STUDENT ENGAGEMENT IN UPPER ELEMENTARY MATHEMATICS:

PROFICIENT TEACHER EXPERIENCES AND INFLUENCES

by

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DEDICATION

I would like to dedicate this work to my loving husband who has showed me nothing but support and understanding throughout this journey and to all of the teachers who have inspired my passion for teaching along the way. To my newborn son, who soundly slept a lot in the early weeks of life which allowed me to get a lot of writing and editing done. Finally, I could not have not made it through without the constant support of my family, especially my personal editor, my mom, and my Mother-in-Law who was always willing to babysit so I could complete the final touches to this work.

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ABSTRACT

KELLY DERRY SHADDEN
STUDENT ENGAGEMENT IN UPPER ELEMENTARY MATHEMATICS: PROFICIENT TEACHER EXPERIENCES AND INFLUENCES
Under the direction of Jeffrey S. Hall, Ed.D.

This phenomenological qualitative study involves proficient teachers who regularly use engaging instructional strategies in their upper elementary mathematics classes. In this study, these teachers explain their experiences and what influences them to utilize strategies that engage students. The research referenced in this study shows that student engagement in the upper elementary grades is important to life-long learning. Therefore, student engagement is a benefit in the classroom. Mathematics was specifically targeted due to the negative feelings often associated with the subject area. This study adds to the body of knowledge regarding what influences teachers' instructional decision making when it comes to engagement and how their experiences inform their instructional choices.

CHAPTER 1

INTRODUCTION

Effective classroom instruction encourages student action and identity-as-learners through facilitation of discussion, challenging tasks, and ongoing formative assessment resulting in feedback to guide the learning process (Goldman & Pellegrino, 2015). The top skills required for success in the 21st century are cooperative learning, innovation, critical thinking, problem-based learning, and communication (Gore, 2013). In the words of Franklin Bobbitt (1924), "The method of the new education is not subject storage but action, activity, conduct, behavior. One learns to act by acting. One learns to live by living…. Life and education are one process, and never should they diverge" (p. 72). Even back in 1924, a need for students to be more engaged in their own learning was a topic of discussion.

While student engagement is difficult to define, three main components are evident in the literature: Behavioral engagement, cognitive engagement and emotional/psychological engagement (Fredricks, Blumenfeld, & Paris, 2004; Lee, 2014; Mahatmya, Lohman, Matjasko, & Farb, 2012). Therefore, throughout this research process student engagement will refer to those three elements which will be further discussed in Chapter Two. Correspondingly, several things are known about student engagement and the effect it has on student learning: Engagement is important to achievement as well as students' social and cognitive development (Eccles, 2004; Mahatmya, Lohman, Matjasko, & Farb, 2012; Marks, 2000).

Mathematics is one of the subject areas where engaging experiences can beneficially be employed and are actually being targeted. "There is growing consensus among researchers, educators, and policy makers about the need for greater emphasis on ambitious student-centered mathematics instruction in light of mounting concern about student mathematics performance in the intermediate grades and beyond" (Holmes, 2013, p. 1). Proposing open-ended, real world problems to students provides opportunities for access and use of prior knowledge, applying knowledge in new and different ways, as well as, developing integral problem-solving abilities (Boaler, 2016). In support of this, Goldman and Pellegrino (2015) explain that one of the most important pieces of quality instruction is providing opportunities for students to access and build upon prior knowledge.

In order to affect change, mathematics educators must put into practice the research supporting students engaging in deeper learning and development of more flexible problem solving skills. Furthermore, Aslan and Reigeluth (2016) state, "Schools are slowly but surely transforming from the large, impersonal, factory-model organizations of yore into human-centric spaces" (p. 63). Updating teaching practices and integrating engaging instructional strategies are the beginning of employing more student-centered strategies. In today's ever evolving world, complex cognition is crucial (Martinez, 2010) and mathematics fosters this type of thinking. Providing time for metacognition, rich discussion, hands-on learning, and application of skills in real world situations are key to developing future forward thinkers (Boaler, 2016). The aforementioned strategies put students in situations where they are afforded opportunities

to apply prior knowledge, be exposed to different ideas, and presented the ability to create their own path to problem solving.

This research explored what influences and experiences proficient teachers had when it came to instructional decision-making regarding student engagement in their upper elementary mathematics classes. Through the questions posed in interviews, teacher participants are provided an opportunity to be reflective about their practices. The insight gathered in this study could potentially be used to help motivate teachers employing less engaging instructional methods in the same field and grade, as well as across curriculums and grade levels.

