individual student participant was issued a number (i.e., 1–25). Teachers were only identified by the alphanumeric code of their classroom. All rights of the participants were protected by my commitment to adhere to all research study guidelines. All raw data are stored on an external hard drive, locked in a secured safe. The data will be retained for 5 years after the study is completed. The data will then be destroyed.

Data Collection Strategy

Qualitative data were collected from interviews conducted at the beginning and end of the study. I interviewed 44 fourth-grade students during one-on-one initial and post interviews using semistructured questions (See Appendix B). Semistructured qualitative research interviews are purposeful in obtaining personal experiences of the interviewee, which are then interpreted to describe a phenomenon (Brinkmann & Kvale, 2015). Each interview was conducted in a private area and lasted about 20 minutes. All

interviews were audio recorded and transcribed verbatim. The transcriptions were used to answer the five research questions.

The interviews were guided by Keller's ARCS model of motivation design, developed and first introduced in 1979 as a method of effectively and systematically identifying and solving problems with motivation. I transcribed the audio-recorded interviews and saved them as Word documents. The initial and closing interview protocol instruments were framed by the ARCS model and aligned to the research questions; thereby, serving as the best resource for data collection.

I made contact with the building administrator to communicate the purpose of the study, the importance of participant input, and to request site access. After I obtained site and district permissions and approval from the Walden Institutional Review Board, fourth-grade teachers were invited by email (See Appendix C) to attend a session explaining the purpose of the study, how they could become participants, what they would be required to do. After the teachers agreed to participate, I scheduled a time to speak with their homeroom classes.

To gain access to the participants, I requested permission from the fourth-grade teachers to share information about the study with their students and to answer any questions they may have had. Next, I requested parental consent and student assent. The principle of informed consent is that it is the researcher's responsibility to inform participants completely of different aspects of the research in comprehensible language (Sanjari, Bahramnezhad, Fomani, Shoghi, & Cheraghi, 2014). All participants were provided a student assent form for minors and a parental consent form. The forms provided full disclosure of the nature of the study, including benefits and potential risk to

participants, as well as the specifics of what data would be collected, the logistics of data collection, and the expectations of each participant. The forms also included a promise that no identifying information would be used in the dataset or reports produced.

Prior to data collection, I was a member of the building faculty and served in several roles, including teacher, grade-level chairperson, building lead mentor, and PBIS coach. I had a working relationship and open lines of communication with administration and staff. This relationship allowed for a professional level of respect, trust, and comfort among all parties. During the data collection process, I acted as interviewer, recorder, and transcriber and did not act in a supervisory role over the study participants.

As the researcher, I felt it my responsibility to initiate change to improve ineffective practices and to communicate this intent to other educators. In order to do so and to minimize the possibility of bias in data collection, I avoided interactions with participants outside the private interviews. Furthermore, I reduced coercion by reassuring participants of confidentiality, reminded them that participation was strictly voluntary, and therefore they could withdraw anytime without penalty.

Data Analysis

In the current study, a predetermined list of codes initiated the preliminary coding scheme. This list of codes was derived from Keller's (1983) ARCS model of motivation for instructional design to help educators find relationships between student motivation and academic achievement. The ARCS model identified four essential strategy components for motivating instruction:

- [A]ttention strategies for arousing and sustaining curiosity and interest;
- [R]elevance strategies that link to learners' needs, interests, and motives;

- [C]onfidence strategies that help students develop a positive expectation for successful achievement; and
- [S]atisfaction strategies that provide extrinsic and intrinsic reinforcement for effort. (Keller, 1983, p. 383)

An additional coding method, defined by Saldaña (2016) as provisional coding, was used to compare the data and properly code it. The constant comparative method was used to analyze the students' initial and post interviews. Glaser and Strauss (1967) developed the constant comparative method and defined this analytic technique as a process by which data are compared continuously and coded into categories until no more variation occurs. Three types of coding can be used in the constant comparative method: (a) open coding brings organization to the data, (b) axial coding finds the interconnectedness of the categories, and (c) selective coding defines the main themes in the data and relates each theme to the other. These types of coding helped me find the patterns in the words provided by the students during their interview sessions.

Findings

The purpose of this study was to identify fourth-grade students' perceptions regarding homework environment and academic motivation in mathematics. The study was guided by five research questions that focused on (a) attention strategies for motivational sustainment, (b) instructional strategies relevant to learners' development needs and interest, (c) perceptions of motivation needed for mathematical achievement, (d) motivational reinforcement strategies, and (e) preferred homework environment. Through private interviews, participants reported being motivated by factors including, but not limited to (a) technology integration, (b) real-world connections, (c) teacher

feedback, (d) remedial support, (e) differentiated tasks, and (f) intrinsic and extrinsic rewards. The analysis further showed a near even split between students' preference for the traditional and study hall environments due to factors such as preferential learning and work style, conditions of the environment, access to support, and available resources.

Research Question 1

What strategies do fourth-grade students believe help them arouse and sustain their mathematics curiosity and interest?

Children were asked how their teachers captured their attention for mathematics. A number of specific teaching tools and strategies were mentioned (see Table 1). The students' responses were be categorized into (a) using motivational strategies, (b) using technology, (c) using manipulatives, and (d) using real-world connections.

Using motivational strategies. One factor influencing students' academic achievements is their perception of the teachers' motivational behavior (You et al., 2016). The fourth-grade participants expressed several examples of motivational strategies used by their teacher. Beyond instructional delivery, good teachers understand that improving motivation is key to academic and behavioral success (Wery & Thomson, 2013). These students expressed an affinity for their teachers' different strategies to make learning more engaging. Examples of these motivational strategies included the teacher's own display of love for math. One student noted, "She always encourages us and shows us how much she loves math. She tells us how cool it is that there is math in everything around us." Students spoke about their teachers' arsenal of instructional delivery strategies, which made class more interesting and engaging:

Table 1

Methods Teachers Use That Capture Students' Attention for Mathematics

Method	Technique
Tools	Videos with music and lots of color Edmodo computer program Flocabulary videos Learning centers Manipulatives Power point presentations Clickers Games, riddles
Strategies	Competitions , team challenges Mixing it up in class Think-Pair-Share Reward Group/partner work Mini-projects Relating mathematical concepts to real life Story telling

- The teacher made us do a shape play and a script to make it fun, and she even made each group do a rap!
- She always tries different things and we're always excited to see what she's going to show us each day.

Lastly, students expressed teachers' ability and willingness to encourage students to take their time rather than rushing to apply what they have learned. This finding is supported by Maulana et al. (2013, 2014) who found that teacher behaviors positively influence students' motivation. Participants stated:

- She taught me to take my time when it comes to math.

- Our teacher makes sure we have work the whole period like the Magic 5 warm-up problems or the challenge problems in the middle of the lesson to keep our attention.

These students expressed a stronger affinity with the subject matter depending on which strategy was being used. These strategies were considered highly effective to students' academic motivation in the classroom.

Using technology. Participants reacted positively to technology integration in the class. As students today grow up in the age of technology, it is imperative that educators link the curriculum and technology with students' interests if they aim to maximize student engagement and motivation (Mims-Word, 2012). One student stated, "She uses a lot of math tools and technology to get our attention, which is what kids my age like." Other times, technology is used as reward for performance mastery, which another student confirmed by saying, "My teacher plays music if the class gets a 90 or higher on a quiz question or we can get free time on the laptop and we complete our classwork and get it checked."

Tamim, Bernard, Borokhovski, Abrami, and Schmid (2011) investigated the use of technology in the last 40 years and found it to be important to both the teaching and learning process. In many cases, technology is used to enhance a lesson or drive home the connection between content and reality for students. Technology positively influences instructional delivery by offering educators an array of innovative strategies to assess students' understanding and performance (Knott, Steube, & Yang, 2013). Supporting this claim, Harris, Al-Bataineh, and Al-Bataineh (2016) stated that, "In education, technology has allowed the dissemination of knowledge to be dispersed instantly and it allows for

quicker and more effective communication (p. 377). Students in this study expressed more enjoyment, were more attentive, and saw technology as a reward instead of another classroom tool. Whether technology is used as a means to deliver content, differentiate, or as an extrinsic motivator, it is a viable tool in an ever-changing digital age.

Using manipulatives. Study participants identified the use of manipulatives as a motivator during the completion of mathematics activities. Participants enjoyed the use of manipulatives and expressed the value they saw in them in the following ways:

- When we learned about dividing decimals, my teacher…[used] beans to show us how to move the decimal inside and outside before dividing….I'll never forget how to divide decimals because she taught me a cool way to learn something I never knew.
- My teacher passes out objects that I can experience with, like angle legs. I like how I can actually touch objects that include math. It helps me see the connection.

Historically, math manipulatives have been defined as a concrete model handled by the individual in a sensory manner to foster conceptual thinking and mathematical reasoning skills (Hynes, 1986; Kennedy, 1986). More recently, math manipulatives have being identified as helpful tools for creating a visual representation of mathematics and problems that help students understand and view math in a deeper, more realistic concept (McIntosh, 2012). Even when students were not required to use the manipulatives, students would ask to do so while working. One student stated, "She lets us use the manipulatives if we wanted or needed the help and listen to music while we worked." Participants' satisfaction with the incorporation and use of manipulatives to aid in

learning mirrors the results of other research conducted in the last decades (Heddens, 1986; Reisman, 1982; Ross & Kurtz, 1993; Uribe-Flórez & Wilkins, 2010).

Even when students were unable to use tangible manipulatives, they wanted the teacher to provide a variety of relevant examples of the work they are expected to complete so they are able to refer back to them when needed:

- I could be better supported or motivated when it comes to math homework by having notes or manipulatives with me when I work at home or at school.
- What my teacher could do differently could be to give more examples for us to put in our notebook and study with. She gives us some, but if she could give us more, like for the hard kind of problems, I think it could help me.
- My teacher could put more examples on the board for our notes because the examples she gives are for the easy problems, but not for the hard problems.
- [Providing more examples of a problem makes] it stick more when I can see it because just hearing it doesn't always make sense in my head.

Making real-world connections. Another important concept that positively influenced students' academic motivation during mathematics was the teacher's ability to relate mathematics concepts to everyday situations. One student shared:

> She compares [mathematic concept] to things that actually happen in life…saying 'Amaya went to the store and bought half a bag of Takis. The next day she bought 4 times that. How many Takis did she buy all together?' She understands that her students eat those chips, so she puts it in a word problem.

The teacher's use of a snack popular seemed to capture students' attention. Other students shared different ways the teacher made the learning more relatable:

- The videos she shows are cool because they show math in the community and we get to share our thoughts.
- She brings stuff from home for things like geometry and snacks to show us things like fractions.
- Our teacher…helps us better understand how math is all around us.

Guthrie (2001) implied that the evocation of intrinsic motivation is driven by a teacher's ability to effective provide relevant, real-world instruction. Real-world instruction attempts to create the realities of the outside world with classroom academia (Bergman, 2017). A lesson without authenticity or relevant examples shows little evidence of a teacher's demonstration of their students' learning and developmental needs. When a teacher makes a conscious effort to incorporate examples of real world, relevant ways to help students connect their personal lives to the learning, active engagement and information retention can become commonplace in the classroom.

Research Question 2

What strategies do fourth-grade students believe help support their individual mathematics needs?

Wang (2013) noted that when considering the prominent role of mathematical competency, the attainment of foundational skills is critical. The fourth graders were asked what they believe would support their individual mathematics needs. What students said about how their interest in mathematics is aroused was categorized into (a) using

afterschool/study hall work sessions, (b) environmental conditions, (c) teacher feedback, (d) afterschool remediation, and (e) differentiated tasks.

Afterschool study hall work sessions. During the private interviews, students shared several reasons why they preferred and were motivated to complete homework assignments in a study hall or afterschool setting opposed to a more traditional, at home setting. Several students felt that working in the study hall setting provided the needed support and feedback from teachers necessary for their success. Several participants made the following claims:

- When I stay after school and the teacher helps me, I understand it better, so then I just make sure I stay after school or do my homework at dismissal.
- I mostly like doing my work in the classroom because there are anchor charts on the wall or we can ask the teacher a question if we get stuck.
- Study hall makes me like math because it doesn't seem that hard when it is a few people in the room and the teacher can help each person if they need her help. I can take my time and fix my mistakes before we check it the next day.
- I like to work with a partner and when I get to I can get my work done with their help and get a better grade, because sometimes by myself, I don't get it.
- I like to complete my math assignments in class with my group because we get to help each other learn and its fun at the same time because I don't really like working alone.

Environmental conditions. Students' attitudes about homework are strongly linked to suitable environmental conditions for completion. Dunn and Dunn (1993)

indicated that providing students the opportunity to work in environments supportive of their learning style resulted in improved attitudes, greater motivation, and an increase in achievement. Beck also discovered that homework completion was more efficient when students received support in a well-organized space (as cited in Cosden, Morrison, Gutierrez, & Brown, 2004). One student stated:

> In study hall I get more time and help from teachers because they are there to provide me help when I do not understand a problem and that makes me more confident in math, but when I did my homework at home, I was kind of distracted by my sisters and the TV.

In contrast, another student reported:

> I completed my homework at home so I could concentrate better than I did in class with my friends because it helped me get better grades. Plus when I'm at home, I have my own supplies, like white board and marker, and I had my own computer to go on math websites for more practice and I could take my time and my mom would monitor me or help if I needed it. I feel really confident because my mom checks it with me and helps me correct my mistakes.

There were also students who showed no preference. One student stated, "It didn't really affect me at all. I mean I prefer a quieter place like home, but I get to discuss things with others in study hall and we share our opinions and that helps too."

Rudan (2014) suggested that, "If homework and its environment were differentiated to meet students' preferred learning styles, homework would become a more effective learning tool" (p. 26). These findings are similar to those found by Hopland and Nyhus (2016) who showed that teacher guidance, access to materials, and

social environment played a very important role in student satisfaction and stimulated motivation and effort both in class and with homework. Similarly, the non-threatening atmosphere of an afterschool program could potentially help students gain self-confidence, which in turn leads to better grades. This type of structured environment provides students the opportunity to complete homework and practice crucial study skills under the guidance of the teacher.

Teacher feedback. Teacher feedback is not only important to students but is an added perk of completing homework in the study hall environment. Wiggins (2013) recognized that the term *feedback* describes a variety of comments made to students, including advice, praise, and evaluation. The study participants valued this component because they could receive specific comments about what they were doing correctly or incorrectly and have the opportunity to make corrections before submission. One student stated, "When we started doing it at school, I can get more problems right because teacher checks it and gives it back to me and lets me fix it. That's why I choose to do it instead of at home." Another student reported:

> If my teacher tells me that I'm missing a step when I'm trying to solve my problems, it makes me go back and look at my notes, which helps me get it right and remember my steps for the test, so then I can get a better grade.

Teacher feedback is highly valued by most learners and affords teachers with the chance to offer individualized attention that may otherwise be probable under normal classroom conditions (Hyland & Hyland, 2013). Receiving feedback from teachers is a potentially powerful influence on student motivation and academic success.

Afterschool remediation and tutoring. Students shared several perspectives on the desire to receive help from an afterschool tutor. Corrigan (2012) defined tutoring as support from an individual to another individual or a small group of learners. Many participants expressed the benefits of receiving support from a tutor. One said**, "**If I had a tutor or if my teacher did remediation after school, I would ask my momma if I could go so I would get better at math and make better grades." Another student added, **"**I like to work with my tutor in the afterschool program because she is very smart and she helps me understand math much easier."

Bowman-Perrott et al. (2013) reported that tutoring is useful in encouraging educational gains in course content, and is successful for elementary and secondary students. Costantini (2015) stated tutoring is often used as a tool to support learners who are challenged by content, and when used effectively as in intervention to improve understanding. Even students who were unable to attend the afterschool study hall felt they could benefit from getting the extra support to improve math skills:

- I asked my mom for a tutor, but she said she can't afford it, so she said she would put me in the afterschool remediation program so they could help me get better in math.
- I think I could get more support if I go to remediation after school and take my time instead of having to rush.

In order to support student development and readiness, tutoring is often considered a way to collaborate with the learner to address individual learning needs (Chae & Shin, 2016). Additionally, tutoring is considered an effective way to improve learning behavior, depth of knowledge, and student engagement in the classroom (Nawaz

& Rehman, 2017), while earning the opportunity to correct mistakes in their work. While students may or may not be able to remain after school for additional instructional support, it can be concluded from the supporting literature that students value and benefit from afterschool remediation and tutorial support.

Differentiated tasks. When it comes to home and classwork assignments, students' needs and developmental levels should drive design. Many participants in this study expressed a number of reasons for differentiated tasks. One reason students requested differentiated tasks was to meet their developmental needs better. Two students voiced the similar need for tasks containing more rigor so they could feel challenged:

- She could give us more challenging work or give some people who understand a different assignment and those who need more practice, the regular practice problems.
- My teacher gives us easy math work, but sometimes it should be more challenging so we can be ready for hard questions on our tests.

Another student wanted tasks to be varied and interactive, stating, "I think my teacher could make homework more fun. Like giving us math projects to do with our family or giving us an assignment where we have to make things out of stuff around our house." In contrast, other participants expressed their desire for the teacher to allow students more opportunities to choose the activity and the frequency in which they would complete it.

- She could let us choose what we do for homework because just doing problems all the time gets boring.

- I still wish we could have homework sometimes or not at all for a grade and we could only do it when we need more practice or before a test.

These expressions from participants are similar to those found by researchers who have concluded that teachers should diversify homework assignments to meet students' needs and interests and eliminate students' lack of motivation for completion (Araújo, 2009; Cooper, 2001; Cooper et al., 2006; Costa, Cardoso, Lacerda, Lopes, & Gomes, 2016).

With a wide range of abilities and varying exceptionalities in today's classrooms, differentiation is a priority (Carr, 2013). Tasks with moderate cognitive challenge are more likely to enhance motivation than tasks with low or high cognitive challenge (Dettmers, Trautwein, Lüdtke, Kunter, & Baumert, 2010). Assignments should be appropriately designed so that they are not too easy, as it could lead to possible boredom and those that are designed with too much difficulty are likely to result in learner frustration. Zakharov, Carnoy, and Loyalka (2014) concluded, "Tasks adjusted for difficulty have a positive impact on performance" (p.19). Therefore, well-structured assignments should be purposeful, doable, stimulating, and engaging in order to maintain students' interests and foster growth.

Research Question 3

In what ways do fourth-grade students feel motivated to develop a positive expectation for successful mathematics achievement?

Considering the global prominence of mathematics, researchers continue to study factors significantly related to mathematical achievement; one factor that has received considerable attention is motivation (Acar Güvendir, 2016). In this study, students reported being motivated to be successful in a number of ways. While some students

were satisfied with mental and emotional rewards (i.e., praise), other students were more motivated by physical/tangible rewards (i.e., prizes, extra computer time). For this reason, their responses were grouped into two categories: (a) receiving extrinsic rewards and (b) receiving intrinsic rewards.

Receiving extrinsic rewards. Often, students want to be rewarded for the effort they have put forth in the classroom. For this reason, many teachers attempt to develop creative ways to reward students for their efforts to keep them motivated. Students who are motivated extrinsically are driven by factors such as tangible rewards and earning good grades. Many teachers operate from the idea that the extrinsic rewards are highly revered by students who are minimally interested in learning activities. During the participant interviews, students were noted saying:

- If we had better rewards for our grades, I would work harder.
- I am motivated when I can earn a prize from the box or extra points on Class Dojo.
- (I am motivated by) getting good grades and getting prizes for getting good grades.
- When we do well on a test, our work gets put on the scholar board in the classroom and at the end of the week our teacher sends a good job message home to my dad.

Another student expressed excitement for doing the work, “Doing my work makes me realize that if I keep trying I can do anything and make good grades.” Finally,

participants even shared not wanting to receive poor scores on their work because they "didn't want to disappoint the teacher or be punished by their parent."

The participant responses align with the literature. Extrinsically motivated students focus on praise and interest from teachers, parents, and peers, and avoiding punishment or negative feedback (Middleton & Spanias, as cited by Acar Güvendir, 2016). In contrast to the intrinsic motivation that is related to internal rewards, extrinsically motivated students engage in learning for external rewards, such as teacher and peer approval, and good grades (Mueller, Yankelewitz, & Maher, 2012).

Another factor to explain why students report more extrinsic motivation could be because of the emphasis placed on grades. Students value extrinsic rewards because their accomplishments and rewards can be seen. Many participants in this study described how they are motivated by earning good grades and what drives their hard work. One student shared, "The more you practice, the better you get. If I keep getting a good score…I will be motivated to keep practicing the problems the teacher gives us." Another student said, "Anytime I hear 'good job,' or I get a sticker, or a 100 on my work or quiz, I just keep working hard because it feels good to get a good grade."

Recent studies have found that homework is linked to higher grades but not to higher achievement on standardized tests (Krashen, 2013). Consequently, students are more interested in getting better test scores because they consider these scores to be the best rewards and a show of academic fulfilment (Gbollie & Keamu, 2017). Students even expressed how they appreciated timely grading and feedback from the teacher. One student reported, "I could be motivated more by my teacher by giving us our grade the

same day so I can know how to do better." This participant expression is another example of how considering the needs of the students could greatly affect teaching and learning.

Receiving intrinsic rewards. A number of participants (*n* = 21) also indicated that they are motivated by intrinsic rewards. Intrinsically motivated students are more concerned with the desire to perform, seek competence, spend more time on the task, and can lead to high levels of self-efficacy (Middleton & Spanias, 1999). For those students, acknowledgement of effort, parent and teacher support, and recognition are satisfactory, intrinsic motivational drivers. The participants expressed how they are intrinsically motivated:

- I get help from my mom or dad.
- …my teacher cares if I'm happy or passing.
- I want to impress them [my mom or Ms. XX] and show them that I'm doing my best. It pushes me. If I feel like no one cares, sometimes I just do the basic.
- When someone pushes you to do better, it makes you work hard and keep trying.
- Someone telling me 'good job,'…makes me want to keep going. If my teacher doesn't really make me feel like I'm doing good, it's hard to try.
- …I feel like she [teacher] cares about me, and I want her to be proud.

For many elementary students, mathematics can be arduous; therefore, intrinsic motivation can energize children to invest the effort and use the strategies necessary to be successful (Froiland, Oros, Smith, & Hirchert, 2012). To support this notion further, Acar

Güvendir (2016) found intrinsic and extrinsic variables to be linked to student mathematics achievement. Along with those findings, the association of intrinsic motivational factors and mathematical achievement was greater than the connection with extrinsic motivation factors. These findings further corresponded with previous findings of intrinsic motivation over extrinsic motivation in mathematics achievement (Zhu & Leung, 2011). For these reasons, it is even more important to consider the intrinsic motivational drivers for students to help maximize their success in mathematics.

Research Question 4

> In what ways do fourth-grade students feel they are provided motivational reinforcement for effort?

Participants shared ways their academic effort is reinforced. Their responses were organized into (a) teacher encouragement and support, and (b) self-efficacy.

Teacher encouragement and support. Students in the study who received motivational reinforcement for their efforts reported finding themselves motivated to push through their dislike or discomfort to get the work done and later feel accomplished. According to researchers, increased perceptions of support are also positively linked to self-efficacy and achievement (Federici & Skaalvik, 2014; Skaalvik, Federici, & Klassen, 2015). One participant stated:

> My teacher last year always made me feel like I was dumb, so I stopped turning in my work because she would mark it wrong but didn't tell me what was wrong…this year I like math again because we have fun and my teacher tells us to never give up.

These results support previous research revealing the relationship between students' perceptions of teacher support with intrinsic motivation, engagement, and academic initiative (Danielsen, Wiium, Wilhelmsen, & Wold, 2010; Patrick, Kaplan, & Ryan, 2011; Skaalvik & Skaalvik, 2013; Wentzel, 1994). Encouragement and establishing a trusting relationship with students is as important as creating a caring and supportive classroom environment, which can positively benefit motivation and academic success (LaCour, McGlawn, & Dees, 2016).

Another participant reported, "Sometimes I get lazy and don't feel like doing my work. Then my teacher tells me that I can't give up and she's here if I need her, then I'm motivated to finish my work on time." Manning and Bucher (2013) indicated that when a teacher demonstrates and communicates belief in students' abilities, it could positively influence students' self-esteem, self-efficacy, and academic behaviors. Therefore, it can be concluded that the more students feel supported, the greater the expected level of motivation for task completion

Self-confidence. Students' perceptions of their confidence and ability to carry out a task are commonly referred to as their self-efficacy. Bandura described self-efficacy as the level of confidence one possesses in order to perform a particular task (as cited by Alqurashi, 2016). In short, the more confident students feel about their aptitude to carry out a task, the more they are motivated to complete the task. Although students value the encouragement and support received from their teacher, several students provided sage advice about how students should motivate themselves to be successful in mathematics. One participant shared, "I think you have to believe you are confident because a place can't make you confident."

Similarly, students indirectly demonstrated confidence in their ability and willingness to do what was necessary to be successful in the classroom by identifying effective practices strategies that could aid in achieving success:

- If your environment is good, you will do good. If your environment is bad, you will do bad.
- If you do your work with someone in a place you can focus, you will do well in math…that can be home or school. But, if there are people there who are a distraction, you should find another place to work, if you want to pass.
- …make sure you go somewhere you can focus.

Motivation plays an important role in determining student acquisitions and can influence students' confidence and academic performance (Petre, 2017). Regardless of external or internal reinforcement, students were motivated to do the work and be successful.

Research Question 5

What type of homework environment do fourth-grade students prefer?

Participants were asked to share their experiences, thoughts, and preferences for the environment in which they desired to complete their homework. Out of the 44 participants, only four (10%) students had no preference for homework environment and felt they could complete their work anywhere. The remaining 90% of students were closely divided between the school and home environment.

Forty-eight percent of the fourth graders preferred study hall and listed reasons such as getting help from their teacher or classmates. However, several students expressed a less than academic reason to get their homework finished before they went home, such as wanting to play with friends or going to sports practice. Students who

preferred to complete their homework at home (52%) did so because either they needed an environment with less distractions or they could create an environment at home that was more to their liking. The students expressed their desire to have a snack while working, being able to scatter their study materials across a table or floor, or having more materials at home that they wanted to use to help them make better grades (i.e., math computer games or additional practice workbooks). The fourth graders' responses to the type of homework environment garnered a number of responses that were grouped into four categories: (a) nature of environment, (b) study hall environment, (c) home environment, and (d) motivational drivers of homework environment preference. Xu (2012) noted the absence of homework environment management, specifically students' choice of homework environment, from recent words of literature on homework.

Nature of environment. Participants in the study expressed preferential differences in the nature of the environment, either quiet or interactive. Fifty percent of the students interviewed expressed the need to have a quiet environment in which to study, but that environment preference ranged from a library, study hall, or a room at home. These findings align to those found by Radley, Dart, and O'Handley (2016) who used a noise reduction intervention to increase the academic engagement of elementary students. The implementation of the intervention showed an average increase of academic engagement of 73%; student engagement levels averaged 43% prior to implementation and 74% after removal of the intervention.