Problem Statement

Students' engagement in elementary school has a strong correlation to their continued engagement throughout the remainder of their schooling years (Mahatmya, Lohman, Matjasko, & Farb, 2012). Moreover, engagement declines as students move from upper elementary grades to middle school and is at its worst in high school (Indiana State University, 2017). Also, early school failures result in low self-esteem and over time students disengage and behavior deteriorates (Finn, 1989). These assertions are echoed in the 2006 High School Survey of Student Engagement (HSSSE) which involved 110 schools throughout 26 states and revealed that over one quarter of students are not engaged in the classroom. More recently, the 2013 HSSSE, in which 11,848 public school students participated, indicated 86% of students reported being bored while in class (National Association of Independent Schools [NAIS], 2015). Therefore, these findings identify a need for more engaging instruction in the elementary grades so students continue to have interest in school all the way through to graduation.

Further supporting the importance of engagement, a longitudinal study involving groups of 298 to 767 participants ages five to 20, found a correlation between academic performance and engagement (Wylie & Hodgin, 2012). Nine trajectories were identified for students and then evaluated using these categories: 17% of students showed a stable high level of engagement, 21% hovered around moderate engagement, 13% showed stable low engagement, and 24% of participants demonstrated a low level or decreased in engagement. Thus indicating 37% of students engaged at low or decreasing levels of engagement throughout the years of the study. All trajectories of engagement declined between the ages of 10 and 16, but students who experienced success through age 10 were most likely to remain engaged at higher levels comparatively (Wylie & Hodgin, 2012). Therefore, these findings provide an argument for the importance of engagement in the later elementary grades which usually include the ages of eight through 11.

Throughout the researcher's review of literature on student engagement and disengagement, there appears to be a gap in the literature involving upper elementary mathematics and what factors may influence teachers' selection of instructional strategies. Therefore, the study at hand focuses on upper elementary grades as a result of the research and literature findings indicating engagement and involvement at the identified age levels are integral to a student's future success throughout the rest of their school career (Indiana State University, 2017; Wylie & Hodgin, 2012). Mathematics is specifically targeted due to the often negative attitudes and feelings of anxiety students and teachers possess towards the subject area, as well as its significance to real life skills and professions (Boaler, 2016; Jansen et al., 2013; Willis, 2010). Numerous searches

through books and journals utilizing several variations of search terms such as “teacher influences in instructional decision-making”, “teacher address student attitudes in mathematics”, and “student engagement upper elementary mathematics” all lead to tangent studies sharing just pieces of each element being researched. As a result, this study aims to add to the body of knowledge by combining the elements of student engagement, upper elementary mathematics, and what influences teachers’ instructional choices.

Research Question, Theoretical Framework, and Epistemology

In order to add to the body of knowledge in an attempt to resolve the above problem the following research question will be utilized throughout this study: How do proficient teachers' experiences and influences impact instructional decisions regarding student engagement in mathematics? It is the researcher’s aim to gather information that will potentially help foster a growth mindset in pre-service and current teachers by identifying experiences and influences that encourage the use of engaging strategies by proficient teachers within their mathematics classrooms.

Constructivism served as the theoretical framework for this study as student engagement involves students actively participating in their learning. Additionally, Piaget’s constructivist learning theory explains that children are not passive in their learning, but active participants (Piaget, 1977). Therefore, it is the position of the researcher that learning through experiences and building on one’s experiences is invaluable to the learning process. Moreover, the learning process involves actively constructing knowledge, not sitting passively attempting to simply soak in new information (Duffy & Cunningham, 1996). Constructivism further asserts that the

mind is not a container waiting to be filled, it learns from engagement and piecing together bits of knowledge in an active process involving interaction with the environment (Scholnick, Kol, & Abarbanel, 2006). Therefore, constructivism is a perfect fit for this research as student engagement aims to activate the minds of learners by providing opportunities for knowledge to be pieced together in order to create understanding.

The epistemology of this study was also constructivism as we know what we know based on our experiences (Dewey, 1917). Students' knowledge is developed through the activities in which they are taking part (von Flasersfeld, 1983). However, students are not the only ones learning through experience in the classroom, teachers also learn from their experiences. The teachers in this study have experience teaching mathematics and integrating engaging strategies, therefore their insight is helpful and relevant. Consequently, their responses to interview questions are pertinent to discovering the essence of what influences instructional decisions involving student engagement.

Personal Relevance

Currently, the researcher is an instructor in a College of Arts, Science, and Business educating future teachers regarding general pedagogy as well as instructional methods in mathematics. Therefore, the researcher has a vested interest in these findings so that she can encourage use of engaging strategies in mathematics instruction for the benefit of her students' and their future students. Furthermore, it is the hope of the researcher that this study reveals beneficial information that will be useful to her as an instructor.