Many researchers have evaluated noise-reduction interventions in a number of school locations (Davey, Alexander, Edmonson, Stenhoff, & West, 2001; Kartub, Taylor-Greene, March, & Horner, 2000; LaRowe, Tucker, & McGuire, 1980; Staub, 1990).

Little research has evaluated the quiet classroom setting and its effect on motivation or achievement; however, there is research that suggests a lack of academic pursuits in classrooms with excessive amounts of noise (Radley et al., 2016). One student in the current study reported:

> It's hard to do your work in a classroom that isn't quiet or clean or neat. So, if your environment is loud or dirty, you can't really focus on your work because your mind is wondering and that affects how you perform in math.

Another student confidently stated, "If I am around people who are working quietly, it makes me want to work quietly too so I can finish my work on time and get a good grade." As a result, students need and often rely on the support of parents and teachers to create or arrange a quiet area for studying, minimize extraneous conversations and distractions, and remove potentially distracting materials (Xu, 2013). One student reported, "I tried to complete my homework in different environments but I mainly completed my homework at home because at school in study hall, lots of students were loud and always moving around to sit with friends or play." Therefore, considerable attention should be placed on establishing a manageable, quiet homework environment for students, and the support from teachers and parents should be attainable in these work spaces for students if necessary (Xu, 2012).

Forty percent of the participants preferred a more interactive environment that provided them with support when they needed help on problems. The interactive environments included study halls, a classroom, or at home with family members:

- The environment I completed my homework in helped me because when you're in class, there are still examples everywhere like on the board from

class or student work from the bulletin board or the anchor charts or the word wall, plus it has my teacher in it and I can go up and talk to her, so my confidence was higher than at home because nothing is there to help me.

- I like to do it at home best because it makes me feel confident when I can ask my parent or family members to help me and I can finish it at home fast. Most of the time it's right and that makes me feel confident to because my parents will be proud. I don't really like to ask the teacher at school because people try to listen to what I'm asking if I go to her desk. I don't like to do it after school because people talk a lot and that makes me talk and not get finished.

Interaction was important for some students, whether it was in the home or school environment. One reason for this was because students expressed needing help in completing their homework. One student reported:

> The classroom environment. I completed my math homework in afterschool because it was only a little noisy with people whispering, but it helped my confidence in math because I felt comfortable asking for help and a few things I can better understand now. I could ask the teacher without a lot of people looking at me whenever I wanted instead of not having a lot of time during the regular math class.

The interaction was also important because students admitted to feeling more motivated and confident when they could have someone check their work. One student reported:

> Before I wouldn't participate in class because I didn't know if I was doing something right, but now, I know I'm doing it right or I'll just raise my hand to

ask the teacher for help or look around the room during study hall and it will come back to my memory, so now I'm confident because I wasn't before.

The benefit of interactive support was the determining factor for students selecting a preferred homework completion environment. Participants expressed the necessity of being in an environment where they felt supported or comfortable enough to complete their work. A participant reported, "The only environment I really completed my homework in and boosted my confidence was in the classroom after school because I could sit next to the teacher to review or do my work and not be distracted." This student required a quiet environment free of distractions, but also had adult support available to help in the event a question about the homework assignment arose. This type of environment could be in the classroom or in the home environment.

Finally, 10% of the participants did not have a preference. They felt confident enough to do their work in any environment. Sometimes it depended upon their mood:

- It didn't really affect me at all. I mean I prefer a much quieter place like home, but when I get to discuss things with others in study hall and we share our opinions. That helps me to do my work and not be distracted.
- I like completing my homework in both settings. It depends on my mood. In school, I would do all of my other assignments first before I do my homework, and if I don't have enough time I would do it at home. When I don't have anything to do, I would use that time to do my homework. But most of the time, I like doing homework at home because it gives me more time to do things and that makes me confident because I end up with right answers when I take my time.

Participants also had different preferences regarding where they completed their homework. There was an even split in student references to either completing homework in the school environment or in a home environment.

Study hall. Students' experiences and perceptions of study hall were recorded during the interviews. When discussing study hall, students emphasized a number of benefits for preferring to complete homework in this environment. Several students spoke about the positive impact working in study hall had on their confidence:

- When you're in class, there are still examples everywhere, on the board from class or student work on the bulletin board, or the anchor charts, or the word wall….my confidence was higher than at home because nothing is there to help me.
- I prefer to do my homework at school. It helped my confidence because it felt comfortable to ask for help and a few things I can better understand now.
- Doing it [homework] in study hall made me a little more confident to ask questions in class.

Another benefit of completing mathematics homework in the study hall environment was the access to and support of the teacher:

- I would prefer the afterschool study hall so I can get help if I need it and get my work checked by my teacher.
- When we're at school we have to stay on task and stay quiet during independent practice, but when I go home, I can start and stop whenever I

want and sometimes I even fall asleep while I'm reading or working, so that can hurt my grade if I'm not taking it serious.

- I liked study hall because it helped me to stay focused, plus the teacher was always in the room with us and told us if we had a question we could raise our hands. If we were quiet, she would let us work with a partner…which I liked because math is easier sometime when you get to work with someone else.
- Being able to do my work at school would motivate me to ask my teacher for help when I need it instead of guessing when I'm at home.
- During study hall, the teacher encouraged us to ask questions if we needed help and always told us to take advantage of her while we were still there and not to go home with questions.

One student stated:

> If I have to do my work at home, it's probably not going to be that right because it's a lot of noise there. If I do it at school, I can concentrate and get it finished and maybe my teacher can look at it or help.

For another student, study hall was important because it was where he or she could receive the most help and have the fewest distractions, compared to completing homework at home. The student reported:

> I would choose to do it in study hall because that's where I get the most help. When you do your work in school, you still stay focused just like the regular day…but when you go home...hear your friends play outside, it's hard to get back in focus.

Those who showed a preference for the school environment also hinted at wanting to take advantage of the extra time to complete their work in class. Participants also indicated a desire to have their work completed before returning home so they could still have leisure time:

- I prefer to complete my homework in study hall because I could finish it before basketball practice. [at home] Sometimes I don't finish it because it's late and I'm tired…doing it after school would motivate me to finish it all.
- I like to do my work at school, so I can have free time at home and not worry about my homework. I would rather get it over with and have time to spend with my family and friends. However, I was unsatisfied with the study hall environment because of the rudeness of the other students because they didn't come to work, just to talk to their friends.
- I liked being able to finish my work before I got home so I wouldn't be working on so much homework all night and still have time to watch TV or whatever.
- I like the study hall…get all the work done before you get home so you feel like you still have a life!

Lastly, not all students were assigned to the study hall environment. One student honestly stated:

> I was a little satisfied with study hall because I thought it was good for them to make a space for people to do their homework and get help, but then I wasn't satisfied because people would come in to talk to their friends and not work and

> the teacher couldn't really watch them all the time because she would be helping people who needed it, so it didn't really motivate me.

Home environment. The homework environment preference depended on the child in question. This was similar to previous research about promoting positive interventions to support children (Axelrod, Zhe, Haugen, & Klein, 2009; Theodore et al., 2009). This was even supported by those participants who expressed no preference for a quieter or more interactive environment. They just needed to be in an environment that supported their needs, and this could change for them depending on their present preference. One student reported:

> I like completing my homework in both settings, it depends on my mood. In school, I would do all of my other assignments first before I do my homework, and if I don't have enough time I would do it at home. When I don't have anything to do, I would use that time to do my homework. But most of the time, I like doing homework at home because it gives me more time to think and that makes me confident because I end up with right answers when I take my time.

It is important to determine student preference, assign work they will actually do, and encourage them to ask for help when necessary.

Preference about homework environment also overlapped with the interview question about the participants' preferred location. There was a mix of preferences regarding working on homework in the home environment versus the school or study hall environment. The responses depended on different emotions and feelings from the students. Slightly more students expressed preference for the school or study hall environment, as those students felt they did better when working near the teacher or in an

environment that they felt was calmer. As noted by one student, "I mostly like to get my homework done in school because if I ever need help, I can ask my teacher and it helps me not lose it and I just put it in my desk until the next day." However, others expressed the desire to work in the home and noted that the home environment boosted their ability to work without distraction. One student reported:

> Doing your homework at home is best to me because no one is there to bother you and you can get more one-on-one help from a relative. If you get help and you start to understand then you become more confident because that's what happened to me.

Other students preferred the school because it gave them the opportunity to ask for help; thus boosting their confidence in completing their homework. A student stated:

> I completed my math homework in afterschool [program]. It was only a little noisy with people whispering, but it helped my confidence in math because I felt comfortable to ask for help and a few things I can better understand now. I could ask the teacher without a lot of people looking at me, whenever I wanted, instead of not having a lot of time during the regular math class.

Those participants expressing a desire to work at home showed a feeling of independence regarding completing their homework on their own or they just preferred working without distractions:

- I completed my math at home because it affected my confidence in mathematics in a good way. It made me interested to learn more and think and use the correct skills more often because I could concentrate.

- I like to do it at home best because it makes me feel confident when I can ask my parent or family members to help me and I can finish it at home fast. Most of the time its right and that makes me feel confident too, because my parents will be proud. I don't really like to ask the teacher at school because people try to listen to what I'm asking if I go to her desk and I don't like to do it after school because people talk a lot and that makes me talk and not get finished.

Other reasons included the noise in a school building compared to the quiet of being home, the comfort:

- I completed my homework at home so I could concentrate better than I did in class…because it helped me get better grades. Plus, when I'm at home, I have my own supplies, like white board and marker, and I have my own computer to go on math websites for more practice and I could take my time and my mom would monitor me or help if I needed it. I feel really confident because my mom checks it with me and helps me correct my mistakes.
- I always like to go home to do my homework because when school was out, I just wanted to go home and get a snack and work in my house. I tried to work in study hall a little bit, but I didn't really like it because it was noisy and none of my friends were there and the teacher was helping other people.
- If I had a choice, I would like to do my homework at home because I'm distracted at school by my friends and noises in the hallway. I can concentrate when I'm home and close my door sometimes and that motivates me to get it finished.

- If I had to do it at school, I don't think I would do as good because it's busy and noisy at school.

Being able to concentrate and having access to materials without waiting or sharing was also reported:

- I don't think homework style motivates me because I can do my work in class and at home, but I think at home might be best because it is quieter and my friends aren't there to talk to.
- At first, I liked to do it at school because not many people would stay, but then a lot of people started staying at study hall and it was loud and the teacher was busy all the time, so I just started back doing it at home.

Adding to that perspective, one student appreciated the ability to work at his own pace and think through the process and assignment, while another student expressed not needing the additional support after school and simply preferred to work alone:

- I like doing homework at home because it gives me more time to think.
- I want to mostly do it at home…I don't need that much help and I like to work by myself.

Motivation as a driver of homework environment preference. Finally, motivation was an important consideration in the analysis of Research Question 5. More than half of study participants expressed a desire to do well in their mathematics homework, as they wanted to do well in school in the future. They also wanted to impress teachers and parents by doing well on their assignments. When children have a desire to do well, there are positive feelings about the importance of homework and mastering the

concepts. These emotions and motivations connect directly to the discussion of homework assignments and the preferred work environment. This was noted by one student who was satisfied with the homework because it helped him understand mathematics, which would help him later in life:

> I am satisfied with my math homework because some was easy and some was hard and now that I had the choice to do homework, it made me see that I need the practice so I can continue to grow in math. My grade got better because I turned in the work that was easy to me and I ended up with an A. I just practiced the work that was hard sometimes but didn't turn it in in case I got a bad grade. It has impacted my motivation very much because most of the things we learned in fourth grade we can use in the future in real life.

The presence of these drivers and motivations are also important in order to address the concerns of children who expressed negative thoughts and emotions about homework in mathematics. As one child noted:

> I'm not that good in math, so sometimes I don't get it when I'm at home and I get nervous when we check it. If I take my notes with me, I can use the example my teacher gave us to see if the problems are still the same and then I just try it out.

However, a few responses revealed that some participants were skeptical about the reality of having the homework optional. They were not always satisfied with the homework, either. One participant was motivated regardless of the homework environment, but he pointed out the difficulty if he did not complete the homework in a supportive environment:

> Sometimes I am satisfied and sometimes I'm not. Sometimes my class can be loud and annoying. Sometimes I can stand the homework and my class. Every day is different, but the majority of the time when we got to choose, I was satisfied, but my motivation was the same because I want to stay on A/B honor roll.

Another student reported a similar concern:

> I'm used to doing my homework at home, but I think if I had to do it in study hall or if it were optional, I wouldn't be very motivated to do it because my friends would distract me in study hall or try to convince me not to do it if we had a choice. So, I guess traditional motivates me to do it because I have to finish it and turn it in because it is a grade.

Although the majority of responses showed that children still expected to do homework, having the option of not doing it lifted a perceived pressure on them. One student stated, "I think doing homework should be a choice in case you don't understand it. You can practice it without getting a bad grade, but if you get it, that means you're ready for your quiz or test." Relieving the pressure would motivate students to ask for help if it was needed. They might be able to learn a concept that they would otherwise not understand if the pressure to complete the homework were lifted.

Summary

The analysis of the data showed that students respond differently to motivation techniques, homework environments, and strategies used to help them achieve in mathematics. Each research question highlighted the attention, relevance, confidence, or level of satisfaction associated with the different aspect of the students' perceptions of mathematics instruction and achievement. Overall, the themes included (a) strategies for

engagement strategies for support, (b) motivational factors, (c) perception of effort, and (d) homework environment.

Students identified several ways that teachers effectively arouse and sustain their curiosity for learning mathematics. One strategy was the integration of technology in the lessons. This integration was presented using a number of media, leaving room for dialogue and active participation. Making mathematics relevant through real-world connections was another motivational strategy used to capture students' interest in class. Students expressed more interest in mathematics when the teacher explained, demonstrated, and provided examples of everyday use and application, including possible career connections.

The fourth graders were asked to share their experiences with individualized support to meet their needs. Students expressed the benefits of staying after school where they could (or would like to) receive tutoring or additional support through the school's remediation program. Additionally, receiving feedback on their work was strongly desired by students. Participants expressed their desire to receive timely feedback on their work to increase understanding and improve their performance. Finally, students discussed their desire for differentiated tasks that provided the appropriate amount of rigor for their developmental level, so they could be successful. Students acknowledged that the work should not be too easy or too hard, but should be doable with the right challenge to keep students motivated.

When seeking to identify ways they felt motivated to develop a positive expectation for successful mathematics achievement, students expressed their need for both intrinsic and extrinsic rewards. Intrinsically, students were motivated by teacher and

parent recognition. Students enjoyed being acknowledged for their efforts and were more motivated to put forth the time and effort when they were recognized. Along with intrinsic reward, students also expressed being rewarded extrinsically. Students strongly desired good grades for their efforts, including the ability to participate in other tangible reward systems. Students were more motivated and more likely to continue putting forth valuable effort when they were accredited and rewarded for their work.

Students reported receiving encouragement and support from their teacher and/or being self-confident in their ability to use their skill set to complete the task. When receiving encouraging words and support from their teacher, students admitted to being more motivated to put forth their best effort to complete their work. Students also shared that when they were not self-motivated there were times when the encouragement from the teacher made the difference between completion and non-completion. Some students said they were motivated because they understood the benefits of homework and effort, while others claimed to be already motivated to do the work because they were confident in their mathematical ability.

The benefit of interaction and environmental conditions all influenced how students identified their preferred homework environment. When considering environment, the most important factor was not the actual location in which students were to complete their mathematics homework, but instead, the availability to receive support and interact with someone (teacher, peer, or parent) who could offer help when needed, and access to additional resources. There was not as much of a focus on the rigor of the homework assignment as much as addressing whether students had the right environment and support to facilitate their ability to complete the homework.

Overall, feelings about environment, motivation, and homework influenced feelings of satisfaction about homework completion and environment. Homework completion was also influenced by motivation, which was the catalyst for influencing participants' preferred learning environment, homework environment, and success. Homework was expected by students, and they expressed their understanding of the necessity of homework for reinforcing lessons. The consensus about homework leaned toward environment and support more so than the actual homework. This preference also depended on if the students could work in their preferred environment and had the necessary support available to help them overcome any difficulties. Most children appeared satisfied with the idea of completing homework, especially when that resulted in better grades and improved understanding of the concepts introduced in the class. These preferences showed the potential for improving the environmental conditions and level of support to increase the motivation of fourth-grade students, which could potentially influence their later views about mathematics.

Evidence of Trustworthiness

Instead of validity of a study, qualitative researchers discuss the trustworthiness of a study (Glesne, 2016). The essential quantitative notions of validity, generalizability, reliability, and objectivity are not appropriate in qualitative research (Guba, 1981). Therefore, Guba (1981) considered the following terms appropriate for qualitative research: credibility, transferability, dependability, and conformability. This section includes how trustworthiness of the study was addressed.

Credibility

Credibility in a qualitative study corresponds to internal validity in qualitative research (Creswell, 2014). To ensure credibility, the research must represent the perspectives of participants truthfully and present the data accurately (Polit & Beck, 2012). Credibility was established by ethically recruiting and interviewing a suitable group of volunteers who provided open and willing answers to interview questions. The interactions between the participants and the interviewer allowed for open-end responses to the interview questions, and supported the credibility of the collected data.

Additional credibility of the results was achieved using member checking (Birt, Scott, Cavers, Campbell, & Walter, 2016). Typically, participants are asked to read the transcription of their interviews. Because the participants in the current study were fourth graders, the initial recorded interviews were played back to each student before the closing interview was conducted. In this way, the students were able to confirm if their interview was audible and conveyed what they meant to say.

Transferability

How the findings of the current study are applicable to similar settings is called transferability (Guba, 1981). Transferability in qualitative research corresponds to external validity or generalizability in quantitative research (Guba, 1981). Transferability is dependent on the "fit between the contexts" of the settings (Guba, 1981, p. 81). The researcher used a rich description of the students' comments on their personal experiences with homework, their thoughts on what motivates them academically, and perspectives on the different homework settings to achieve transferability. By providing rich descriptions, the findings become more realistic and aid in the validity of the

findings (Creswell, 2014). In order to provide rich descriptions of the students' perceptions, open-ended interview questions and probing were used to identify the understandings held by the participants.

Dependability

Dependability is a study's ability to be repeated and is equivalent to reliability in quantitative research (Guba, 1981). Creswell (2014) suggested different reliability checks to ensure the consistency, and thus, dependability, of the study. The researcher provided a clear description of the processes used to select the student participants, collect the data, and analyze the data. The interviews were transcribed and checked for errors. Throughout the data analysis process, the researcher compared the data with the codes to ensure no drift in the definitions of the codes occurred.

Confirmability

The confirmability of qualitative research corresponds to a quantitative study's objectivity. Guba (1981) stated that, "Naturalists shift the weight of neutrality from the investigator to the data, requiring evidence of the confirmability of the data produced" (p. 81). The researcher cited literature that supported the findings of this study. The researcher included students' comments to support her interpretations and conclusions. Finally, the researcher clarified the biases she brought to the study.

Assumptions, Limitations, Scope, and Delimitations

For this study, the primary assumption driving the study was the important role homework played on mathematical achievement. As well, the researcher assumed that most students despise homework, and as a result, do not concern themselves with completion, nor acknowledge the potential benefits of it. The researcher also assumed

that at least 80% of the identified fourth-grade students would participate in the study and that students would attend school on a regular basis. However, these two assumptions were not met. Other assumptions included (a) the design of each task would include rigor to align with that of Common Core standards and (b) teachers would use common policy and practice assigning and grading homework. As a result, a significant limitation for this study was the sample size. Although forms were given to each homeroom student, few responses were returned from home. A small sample size created low statistical power required to conduct inferential tests on the quantitative data.

The scope of the research focused on identifying the motivational strategies that aroused, sustained, and supported the mathematics curiosity, interest, and effort of fourth-grade students. The focus of the study was also to determine what homework environment fourth-grade students felt best motivated their homework completion and supported their developmental needs. The study was initially a mixed method study. Failure to recruit enough participants to conduct the quantitative portion of the study necessitated a change in focus to only data collected from interviews with those fourth-grade students participating in the study. The following were delimitations of the study: (a) chosen population (all participants came from one grade, school, district, and state); (b) content area (mathematics only); and (c) data (interviews only).

Conclusion

In the methodology section, I provided a description of the qualitative research design, the setting and sampling method, the strategy for data collection, and the data analysis plan. In addition, the methodology section contains a description of how credibility, transferability, dependability, and confirmability were assessed, my duties

and responsibilities, and how the participants were protected. Overall, the qualitative findings of this study did not demonstrate a significantly favorable preference for one homework environment over the other. Instead, students preferred comfortable environmental conditions conducive to their success that offered resources and support, and were ultimately comparable to that of their normal learning setting.

Participants also expressed how the benefits of teacher availability and timely feedback positively influenced their motivation to complete the task and increased their mathematical efficacy. Although the literature indicated homework completion is often beneficial to students, the focus should be on opportunities to motivate and engage students with homework completion.

Section 3 of the study contains a detailed description of the project. The project is centered on the research findings linked to the influence of homework assignment and environment on students' mathematics achievement and motivation. The objective of the project is to inform educators and families about these results, and to offer recommendations for the effective development and adoption of learner-focused strategies for promoting education in school and at home. Section 3 contains the rationale for choosing the proposed project, a literature review to support the recommendations for developing and adopting learner-focused strategies that align with students' homework environment preferences, information regarding implementation of the project, and a summary of the implications of the project. The results may aid families and schools as they create homework environments that facilitate the best learning. These environments can promote and accommodate a variety of student strengths and needs.

Section 3: The Project

The selected project, based on the findings of this study, is a white paper report intended to support the development of a homework guide for teachers and parents. The design of this homework guide will include research-based strategies that can be used to provide academic support, constructive feedback, and ways to fashion an environment that best supports students' learning needs and work habits. Schools depend on research studies to direct decision making to improve student performance (DeFilippis, 2015). School administration will be presented with the findings and white paper project for review prior to implementation. The project effectiveness will be evaluated biannually using survey results from parents and teachers. The project outline can be viewed further in Appendix A. The project section includes a description of the project and project goals, rationale for the chosen project genre, justification for recommendation, an analysis of past and current literature on implementing recommendations, implementation plans, evaluation measures for the project, and project implications.

Project Description and Goals

Noted in the literature was that homework remains an important component in the relationship between students' learning capabilities and their level of achievement. This study of fourth-grade students' perceptions of homework environment and academic motivation in mathematics was conducted with the hope that the findings would lead to the development of a white paper that best aligns with students' academic and motivational needs. The overall purpose of the white paper report is to provide an overview of the study, report the study results, and share the proposed recommendations to school leaders, teachers, and parents. The core ideas communicated to school

administration are supported by the findings of this study. The study found that students preferred classroom and homework environments that offered opportunities for support and feedback, availability of resources, and comfort.

The first goal of the project is to facilitate an information session that will present the results of the study and proposed recommendations to the leaders, teachers, and parents of students at the school of record using the white paper report. The objective is to increase educator awareness regarding students' motivational drivers and preferred homework environment. It is imperative for teachers and parents to know how students perceive and complete homework based on motivation, or the lack thereof, and their environment. The second goal is to provide appropriate recommendations and strategies through the white paper report to serve as a homework guide for teachers and parents, framed by the motivational drivers of homework completion as expressed by students. The objective of this goal is to offer a detailed guide to stakeholders that includes details for implementing research-based strategies that support student motivation and enhance academic growth through a synthesis of literature and study findings.

Rationale

White papers are persuasive documents of various lengths used to present topics, study findings, and recommendations (Sakamuro & Stolley, 2012). My goal was to present a project to the school (and district) that is relevant, speaks directly to the problem, and offers solutions that are easy to implement. Based on participants' responses, students expected to receive homework, understood the benefits associated with it, and were motivated to complete it when specific motivational drivers were satisfied. Those motivational drivers included receiving their desired level of support in a

comfortable environment, having their work reviewed, and being provided feedback. Based on those drivers, the decision was made to complete a white paper report that could serve as a homework guide to help stakeholders enhance current homework policy and includes relevant strategies and practices to meet students' needs more efficiently.

The white paper report is the most appropriate genre because it would not replace current homework policies, but help to make them more reflective of students' preferred homework environment and need for support. Lubienski, Scott, and DeBray (2014) and Chrisinger (2017) supported the sharing of educational research by noting how administrators need evidence-based research from academics to improve their planning and decision making. Establishing evidence-based practices should provide teachers and other stakeholders with a more objective indication of effective practices and begin to change perceptions of trustworthiness, relevance, and the importance of educational research (Schirmer, Lockman, & Schirmer, 2016). The qualitative results of the research showed motivation influenced students' preferred learning environment, homework environment, work ethic, and overall confidence. Given that students expressed the desire to complete homework in a comfortable and supportive environment, considering the data is critical to the sustainment of student motivation. It was thus my intent to use the study's findings to raise awareness about students' perceptions regarding the motivational drivers of homework completion and their preferred choice of study environment. With these considerations, a white paper report was chosen as the suitable project genre.

Review of the Literature

The purpose of this project was to educate stakeholders on how students perceive homework and motivation and to approach the inconsistencies regarding student

motivation and homework completion in mathematics with viable solutions. The literature review was structured to provide relevant findings, including the purpose and development of the white paper, and its relation to the findings of the study presented in Section 2, followed by details regarding how the search was conducted.

The following search engines and research databases were consulted to find relevant research: Directory of Open Access Journals (DOAJ), Emerald Journals (Emerald Group Publishing), ERIC (U.S. Department of Education), Informa-Taylor & Francis (CrossRef), INFORMS Journals, JSTOR (Journal Storage), Scholar Google, Science Direct (Elsevier), Social Sciences Citation Index, SpringerLink, Taylor & Francis Online–Journals, and Walden. Relevant combinations of key search terms included the following: *homework environment, homework motivation, academic support, parental support, teacher feedback,* and *technology*. I also reviewed reference lists from relevant articles for appropriate sources. This review of literature was supported by peer-reviewed sources written and published in the last 5 years.

White Paper

The white paper is the most appropriate project genre for communicating the findings of the study. Kantor (2009) described a white paper as "a document whose purpose is to educate, inform, and convince readers by identifying existing problems and presenting solutions that help solve the issues" (p. 167). Historically, white papers were thought to originate in the early 1920s and were often used as a way to disseminate information (Graham, 2016). Decades later, white papers gained popularity in the 1980s and greater accessibility in the 1990s with the rise of technology and computers (Hunnell,

2017). Despite the increase in popularity, there is still limited knowledge and research on the use of white papers in the field of education.