Previously, the researcher was an instructional coach to elementary mathematics teachers and found about half of the teachers she worked with were open to trying more engaging strategies and the other half were content continuing the use passive approaches to instruction. Thus, the experiences had while in the role of instructional coach inspired the researcher to investigate why this difference in instructional approaches happens in order to foster a growth mindset in her own students, as well as in other teachers. Finally, the researcher whole-heartedly believes in the power of student engagement and what a positive impact it can have in the learning experiences of a child; consequently, she is very passionate about this project.

Procedures

Phenomenology was the methodology for this study. Phenomenology is a philosophy that aims to identify and describe a shared meaning of lived experiences (Giorgi, 2009; Schwandt, 2007). Husserl (2014) explains that phenomenology is not about facts, it is about understanding peoples' perceptions of an experience and getting to the essence. Aligning with these beliefs, the researcher investigated the phenomena occurring that influences elementary mathematics teachers' implementation of engaging teaching strategies and their experiences with such. The definition of phenomenon employed in this research study is a person's perspective of an entity (Giorgi, 2009). Therefore, phenomenology is important to this study as each teacher has different experiences that influence instructional decisions.

The method used to research teacher influences and experiences were interviews as recommended by qualitative researcher Creswell (2007) and a classroom observation. Qualitative research aims to gain understanding by studying participants deeply and

personally (Creswell, 2007). Therefore, teacher participants were identified by school-based administrators as proficient and implementing student engagement strategies during their mathematics lessons as explained in the definition provided by the researcher. After participant identification and agreement to participate, interviews were conducted over the phone to allow for personal reflection to occur in a location and at a time that was most comfortable for participants. The initial interviews helped establish a baseline of the teachers' understanding of student engagement and were followed by a classroom observation. Finally, a follow-up interview was conducted. Furthermore, time was taken between the initial interviews, classroom observations, and follow-up interviews for the researcher to analyze data in order to tailor the follow-up interview questions to get to the essence. The researcher identified common statements and ideas that repeated themselves among participants, known as saturation, to help identify the phenomenon/phenomena influencing teachers' instructional decisions (Grbich, 2013; Guest, Bunce, and Johnson, 2006). Furthermore, each interview was transcribed and coded by the researcher to identify themes, or "meaning units" as defined by phenomenology. Meaning units were analyzed and grouped together to find commonalities among participants' statements. Additionally, bracketing was utilized as is required in phenomenology. Bracketing is when the researcher puts aside any preconceived notions as to not influence the research process (Husserl, 2014). Finally, the researcher compiled the data gathered during interviews and observations and identified the most influential factors and experiences in teachers' instructional decisions in mathematics regarding student engagement.

Significance

Teachers confront intricate decisions daily that rely on various types of judgement and experiences which can include high-stakes outcomes for students and their futures (Darling-Hammond & Bransford, 2007). One of those "complex decisions" is how to effectively aid students in learning required content. Furthermore, many people would agree that these days in the United States there is a direct spotlight on improving academic achievement for all students that is much brighter than in the past (Sanders, 2000). Researchers Fredricks, Blumenfeld, and Paris (2004) found behavioral, emotional, and cognitive engagement have a positive effect on student achievement. Therefore, identifying influential factors for teachers integrating engaging educational activities into mathematics classrooms will increase student learning. Fredricks et al. (2004) feel strongly as to the benefit of student engagement as well and stat, "Ultimately, although engagement might begin with liking or participating, it can result in commitment or investment and thus may be a key to diminishing student apathy and enhancing learning" (p. 82). Thus, the more engaging the environment and instruction a teacher provides, the more students will learn.

Encouraging and developing deep knowledge of pedagogical practices enhances the quality of instruction students experience (Marzano & Waters, 2009). Therefore, this research could also be utilized to provide quality professional development in integrating engaging instructional strategies within upper elementary mathematics classrooms. Additionally, continuous improvement through professional development should also be highly encouraged by administrators to increase teachers' pedagogical knowledge (Marzano & Waters, 2009). Alternately, professional development is only one influential

part of student achievement, the right teachers need to be hired from the beginning (Marzano & Waters, 2009). This research could also be utilized in fostering motivation and excitement in pre-service teachers for implementing engaging instructional strategies within their future classrooms

Delimitations/Limitations

Participants were teachers identified by school-based administrators using the definitions for "student engagement" involving behavioral, cognitive, and social/emotional engagement provided by the researcher. Using shared definitions established understanding of what specific characteristics and teaching qualities the researcher was looking for in participants. The teachers all have at least five years teaching experience in upper elementary mathematics and are considered to be proficient by their administrators.