Several researchers highlight the purpose, use, and popularity of white papers, despite their limited use in education (Gordon & Gordon, 2003; Graham, 2013; Kantor, 2009; Steizner, 2010). More recently, white papers are designed to highlight a problem and offer persuasive points with specific solutions (Graham, 2013). This problem/ solution format is commonly used by researchers who present research-based ideas to school and district leaders seeking a solution for deficits in teaching and learning.

The white paper format falls under the classification of gray literature. According to Boekhorst et al. (as cited by Slonaker, 2013), "Gray literature refers to works not available through normal channels, including unpublished works, reports, working papers, and proceedings" (p. 76). In the absence of official standards, the genre adheres to a common format, which typically includes an introduction, purpose statement, problem description, proposed solutions, and a conclusion, with lengths varying between five and 10 pages (Slonaker, 2013).

A white paper report is used to assist in educating the targeted audience about a problem and building support of the proposed solution (Young Adult Library Services Association, 2013). White papers are often used in business and educational settings to disclose information to a target audience and offer conceivable solutions to problems (Sims, 2011). To inform the school and district of the proposed solutions to increase homework completion and student motivation, a white paper report was used. Although the white paper should not be considered the sole solution to the problem identified for the study, it should be considered an effective tool to communicate the findings of

Section 2 and recommendations presented in the project for improving homework completion and motivation of students

Genre Rationale

A white paper report can succinctly communicate problems and solutions to stakeholders, and is often used in concise presentations of project studies (Snyder, 2014). The problem guiding the research for this study and the findings supported the use of a white paper over the other project study choices of a curriculum plan, evaluation report, professional development plan, or policy recommendation (position paper). A white paper provides a method for presenting the background of a scholarly-based research problem and valid and achievable recommendations for amending the presented issues (Bardach & Patashnik, 2015). Creswell (2012) noted when findings are presented to the educational community as an executive summary of the study, along with conclusions and possible solutions. Because a white paper provides a format for outlining recommendations, it is considered a suitable choice for the project study. For this project, a white paper report was created to provide insight to school leaders, teachers, and parents about students' perceptions of motivation, homework, and environmental preferences. This report would also provide guidance to these stakeholders with better understanding how to approach the concept of homework by overcoming the noted inconsistencies in homework completion, submission, and accuracy, as a possible result of environmental factors and/or decreased levels of motivation.

Compared to the other project genres, a white paper was chosen due to its versatile nature and ability to communicate information in easily understood language for all stakeholders (Clay, 2012), specifically parents who may be most unfamiliar with

educational verbiage, likely included in the other genres. An evaluation report was not appropriate because the study did not identify a problem in a program, nor did the genre coincide with the findings of the study. The final project study genre, professional development, provides professionals with recommendations for improving their skillsets. Despite this, the issue was not the teachers' ability, but the policies and practices they implement for student homework completion. Finally, the data results of the study do not support the development of a complete policy recommendation because an experimental design was not carried out measuring the impact of the current homework policy; therefore, a policy recommendation (position paper) has not an appropriate choice.

The findings of this study show that students' perceptions of homework and environment are strongly influenced by motivation. Juricek (as cited by Slonaker, 2013) stated that white papers "provide an opportunity for researchers to circulate their information to those typically outside the research community" (p. 77). As a result, I intend to share study findings in a way that the problem, data, and solutions can be easily communicated and interpreted by all stakeholders. In addition, the genre provides an easy to read format which appeals to many readers (Sakamuro & Stolley, 2012). Each of these project types may be considered appropriate at different stages of the study process or to support future studies; however, the most appropriate and feasible project given the results of the study was the position paper and recommendations to implement changes.

Environment

Study findings illuminated the importance of environment for students when attempting to complete their homework. At school or at home, students both learn and work best when the environment is conducive and for an environment to be conducive, it

must be comfortable and pleasurable to the student (Munawaroh, 2017). Students expressed a strong desire to have the autonomy to select a homework environment that is conducive and supportive of their preferred learning style and developmental needs to complete the assignment. Nathan (as cited by Xu, 2013), supported this notion, saying it would definitely be advantageous to pay close attention to students' expressions on ways teachers and parents could help improve and better support students' homework environment. In other words, student perception and input should be strongly considered by decision makers because it often provides the most accurate data for improvement.

Several studies have been collected by researchers who found that a student's learning environment and individual learning characteristics are connected to the development of their academic competencies (Anders et al., 2012; Kleemans, Peeters, Segers, & Verhoeven, 2012; Niklas & Schneider, 2013, 2014; Sénéchal & LeFevre, 2002, 2014; Yeung, Linver, & Brooks-Gunn, 2002). Homework is a learner-centered task and the environment should be accommodating to the learner. Environment includes the presence of others, the amount of direct or indirect interaction, as well as the physical condition, including noise and lighting (Munawaroh, 2017). Therefore, when students' preferred ways of learning and working are accommodated, a number of benefits are accrued, including positive attitudes, increased motivation, and more productivity (İflazoğlu, & Hong, 2012).

Researchers who conducted homework studies in the mid and late 1990s asked students to describe when they felt most productive and learned the best. The students' responses included (a) "When I am in groups," (b) "When I am by myself," (c) "When I am with my mother, studying at home," (d) "When I can see stuff on paper and

blackboards," (e) "When I listen," or (f) "When the teacher gives us hands-on activities to do" (Boulmetis & Sabula, 1996; Callan, 1996; Dart et al., 1999; Dunn, Griggs, Olson, Beasley & Gorman, 1995; Fisher & Fraser, 1983; Fraser, 1994, 1998; Hazler & Hazler, 1993; Hodgin & Wooliscroft, 1997; Ramsden, 1992). These comments closely mirror the results in this study. As a result, the establishment of a favorable work environment is a key driver of motivation and effort, and in turn, "students' perceptions of their environment are a useful basis for modifying and improving the quality and effectiveness of teaching and learning" (Matheas, 2017, p. 700). Despite the gaps in research and literature on homework environment, according to the responses of these students, it can be concluded that students do not necessary prefer one environment, but simply prefer that the learning and work environment be congruent to their learning style.

Feedback

For many teachers, providing constructive feedback, while attempting to keep students motivated has been an on-going challenge for mathematics teachers (Lunsford & Pendergrass, 2016). One study showed that homework assignments might be counterproductive if students are not given specific feedback with the opportunity for correction to help them learn how to identify their mistakes in order to improve understanding and performance (Murillo & Martinez-Garrido, 2014). It is the expectation that the feedback on homework provided be timely and specific to learning objectives. Hatziapostolou and Paraskakis (as cited by Ladson, 2012) implied that "students must also engage in the feedback and the quality of the feedback needs to be motivating, personalized, and manageable" (p. 44). Núñez et al. (2015) further supported this notion by showing that when the teacher's feedback is provided for students' homework, there is

a significant effect on the quantity and quality of students' motivation to complete the assignment. For this reason, it is important to promote freedom of expression from students to understand its true influence on motivation better.

Feedback plays a critical role in the process of understanding (Agius & Wilkinson, 2013). Like participants in this study, many learners use feedback as a guide for self-improvement (Ladson, 2012). Students often express other reasons to support their desire for receiving feedback. Marrs, Zumbrunn, McBride, and Stringer (2016) found that 88% of students enjoyed receiving feedback for two main reasons: mastery and positive affect. Constructive feedback helped students make improvements to their work by correcting mistakes and inform future practice. Additionally, feedback evoked a sense of happiness and confidence because students felt recognized and supported by their teacher. These findings, along with the findings of this study echo those of Rowe, Fitness, and Wood (2013) who found that students associate a host of positive emotions to feedback, most likely because of previous experiences with receiving feedback. Furthermore, when feedback identifies students' strengths, it may also lead to increased self-efficacy, self-regulation, and motivation (Zumbrunn & Bruning, 2013). It can then be implied that receiving feedback fosters motivation and improvement for students.

Technology

The use of technology in classrooms has changed how students learn and complete homework assignments, particularly in mathematics. Strohmyer (2016) stated that, "Increased desire for the use of technology and its multiple applications may provide some insight into how students view learning culture and demands for learning within an era where technology is infused into many aspects of both living and learning" (p. 70).

Researchers have proven that the various uses of technology in the classroom enhance mathematical learning and retention when used directly to support the content area and is age and developmentally appropriate (Cheung & Slavin, 2013; Cohen & Hollebrands, 2011). In each study, students expressed a desire to use technology and perceived it as a way to enhance learning and increase creativity and interest. Research studies conducted by Weaver, Walker, and Marx (2012) and DiVall et al. (2013) produced findings similar to those of this study related to students' perceptions of technology integration in learning. When teachers integrate technology in the classroom, it provides an opportunity to cultivate existing knowledge through teaching and learning, while acquiring new knowledge inspired by the 21st century.

Research has provided empirical evidence of the positive influence technology has on students' attitude toward learning and mathematical achievement (Arroyo, Burleson, Tai, Muldner, & Woolf, 2013; Ma, Adesope, Nesbit, & Liu, 2014; Pane, Griffin, McCaffrey, & Karam, 2013; Steenbergen-Hu & Cooper, 2013). Babaali and Gonzalez (2015) conducted an empirical study on the use of technology supplementation with instruction versus instruction without supplementation. Although there was no negligible change in academic achievement, Clark (2013) found when technology is integrated, students demonstrate a stronger desire to learn that could eventually create a shift in performance. Research by Lunsford and Pendergrass (2016) supported this conclusion. While technology-integrated homework shows no significant statistical gain in achievement, if teachers properly planned and implemented technology in homework, student engagement increased, which could potentially lead to gains in achievement.

Lunsford and Pendergrass also found that when assigning and grading technology-integrated homework, students were more motivated to complete the homework.

When technology is implemented to enhance the curriculum, the desired results, including improved engagement and performance, are likely achievable (Babaali & Gonzaelez, 2015). Strohmyer (2016) further supported this by saying, "Research considering student perceptions of technology in delivering instruction, interacting with content, and collaborating for learning, indicate a strong preference among students for the resources" (p. 72). Roschelle, Feng, Murphy, and Mason (2016) also expanded on these considerations for students' learning preferences when conducting a trial for online mathematics homework. They carried out a test of a pilot program for 2,850 mathematics students to determine the effectiveness of the homework environment on students' achievement in the subject. Roschelle et al. acknowledged that homework assignment remains controversial, but their hypothesis was that creating an environment that combined this technology with teacher instruction would be a benefit to students' learning capability. Their tool, called ASSISTments, matched recommended guidelines for homework policies, as it provided relevant feedback and assessment, clarity of assignment, and was relevant for students' capabilities (Roschelle et al., 2016). Results of the tests from 43 schools demonstrated the relevance of the tool, students' scores on standardized tests improved as compared to students continuing to use the previous homework environment. This was especially the case for students with previously lower mathematics achievement (Roschelle et al., 2016). In general, when technology is integrated with homework or used to support homework, students' perceptions, motivation for completion, and overall satisfaction for homework increases.

Flipped Classroom Model

Technology has been integrated in homework environments, as demonstrated by the development of flipped classrooms. DeLozier and Rhodes (2016) explored the practice of flipped classrooms where teachers use classroom time for learning activities, discussion, and quizzes. As a part of the flipped classroom, flipped homework incorporates support systems like instructional videos for students to view as a way to pre-expose them to new concepts or as a review for a currently taught concept.

Virtual manipulatives are also a part of the flipped classroom and homework model, which offer additional support for students in the completion of mathematics homework. Moyer-Packenham and Westenskow (2013) also found that "virtual manipulatives have potentially positive effects on mathematical learning when used concurrently with well-designed lessons" (p. 122). This implication supports the findings of this study, in which student expressed a desire to use manipulatives to support the completion of mathematics assignments and homework.

Velegol, Zappe, and Mahoney (2015) discussed the benefits of the flipped classroom versus the traditional instruction method. Students reviewing content prior to class and then applying this information to a practical task while in class showed several benefits, as they were able to develop problem-solving capabilities and practical application of knowledge (Velegol et al., 2015). Students' preferences were also considered when developing this learning style, which improved focus and capability, as these methods were based on relevance, expectations, and clarity of assignment. These styles of homework and teaching policies help to engage different cognitive processes that influence learning and behavior in students (DeLozier & Rhodes, 2016).

Additionally, this form of teaching and learning showed potential for helping students adapt their learning style into the method most appropriate for them.

There are benefits and drawbacks to any implementation of practice. However, in order to successfully design and establish a flipped classroom, there must be a complete paradigm shift in thinking and instruction by all stakeholders from that of the traditional classroom and home environment (Bergmann & Sams, 2013). The technology resources provided to students as a part of the flipped classroom model could also serve as beneficial resources to parents. Parents could view videos and practice using the virtual manipulatives alongside students to help them understand or refresh themselves on the concepts students are learning in the classroom. Although there are benefits to this style of classroom, certain drawbacks to implementation must also be considered, including availability of technology, technical difficulties, minimized engagement, lack of parental/teacher support to answer questions, and decrease in student self-confidence.

Social Media Influence

Technology not only has the ability to impact students' academically, but can also influence social aspects of learning. Lu, Newman, and Miller (2014) discussed the growing importance of social media in education. Although social media is a somewhat newer approach to teaching and learning, its presence could potentially increase motivation and collaboration amongst students (Moradabadi, Gharehshiran, & Amrai, 2012). Friedman and Friedman (2013) further suggested, "Social media use in the classroom promoted engagement, interactivity, and established relevance of learning and application to course material" (p. 4). Findings from a meta-analysis on social media in

the classroom suggested that it can be an advantageous support tool when paired effectively with homework assignments for content mastery (Strohmyer, 2016).

Today's students are more familiar with technology and are more likely to be eager to use it for academic purposes. The availability of technology has changed learning styles for many students, as ideas and information are more readily available and shareable (Martin, 2012). Lu et al. (2014) surveyed students about how they valued social media as a learning aid, and the results showed a variety of responses. The implication of these findings is that educators must increase their research into the best strategies for integrating technology into their homework policies and curriculum (Lu et al., 2014). These were new factors to consider in developing homework environments and teaching strategies preparing students transitioning between grade levels and to college.

Summary

The review of literature section outlined and expounded on the findings presented in Section 2, and the development of a white paper report. Literature was provided to detail the history and use of white papers and their appropriateness as the chosen project for the study was discussed. Analysis of the study's data identified several drivers of motivation related to homework completion and homework environment preference. Those motivational drivers framed the review of literature and the project for this study, which included environment, feedback, and integration and use of technology. The goals of the project were described and the project recommendations were driven by sound empirical research to provide clarity to educators and parents on their roles in homework support. The section provided evidence of the necessity for developing recommendations to support existing homework policies for students and to bridge the identified gap

between research on the effectiveness of homework and students' perceptions on homework. The final portion of Section 3 is focused on the development of potential implications of the project, including potential barriers, a plan for implementation and evaluation, and the potential for social impact.

Project Description

The project to support the findings of this study is a white paper report recommending the creation of a homework guide for teachers and parents. To sustain growth of student motivation, educators will be required to openly acknowledge the expressed needs of students and commit to carrying out the white paper recommendations. This section outlines the plan for implementing the recommendations, potential resources, support, and barriers, along with the roles and responsibilities of the project's stakeholders, the evaluation of the project, and implications for social change.

Potential Resources and Existing Supports

Successful implementation may require access to a meeting center that will accommodate the occupancy of school faculty and district personnel. I will create a Google Drive account and will upload the white paper to a folder entitled *SES Homework Project Study*, and will share the link with school faculty and district personnel via email prior to the information session. I will need access to a commercial copier to make color copies of the PowerPoint presentation that participants can pick up at sign-in, to follow along and take notes during the session.

Other imperative resources to the successful distribution of the study findings and the white paper will be school stakeholders. Principals are the first important resource and existing support, as they will be first to start the informative conversation with

teachers and parents about what needs to take place to support and enhance current homework policy. Teachers are also an important resource, as they are another layer of communication to parents and students about the findings of the project and the steps to implement recommendations. Parents and students are the other potential resources for the project, as the students indicated preferred environments and much needed support and resources to drive their motivation for mathematics homework completion, and they will be able to discuss these needs with both teachers and parents.

Potential Barriers and Solutions

A potential barrier of implementation involves the rejection of the white paper project by school administration. Administrators may decide that student preferences for homework environment will not influence their motivation enough to adopt the homework guide. A possible solution to the barrier could be to prepare and present a stronger and more persuasive white paper. I could also persuade administrators by supporting the white paper with the findings of similar evidence-based strategies.

Another potential barrier of implementation may be a lack of teacher buy-in. Although teachers express concern for students' homework completion and motivation, they may be resistant to adding another initiative to their list of responsibilities. This resistance could be possibly due to perceived time commitments or bad experiences with previous implementation rollouts. A potential solution to avoiding this barrier would be to provide grade-level teachers a professional collaboration day to review the white paper and homework guide so they could develop plans and a timeline to implement the recommendations. School leaders could also consider providing teachers opportunities to attend professional development to support effective implementation.

The third potential barrier could be parents' commitment to the implementation of the strategies and recommendations indicated in the project white paper as a homework guide. Parents may not be present or available during afterschool hours to assist students with homework due to work. Parents also may not feel comfortable implementing certain strategies and recommendations due to their own perceived knowledge and confidence with content matter; thereby unable to provide the support and feedback students expressed as needs in the findings.

Proposal for Implementation and Timetable

Upon approval of the study and project by Walden University, the white paper will be provided to the school's administration. A meeting will be proposed to discuss the project's findings, along with recommendations for possible steps to take for disseminating information to stakeholders. Should administrators decide to adopt the project's findings and recommendations, we could collaboratively prepare talking points to present to the SES teachers and parents regarding the homework guide.

In these talking points, the administrators will outline the importance of acknowledging the motivational drivers and environmental preferences of students related to homework completion, the role of the teachers and parents, and the way it will improve student motivation. Should the teachers and parents decide to adopt the guide presented in the white paper, the administrators and I would review the project findings, proposed outline of the white paper (Appendix A), and the recommendations to present to parents and students. After the document is developed, it must be presented to teachers, parents, and students to gather their perspectives. Next steps would be the establishment of a project committee. Representatives from each stakeholder group will be designated

as part of the project committee that will be responsible for reviewing the project's findings in depth and developing a more customized framework for the homework guide.

After the project committee's in-depth review of the findings, the detailed homework guide presented in the white paper will be developed, shared with faculty and parents for feedback, revised, and implemented at the start of the next academic school year. Leading up to the start of the next academic school year, the project committee will discuss the progress of the project during faculty and parent-teacher association meetings to gain feedback before moving on to the next phase of the homework guide. This will be a continuous process throughout the development of the homework guide until the project committee develops the final product. After administrators, teachers, parents, and students are satisfied with the final product, it will be presented to district leaders and relevant personnel for review.

Roles and Responsibilities of Students and Others

Committee members will be tasked with the development of the possible homework guide, ensuring the inclusion of suggested practices for teachers and parents that align with study findings. This includes incorporating strategies for individualized support, teacher feedback, and the establishment of an environment conducive to successful homework completion, as outlined in the literature review. Students will be tasked with providing feedback to teachers and parents about the homework guide. Teachers and parents will use students' feedback to enhance or eliminate specific strategies to ensure continuous improvement with motivation. They will also complete the project evaluation to offer feedback to school leaders on the effectiveness of the homework guide. As the researcher, I am responsible for presenting study findings and

the white paper to administration for review and approval. The administrators in turn, will be responsible for sharing the findings and recommendations with teachers and parents. All stakeholders are responsible for working together to help develop, implement, and evaluate the proposed homework guide.

Project Evaluation Plan

To assess the effectiveness of the project and the strategies presented in the white paper, qualitative and quantitative measures are recommended. I will develop online surveys via Survey Monkey to collect quantitative data from teachers, parents, and students using a Likert-style question format. This measure will allow me to obtain statistics on the effectiveness of the strategies and recommendations provided to support the improvement of motivation and homework completion. At the end of the school year, I will complement the survey by conducting a focus group of survey participants. The qualitative data will increase validity of the evaluation plan by providing me rich feedback from parents, teachers, and students as they elaborate on their experiences with the homework guide's strategies and share their perception of the homework guide.

The feedback from both measures will be used to develop the guide further each year for the purpose of continuous improvement of student motivation. The following questions would be used to guide the focus group meeting to evaluate the effectiveness of the project better:

- What aspects of the homework guide did you find most useful?
- What aspects of the homework guide did you find least useful?
- Which components of the homework guide do you feel required the most involvement (collaboration)?

- How do you feel the homework guide affected the relationship between the teacher/parent/student?
- Share your thoughts on how you perceived the change in the homework environment effected the students' motivation.
- Share your thoughts on how you perceive the change in homework environment affected homework completion.
- Would you increase or decrease the amount of technology integrated in the homework tasks and homework environment? Please explain why.
- What changes would you make to the current homework guide?

Bruch and Reynolds (2012) implied that evaluations assist stakeholders and decision makers with recognizing the strengths and weaknesses of implementation; therefore, use of survey and focus group data will provide SES stakeholders the evidence-based data to make the necessary future improvements.

The overall goals of the project are to provide insight and recommendations to educators and parents to better support students with homework completion and improved motivation. The project will be evaluated twice during the first year of implementation. The first evaluation will occur in December and the second evaluation will occur at the end of the second semester in May. I will develop three versions of a brief survey, one for parents, teachers, and students. I will email the project surveys bi-annually to teachers, parents, and students of the school of study and the feedback would be used to develop the guide further each year. A print version of the survey will also be provided to families who may not have access to the internet at home. Survey data will be

analyzed using a Google Forms data analysis tool to provide quantitative results, which will be further supported by the qualitative data obtained from focus groups to drive any necessary improvement of the homework guide.

Key stakeholders included in the project evaluation are teachers, students, and parents of SES. Teachers and parents will evaluate the perceived effectiveness of the homework guide as it relates to student motivation, the difficulty of implementation, how the use affects the teacher/student and parent/student relationships, and perceived changes in motivation. Students will evaluate the effectiveness of the homework guide as it relates to homework support, motivation (effort), performance (completion and accuracy), and accommodations (environment). All feedback will be used for the continuous improvement of homework and environmental support for all students.

Project Implications

The white paper project is aimed to address the needs of students, parents, and teachers in the local community. The results of the study provide readers a new perspective on how the implementation of specific motivational strategies and a supportive environment can positively influence the homework completion of fourth-grade students. Students in the school understood the necessity of homework, but acknowledged that they experience difficulties completing homework, depending on individual ability, environmental circumstances, and availability of resources. Therefore, the white paper provides an outline of the difficulties faced by students and includes suggestions for how parents and teachers can address those issues.

Teachers may be able to gain a more solid understanding of their students' perspectives about motivational strategies and homework environment. Teachers in this

school might change their perspectives about the best way to teach their students and could possibly provide insight into the academic challenges that some of their students face. The project also provides them with the necessary information about what motivates students to complete homework, how to enhance their current homework policy, and how to best support their students.

Parents may also gain a better understanding of the challenges and expectations their children face in school regarding academic motivation and homework environment preferences. The literature indicated that parents are often not clear on their roles in homework and assessment, and this project might provide them with the necessary information on how to develop their role in that manner. Parents may learn about their critical role in helping students achieve increased mathematics achievement and how to create an environment that best supports their students' needs to be most effective.

If the school uses the project findings and the white paper to foster growth of student motivation, the proposed project has the potential to inform wider district policies and procedures for homework. This information might be useful to other school districts experiencing similar issues with students' homework preferences. These perspectives might assist in raising awareness about motivation and learning environments informed by the outcomes of the school's implementation and success. Should other schools review the findings of this study and find similarities to their needs, they might see benefits in the development of a research-based homework policy.

Conclusion

The study's findings support the development of a white paper to complement existing homework policies, in order to help address the initial problem. Appendix A

includes an outline for the project, which includes a white paper detailing the importance of developing a homework guide acting for teachers and parents to better support student motivation and academic growth. The white paper is based on the identified motivational drivers of student homework completion and homework environment preferences. This is to provide insight and clarify the roles for students, teachers, and parents.

Suggestions are for the school site to implement appropriate strategies and homework practices by creating a collaborative group with administrator, teacher, student, and parent representatives. Including these perspectives and following the recommended guidelines allows for the development of more comprehensive and supportive homework policies. Section 3 included information about the white paper and ways the teachers and parents can better support students. The section provided information on existing resources and support, possible barriers and solutions, an implementation plan and timeline, and a possible evaluation plan of the project. The final part of Section 3 included future implications for the local community and the far-reaching potential of the project.

Section 4 contains my reflections on the project. I discuss limitations and strengths of the project. Additional project recommendations are included for developing practical homework policies. The section provides an in-depth discussion of what I learned during the development of the project, along with an evaluation of the project, and any leadership skills developed during the project. The discussion provides insight into my reflections about the process. Section 4 concludes with my reflections of the project’s importance and implications for future research.

Section 4: Reflections and Conclusions

Students face difficulties in completing homework unless it is relevant and appropriate to their needs. This project study was designed to provide insight into the problem of homework completion in one Georgia elementary school by uncovering fourth-grade students' perceptions regarding homework, homework environment, and academic motivation. The analysis of the responses indicated students found homework to be beneficial to academic growth and skill proficiency, if students received their desired level of support and feedback in a comfortable and conducive work environment. A further analysis of supporting literature indicated that the most appropriate solution to this problem would be the development of a white paper to provide findings and possible recommendations to school leaders, teachers, and parents to better support students with homework completion and improve motivation.

A reflection surrounding this work is included, including my reflections on the strengths and weaknesses of the project. Reflections include what was learned regarding scholarship, development, leadership, change, and how the project shaped me as a scholar and practitioner. The conclusion includes a discussion of implications, applications, and future directions for the development of the homework guide.

Project Strengths and Limitations

The strength of the project lies in students' perspectives regarding homework environment and academic motivation in mathematics. The qualitative study was designed to uncover students' perceptions and inform the ongoing discussion around the necessity of acknowledging students' preferences of homework environment and their motivational drivers. The study's findings and supporting literature both demonstrate the

importance of providing effective strategies to teachers and parents to assist students better with homework completion, and the white paper project addressed this issue directly by provided practical solutions for addressing the problem.

The white paper provided strength to the study by outlining the problem and solutions to inform stakeholders appropriately that developing a sound homework guide is a simple way to improve a growing problem. The organized, concise format of the white paper may greatly affect overall perspectives about elementary mathematics in the near future. Teachers can use the proposed solutions to improve how they use homework in their instructional program by implementing recommended strategies to meet individual students' work preferences better. After teachers discover how to incorporate research-based best practices to maximize homework effectiveness and completion, "They will have a powerful tool for helping students make academic gains and perform to the best of their ability" (Carr, 2013, p. 179).

There were certain limitations on the project. One identified limitation was that only a single school and a small number of students were included in the study. A smaller sample size implies that conclusions are less reliable (De Winter, 2013). Additionally, the sample size limits the potential generalizability of the information to other school settings. Although large sample sizes are not always available, the larger the sample size, the more accurate and reliable the findings (Aşiret & Sünbül, 2016). Another limitation that was considered is the potential for the school to reject the project findings and recommendations included in the white paper. The recommendations include sharing the information with multiple stakeholders and having these same stakeholders offer their time and effort to implement and use the recommended homework strategies.

Recommendations for Remediation of Limitations

Recommendations for addressing these limitations were introduced through literature on the universality of the debate regarding the effectiveness of homework and its influence on students' academic motivation. An organized environment, student engagement, and homework completion are positively linked to students' academic achievement and motivation (Martin, 2012; Xu, 2015). Furthermore, the combination of other studies with similar findings allows for more generalizability of the results of the project and the ability to transfer the findings to other schools in the district. Limitations are addressed further by the noted support of the school administration and other stakeholders in allowing the project to take place, which may overcome any problems with implementing the project and its recommendations.

Recommendations for Alternative Approaches

The identified problem for the current study was homework completion and decreased motivation and its potential influence on academic motivation in mathematics. The selected method for addressing the problem was through private interviews with fourth-grade students. A white paper was developed to address the problem of homework completion and student motivation, and included homework support strategies for teachers and parents. Successful mathematics homework completion is based primarily on each student's developmental level, understanding of the task, ability to apply skills, and perhaps the failure to complete tasks may be the result of homework being designed without considering the various levels of proficiency.

An alternative qualitative approach to address the problem of homework completion could be to investigate teachers' ability to differentiate learning by

conducting interviews, focus groups, and teacher observations to have a better understanding of how or if teachers use differentiation. Once data are transcribed and coded, school leaders could have a better understanding of teachers' differentiated teaching practices. This information could be used by school leaders to determine possible next steps for training and support, if necessary.

Scholarship

The development of the project study has helped advance my theoretical knowledge as well as my ability to apply the disciplinary knowledge I have gained to present the findings of my study in a scholarly manner. In order to demonstrate the importance of scholarship, I relied on several databases to conduct extensive research for two literature reviews to support homework, achievement, and motivation related to the mathematics performance of elementary students. Peer-reviewed articles and academic journals were used to capture diverse perspectives from various researchers in the field in order to present the most accurate information to support the study.

Conducting this study afforded me the opportunity to present accurately the reality of the local problem. Additionally, literature saturation also allowed me to not only gain knowledge about conducting scholarly research, but made me mindful of how students associate their successes and failures with homework and their perception of it. Most importantly, I learned that true scholarship is a continuous life-long process with endless possibilities. Sometimes a scholar must work both smarter and harder to tap into those valuable resources that help maximize the efficiency and effectiveness of an educational system. Once acquired, the knowledge gained through research and study should be shared in a way that engages and enhances the skillsets of the practitioners and

leaders of this profession. Through this process, I discovered that scholarship has no boundaries and a scholar must continuously seek ways to improve best practices and the mindsets of others for the greater good of all.

Project Development

The project development and evaluation of this study resulted in the formation of a white paper aimed to highlight the importance of identifying the motivational drivers of homework completion in mathematics in order to suggest courses of action toward improvement. During this study, the task of project development and evaluation highlighted the importance of working in an academic community. Conducting research, developing a project that effectively addresses educational issues, and identifying possible solutions is not something I would recommend doing in isolation from other stakeholders. Through my experiences as an educator, professional communities that foster learning, creation, and a variety of perspectives through collaboration most often yield the best results.

I found completing a task of this magnitude to be very intimidating. For that reason, I believe having the opportunity to work with stakeholders in the study school augmented the quality of the proposed recommendations. Furthermore, the aptness of collaboration minimizes biased, subjective thinking, and increases the probability of the district's willingness to adopt and implement the proposed policy recommendations. Overall, project development and evaluation is a necessary part of research that focuses on policy effectiveness and policy recommendations. It forces you, the researcher, to make sense of the data by analyzing the findings of the study in order to synthesize possible solutions, which is an essential part of conducting scholarly research.

Leadership and Change

Through this process, I discovered that to be an effective leader, I must not only evaluate my own practices and intentions, I must also change my mindset about how committed I am to be the change I want to see. I never thought I would get to this point in my doctoral program because there were so many challenges. There were several times I felt defeated and thought of taking time off, but I knew that as a classroom and teacher leader, I had to be an example to the many people counting on me to complete this program and bring change to my district. The first step I made toward becoming a definitive leader was my decision to change the way I dealt with obstacles and removed negativity from my thought processes. Next, I had to remind myself that a true leader understands that there are many complex issues negatively affecting the success of teachers and students. However, initiating on-going, honest discussion and maintaining consistent evaluation of program and practice are the pillars of effective change.

Finally, in order to be a leader of change in my district, and after successfully completing my program, I will take the findings and present them to the study school and district leaders to demonstrate my commitment to finding solutions to local issues directly affecting stakeholders. If the recommendations presented in the position paper are not adopted at the school or district level, I am committed to working directly with elementary teachers of upper grades by sharing my findings and developing a homework policy that will revitalize motivation and increase achievement amongst students. Overall, this journey has taught me that as a leader and life-long educator, I must use my wealth of knowledge to teach and empower others to change their old ways of thinking and push themselves toward the greatness waiting beyond their limits.

Analysis of Self as Scholar

The doctoral journey taught me to examine myself personally and intellectually. I believe that self-reflection is an important facet of being an effective leader and scholar, making me an even stronger and more confident educator. Earning the prestigious title of *educational scholar* means so much more to me now than it did at the beginning of the process because it takes strength, dedication, and passion to seek greater knowledge constantly. Being a scholar now is more about being a committed learner who, instead of being told, takes the initiative to grow and shares the fruits of her investment with others.

Creating this work made me realize that a scholar is not about being an elitist or a genius, but more so about understanding that anyone can become a scholar as long as she is willing to look beyond the surface of learning to seek knowledge and understanding. To develop solutions to the local problem guiding this study, I knew I had to conduct extensive research to have a solid understanding of the historical and current issues and trends affecting students' perceptions of homework and how those things may play a key role in achievement and motivation.

So many changes take place in education and I know that being a true scholar of education means that I have to adjust how I approached my study, but also my intentions as a professional and practitioner. I realize that the historical theories that guided my study are still very relevant today and that one day, I too can make a name for myself in education as a scholar and contributor to how education is perceived by the world.

Analysis of Self as Practitioner

A practitioner is most commonly known as one who practices a learned profession; a term most commonly used and recognized in the medical field. Initially, I

never considered myself experienced enough or knowledgeable enough to be considered a practitioner. Then I realized that after identifying a problem, conducting research, analyzing data, and developing a project for a school district, I am on the path to becoming an impactful practitioner.

Although the sample size of the study was smaller than anticipated, the feedback provided by students was honest, eye-opening, and could be used to guide further research in the areas of homework and motivation as they also relate to other content areas. Knowing this has taught me that as a practitioner there will always be challenges and complexities to finding valid resolutions to educational issues. I now have a deeper curiosity, drive, and determination for solving problems in the field.

Being responsible for conducting research and making sound decisions to evoke change at the local level completely changed my understanding of being a practitioner. This level of study clarified many misconceptions for me in education, from students' perceptions about learning, to the true effect of environmental factors on achievement, to the amount of time and resources required to develop effective policies and practices.

Analysis of Self as Project Developer

From the start, I knew I had an idea and I knew I could translate that idea into scholarly writing, but what I failed to consider was just how synchronous those ideas had to be with the guiding problem of the study. Project development is a task like no other. No amount of courses or training could truly prepare a novice researcher for the intense workload associated with project development. Until this project study, I had never conducted research at this level, nor had I been charged with identifying a problem, creating a statement around that problem, explaining the rationale of the problem, and

developing a plan to resolve it. This study has taught me that being a project developer is more than identifying a problem, but familiarizing oneself enough with the problem and research to have a thorough understanding of why the problem is worth solving.

I learned when writing the literature review that using historical data and theories are essential to guiding the development of a project, along with the findings from scholarly, peer-reviewed publications. One of the greatest challenges for me was finding current research to support my project study, but also to know when I had reached saturation of data. Although the problem I chose to research is a decades-old issue, the amount of current scholarly research available was discouraging. This made the process overwhelming and the synthesis of the findings even more difficult.

As I reflect on my journey as a scholar, a practitioner, and now a project developer, I understand that the complexity of project development is substantial to the developing scholar-practitioner, yet manageable with diligence and tenacity. I do not recommend carrying out a project such as this dissertation without the knowledge, advice, and patience of an expert. In the future, in order to be considered a notable and effective project developer, I realize that I must view the process as more of a marathon than a race and allow myself time to make mistakes, learn from those mistakes, and evolve. Taking the time to understand the importance and purpose of each phase of project development is important to its success and my success as a scholar.

Reflection on the Importance of the Work

Identifying a local problem, collecting data and being able to offer manageable, cost-efficient, and student-focused solutions has given me a sense of pride knowing my hard work could potentially generate long-term effects. This level of work forced me to

focus on a single problem from start to finish, using a myriad of skills to complete the task. Project studies such as this one may not address every problem, or even the largest, but they start dialogue amongst schools and communities that ignite change.

As I reflect on my doctoral journey, I now understand the dedication required of those seeking to be change agents in education. Although every educator holds a personal passion for what she believes is the remedy for the challenges we face in education, this process has highlighted the reality that there will never be just one remedy. The amount of work it will take to begin to see the changes we desire in education seems insurmountable unless we begin working together rather than ignoring problems that may impede social and academic progress, collaborate as professionals to create solutions, and commit to making the changes necessary for the good of all.

As I considered the local problem, I second-guessed the problem I chose each time the research exposed another deficit that handicaps students from reaching their potential. I am reminded to work diligently and intentionally behind the scenes to ensure curriculum, instruction, and policy are framed with the whole child in mind; considering all the steps necessary to point our students in the direction of success as students and as knowledgeable, compassionate, well-rounded citizens of our society.

Implications, Applications, and Directions for Future Research

Findings indicated that there could be positive effects in promoting learner-focused instruction for students, as these students performed differently under a variety of environmental preferences. These findings might provide insight into building a new model for how teachers and families should approach homework and learning for

students. The results may also help educators improve how they assign homework and provide ideas for training staff on learning styles and homework design.

Prioritizing the learning needs and desires of students could generate future success. Therefore, it should be emphasized that teachers need to consider how to create a learning environment and organize materials in a way that activates student motivation and stimulates engagement (Leasa, Corebima, Ibrohim, & Suwono, 2017). Furthermore, improving knowledge about educators and families' perspectives on student-centered learning environments and students' homework preferences implied that difficulties in homework would be addressed.

This project highlighted the difficulties facing students, educators, and parents in understanding how homework promotes motivation and homework completion. In the results of the initial mixed-methods study, the quantitative findings did not indicate statistical significance regarding the effect of motivation on test scores or a relationship between the mathematical achievement scores and academic motivation. However, the qualitative analysis showed the significance of how an environment congruent to students' learning preferences positively influences motivation. Students universally acknowledged the importance of homework, but reported that homework needed to be tailored to their capabilities and environment preferences. The project's findings led to the development of a white paper that could serve as a platform for raising awareness about the debate regarding the necessity of assigning homework, empirical research supporting the best practices for motivating students, and the corresponding implications of developing and applying these recommendations to future research efforts.

The significance of this study is the white paper report, which offers recommendations that apply specifically to the study school without exceeding boundaries. The white paper aims to help the study school implement effective strategies to motivate and support students, which then creates the potential for sharing those findings with the district. Recommendations may further inform other homework practices and start the development of a districtwide homework guide for teachers and parents. The inclusion of a recommendation to evaluate stakeholder knowledge following the project's implementation has implications for future research. Future researchers on homework guide development could use these findings to inform their research and lay the foundation for future quantitative and qualitative evaluation of the process that other schools and districts might take in developing empirically sound homework policies, which informs education policy as a whole.

Conclusion

Section 4 included my reflections regarding the study. Reflection focused on the study's implications, limitations, strengths, and the application of the findings. The final analysis included my understanding of the project study's influence on the development of me as scholar, practitioner, and educator. These reflections will direct me as an educator who is guided by empirical research and sound foundational perspectives. My future actions will be guided by socially responsible applications of best practices.

As I conclude this study, I reflect on my belief that all students have the desire to learn in an environment where they are motivated and achievement is a priority. In order to provide such experiences, we must acknowledge the critically important component of accountability. Although students are not created equally, it is my job as a scholar-

practitioner to identify problems that may hinder the learning process for all students and to work diligently to find solutions. Stakeholders such as teachers, parents, administrators, and policymakers should be held accountable for their roles and responsibilities in the learning process so students are provided maximum pedagogical support and achievement at all levels. When all educators are committed to fulfilling their roles and responsibilities, we can all enjoy the benefits of student success.

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Appendix A: White Paper

Introduction

For decades, homework has been considered by many as an instructional tool used to enhance learning outside the classroom. Many teachers assign mathematics homework during the school week as rote practice for the purpose of content and skill mastery (Walker & Horsley, 2012). Research continues to show the on-going debate that homework creates between teachers and students and between home and school. While some view homework as a necessary component of learning and academic responsibility, others see it as a hassle that impedes the enjoyment of extracurricular activities and infringes on quality time between students and their families. For these reasons, students experience a number of emotional stressors, including boredom, exhaustion, and resentment for homework (Goetz et al., 2012), often resulting in a decrease in motivation, inconsistent mathematics homework completion, and lackluster performance.

Despite this continuous tug-of-war, there are few signs indicative of homework practice ending. Rather than disregarding homework as the *lemon of learning,* perhaps teachers, school leaders, and parents should consider creative and effective ways to turn it into *lemonade for the learner*. One way to initiate this change is to acknowledge the motivational needs and environmental preferences expressed by students. It is especially important, then, to pay attention to students' voices (Bempechat, Li, Neier, Gillis, & Holloway, 2011).

CCPS Academic Focus

Improving students' mathematics achievement is currently one of four primary academic performance goals for College and Career Preparation Schools (CCPS), and has

directly influenced the mission and vision of the school. As CCPS stands by its mission to provide all students with a globally competitive education that prepares them to be college and career ready, all measures must be exhausted to address underachievement. One factor that affects achievement is motivation. Students who struggle with mathematics are often frustrated and lack motivation to overcome challenges experienced with content mastery (Perrault, 2016). Wang et al. (2015) defined math motivation as "the extent to which individuals embrace math challenges, value the importance of math abilities, and are motivated to perform well in math" (p. 1864). Each of these pressures highlights the importance of addressing students' deficits to improve the instructional practices of teachers and the academic performance of all students.

To meet the school and district's academic performance goals, teachers, administrators, and district leaders must bridge the gap between home and school by exhausting all measures. These measures include learning tasks that can be completed inside or outside the traditional classroom. Homework is one of the most popular and frequent instructional tools used in home-based involvement, and often directly involves parents in their child's learning (Katz, Kaplan, & Buzukasshvily, 2011; Wilder, 2014).

Homework has triggered a range of emotions, perceptions, and attitudes in teacher, students, and parents. Each study has focused primarily on the impact it has on student achievement (Murillo & Martinez-Garrido, 2014). Over the past several decades, the debate has since addressed the benefits of assigning homework, the minimum age of students to assign homework to, the appropriate kind of homework, and the quantity of tasks. While some advocate for it, others find it extremely frustrating and often time consuming. During his time in office, President Obama often encouraged students to

complete their homework—even those assignments that were not "completely relevant" (Obama, 2009, 2011). On the other side of things, several school systems throughout the country are reevaluating their homework policies, focusing on whether or not it should be assigned and if so, identifying the least stressful way of offering additional academic support beyond the school setting. Regardless of which side of the debate one chooses to take, this position paper will offer data-driven recommendations for the implementation of a student-centered homework policy aimed to support overall academic achievement based on the findings of the study conducted.

Purpose

The purpose of this white paper report is to present viable solutions to help improve student motivation and homework completion. White papers are used for a number of reasons but one thing most have in common is that they offer insight into a study and give recommendations based on the results (Hoffman, 2013). The goals of the white paper report are to bring awareness to the research problem and the study's findings, and to provide supportive strategies to assist teachers and parents in supporting students with homework completion. Through the details presented in the white paper report, a homework guide could help to curb the ongoing debate about homework in the United States by providing recommendations to teachers, parents, and school leaders to address the problem at the local level.

The challenge local teachers faced in the inconsistency of homework completion by students at the elementary level instigated the research project study. Fourth-grade students of SES were asked to share their experiences and perceptions of homework, along with what best motivated them to complete their tasks. Students' lack of homework

completion included lack of ability or understanding, lack of support, lack of motivation, and a lack of differentiation. To obtain an even deeper understanding of these inconsistencies, I attempted to determine if the type of environment students completed homework in affected their ability and willingness to complete homework. The type of homework environments included a traditional take-home environment, an afterschool/study hall environment, or having the option to choose their environment.

Findings

I examined fourth-grade students' perceptions of homework environment and academic motivation in mathematics. Several strategies that positively influence motivation and no difference in environmental preference amongst students were found. When it came to academic motivation, participants expressed a variety of feelings regarding their homework environment. The school versus home environment depended on whether the student preferred a quiet environment (i.e., home, library) or one that was more interactive (i.e., study hall, classroom). Some respondents felt confident and equally capable of working in either environment.

The findings of the study showed a majority of students were more motivated to complete their mathematics homework when they felt confident, supported, and could engage in some form of technology use. Students also expressed several ways they felt a greater sense of motivation to complete homework assignment, which included teacher support, integration of technology, and mastery. Overall, most children appeared satisfied with the idea of completing homework when those motivational drivers were satisfied and they were able to work in their preferred environment especially when that resulted in better grades and improved understanding of the concepts introduced into class.

Motivational Drivers Expressed by Fourth-Grade Students

Method	Technique
Use of technology	Power point presentations Interactive practice websites Educational videos Virtual manipulatives Online practice assessments
Teacher support	Timely, explicit feedback Differentiated assignments Grading with commentary Manipulatives Steps for problem solving
Intrinsic/extrinsic rewards	Skill mastery Positive recognition Good grades Tangible rewards

Proposed Solutions

Based on the findings, proposed solutions will be recommended to support the development of a homework guide to help teachers and parents accommodate students' perceived needs regarding homework structure and environments. Parents, teachers, and leaders can each implement small, yet effective strategies to maximize support for students. In the home environment, parents can create a workspace for their child that is comfortable and free from distractions. This space should have adequate lighting, basic school supplies, and access to technology use when necessary. It is also recommended that parents take the time to read over the homework with the students and share any challenges to completion with the teacher.

Teachers can support students with homework completion by differentiating the tasks to meet the needs of the learning. Integrating technology in homework could also be a way to differentiate the task and enhance motivation. The teacher could also provide

specific and timely feedback to the student on their work performance. This strategy could help students understand the specific skills they need to work on, which could increase motivation and completion.

School leaders can also assist teachers and parents in supporting students in a number of ways. One support for teachers and parents would be the development of a homework guide with recommendations to support students. School leaders could establish a resource center for parents to check out materials and host a Parent University as content refresher training. Leaders could also consider using school funds to integrate one-to-one technology.

Support Guide

Parents	Teachers	Leaders
Create a comfortable and custom work space	Differentiate tasks for individual developmental needs	Provide teachers and parents a detailed homework guide
Establish a routine homework time	Integrate technology into homework	Create a homework group of teachers for student support
Provide access to technology	Remove distractions from the classroom	Host a parent university to offer content refresher courses
Read homework directions with child	Provide specific and timely feedback	Help parent liaison officer develop a resource center with a checkout system
Minimal monitoring and maximum motivation	Consider a flipped classroom	Consider one-to-one technology for students
Support and provide feedback	Solicit colleagues to help with homework support	Compile and provide to parents a list of educational websites
Communicate any challenges to teacher		

Homework Guide Survey

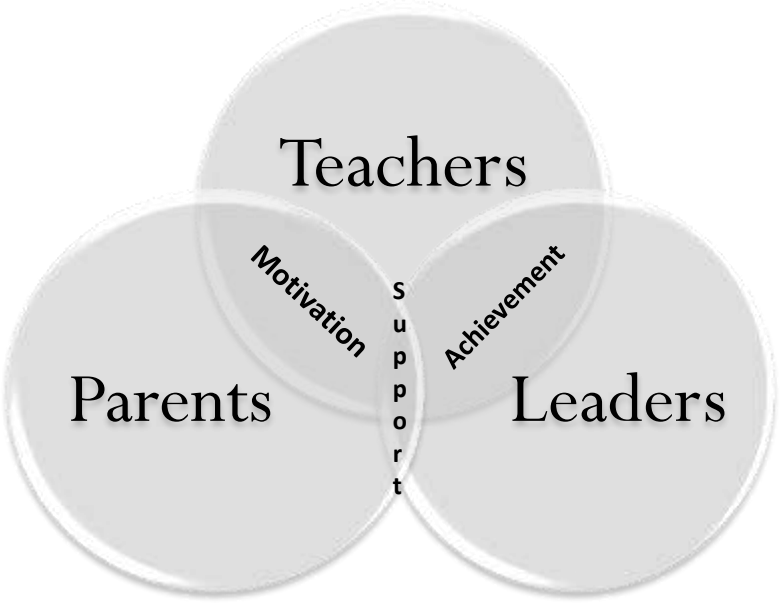
Parents, teachers, and students will be asked to evaluate the effectiveness of the homework guide at the end of the first semester in December and at the end of the second

semester in May. Three online versions of a survey will be created using Google Forms—one each for parents, teachers, and students. A print version of the survey will also be provided to families who may not have access to the internet. All feedback will be used for continuous improvement of the homework guide to provide the most relevant and effective support strategies for all students. Surveys can be accessed using the following links:

Teachers https://goo.gl/forms/8SmXfb1EpANA1GuQ2

Parents https://goo.gl/forms/AylZSOiFAztnhA1a2

Students https://goo.gl/forms/RVfFjS1h9DkPn79X2



Conclusion

The daily assignment of mathematics homework and the environment in which to complete it play roles in student achievement and motivation. The results of the study showed a range of students' learning styles and preferences similar to previous literature, especially when faced with environmental challenges, a lack of resources, and marginal support. While some students expressed the need for a quiet homework environment with limited distractions in order to focus on the work, other students expressed the desire to work in a homework environment that allowed the opportunity for more interaction to discuss the work or receive assistance. Home learning conditions may generate patterns of motivation in learners that may be different from those observed in the classroom (Hong, Mason, Ping, & Lee, 2015).

Regardless of the type of environment preferred, students emphasized the importance of the space being comfortable, having an availability of supplies, along with someone being present to answer questions and offer support if the homework presented challenges. Many dynamics in the school and home environments affect learning and may generate a variety of motivational patterns, as such a one-size-fits-all approach to supporting students with homework that disregards what is known about individual differences in learning (Bennett, 2017). Rather than disregarding students' preferences for learning, administrators, teachers, and parents should begin to acknowledge and include students in the decision-making processes and practices impacting their motivation to learn, in order to improve overall academic success.

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Appendix B: Interview Protocols

INITIAL INTERVIEW

Interviewer's Name: Stefanie Harmon
Interviewee's I.D._____ Class Code: _____
Interview Date: _____ Interview Location: _____

Research Study Purpose

The purpose of this initial interview is to obtain students' perceptions of homework as it relates to mathematics, as well the motivational factors that impact their academic achievement. Student confidentiality will be protected because each participant will be assigned an alpha/numeric code that will be used in the data and final project study report. The interview will take approximately 20 minutes. The study is voluntary and, even though the participants signed the informed consent form, participants may withdraw from the study at any point. An audio recorder will be used to ensure that data are collected accurately.

Interview questions are aligned with research questions and guided by the ARCS model.

[A]ttention-strategies for arousing and sustaining curiosity and interest;

1. What are some ways your teacher captures your interest for learning mathematics? (RQ3)
2. What could your teacher do differently when assigning mathematics homework? (RQ1)

[R]elevance-strategies that link to learners' needs, interests, and motives;

3. What type of environment would you prefer to complete math assignments and why? (RQ 2)
4. How could you be better supported (or motivated) when it comes to math homework? (RQ3)

[C]onfidence-strategies that help students develop a positive expectation for successful achievement;

5. Describe how you feel when submitting mathematics homework. (RQ3)
6. Describe how you feel motivation affects your math performance. (RQ3)

[S]atisfaction-strategies that provide extrinsic and intrinsic reinforcement for effort.

7. Describe how you think homework style motivates your (math) work performance.(RQ4)
8. Describe how you think your environment affects your (math) work performance. (RQ 1)

CLOSING INTERVIEW

Interviewer's Name: Stefanie Harmon
Interviewee's I.D._____ Class Code: _____
Interview Date: _____ Interview Location: _____

Research Study Purpose

The purpose of this initial interview is to obtain students' perceptions of homework as it relates to mathematics, as well the motivational factors that impact their academic achievement. Student confidentiality will be protected because each participant will be assigned an alpha/numeric code that will be used in the data and final project study report. The interview will take approximately 20 minutes. The study is voluntary and, even though the participants signed the informed consent form, participants may withdraw from the study at any point. An audio recorder will be used to ensure that data are collected accurately.

1. Provide examples of ways in which you felt your teacher captured your attention in mathematics.
2. Describe how you felt about the mathematics homework that was assigned to you (easy, challenging, etc.). Did it align with your current studies? Did it provide additional support for your past, present, or future studies?
3. Describe how your homework style (environment) affected your confidence in mathematics.
4. Explain how satisfied or unsatisfied you are with your mathematics homework assignments and environment. How has it impacted your motivation for mathematics (very much, very little, still the same, etc.)?

Appendix C: Participant Invitation Letter

Attention Teachers of SES: This is Your Participant Invitation Letter!

You're invited to be a part of an important homework research study!

- Do you currently teach fourth-grade students?
- Do you specialize in mathematics?

If you answered **YES** to both of these questions, you may be eligible to participate in a mathematics homework research study.

The purpose of this study is to examine the impact of homework environment on mathematics academic motivation and to attempt to find an environment for homework that will maximize student academic motivation and content retention. Participants will be asked to commit to approximately 18 weeks during the academic school year. Although participants will not receive compensation, your participation during the study will be greatly appreciated.

This study is being conducted through the Department of Education at Walden University and is IRB approved.

Please join me for an information session on _____, 2016, in Room 304 or for additional information contact Stefanie Harmon at stefanie.harmon@waldenu.edu

Appendix D: Curriculum Vitae

Stefanie A. Harmon

Education

PhD Walden University, Minneapolis, MN — December 2017
Curriculum, Instruction, and Assessment

MA Walden University, Minneapolis, MN — October 2010
Teacher Leadership

BS Georgia Southern University, Statesboro, GA — May 2004
Business Administration

Teaching Experience

[redacted] Public Schools, [redacted], GA — August 2008–present
Department of Professional Learning
Teacher Development Specialist

[redacted] Elementary School, Atlanta, GA — August 2008–June 2016
Teacher, Grades 3 and 5

Honors and Awards

District Teacher of the Year — 2015–2016