One limitation of this study was that the researcher was dependent upon teachers answering questions honestly. Additionally, since participants were selected by administrators that identified the teachers as utilizing engaging instructional strategies in their mathematics classrooms, the researcher was reliant upon the administrators' judgement and interpretation of the definitions provided.

Furthermore, Fredricks, Blumenfeld, and Paris (2004) state,

> Because there has been considerable research on how students behave, feel, and think, the attempt to conceptualize and examine portions of the literature under the label "engagement" is potentially problematic; it can result in a proliferation of constructs, definitions, and measures of

> concepts that differ slightly, thereby doing little to improve conceptual clarity. (p. 60)

Therefore, providing clear definitions of "student engagement" and the involved elements to administrators within the context of this study was paramount.

As a reference, school performance data from 2017 and 2016 (as comparison) are utilized as current 2018 data is unavailable. Therefore, this is a limitation as observations and interviews have been conducted in 2018 for which there is no current data to reference. It is believed by the researcher that this data is still relevant as it helps paint a picture of the schools' performance and similarities among the student bodies.

Definitions

Bracketing- Researcher puts aside any preconceived notions to not influence the research process (Husserl, 2014).

Constructivism- Constructing knowledge through experiences (Dewey, 1917)

Experiential learning- learning by doing (Dewey, 1938). In the instance of mathematics, experiential learning some examples are: Solving real world problems, applying prior knowledge to solve an unfamiliar problem, using manipulatives to visualize a concept, etc.

Innovative teaching- A new and different way of providing instruction that is not common practice (Kőrös-Mikis, 2001). For the purpose of this study as it relates to mathematics, innovative teaching methods will refer to experiential learning, engaging students in active discussion, and providing opportunities for productive struggle.

Pedagogy/Pedagogical Practices- *How* a teacher provides instruction; involving which strategies will be utilized to facilitate student learning in the most appropriate manner (Schulman, 1986).

Phenomenology- a philosophy that aims to identify and describe a shared meaning of lived experiences, focusing on one's perceptions of an experience to get to the essence (Giorgi, 2009; Husserl, 2014; Schwandt, 2007)

Phenomenon- a person's perspective of an entity (Giorgi, 2009).

Student-centered learning- Students take a more active role in their learning and are completely involved in the learning process while the teacher serves as facilitator (Asoodeh, Asoodeh, & Zarepour, 2012; Hidden Curriculum, 2014; Judi & Sahari, 2013).

Student Engagement- Student engagement involves behavioral engagement, cognitive engagement and emotional/psychological engagement (Fredricks, Blumenfeld, & Paris, 2004; Lee, 2014; Mahatmya, Lohman, Matjasko, & Farb, 2012). This means the student is involved in their own learning by participating, actively thinking about the concept at hand, and being emotionally involved.

Summary

In reviewing the research, it was identified that engaging students in the upper elementary grades can have a profound effect on their entire schooling career. A gap in the literature surrounding influences of mathematics teachers in upper elementary grades to try innovative instructional strategies has also been identified through search terms previously identified. This qualitative study used phenomenology to reveal the true essence of what influences the identified teacher participants in employing student engagement strategies within their mathematics classrooms.

Participants were identified by school-based administrators as employing "student engagement" using the definition provided previously. This study used interviews that were recorded and transcribed, then coded for overarching themes and common meaning units, as well as a classroom observation to aid in identifying incorporated strategies in relation to student engagement. Use of bracketing throughout the research process prevented bias of the researcher's past experiences and knowledge from influencing data. Throughout the study, data analysis was conducted following phenomenological form to identify meaning units and therefore, reveal influential phenomena affecting proficient teachers' instructional decisions in mathematics.

Engaging, student-centered strategies were identified through the literature as being a benefit to student learning. It is the aim of the researcher, upon completion of the study, to utilize findings to help administrators hire innovative teachers and help groom future teachers to try new instructional strategies in mathematics education. Additionally, findings could also be used for creating purposeful professional development for current and pre-service teachers centered on student engagement.

CHAPTER 2

LITERATURE REVIEW

This literature review serves to provide readers with a background on student engagement, the effects of disengagement, and the importance of keeping students actively involved in mathematics learning in the later elementary years (grades three through five). Overviews of the epistemology and theoretical framework for the study are also included to provide readers with additional information as to where this research fits within overarching views. The literature reviewed includes research from significant contributors in the fields of psychology and instructional practices. These researchers were identified by their work being referenced multiple times in several sources, therefore being recognized as influential in their field. Also, select peer-reviewed texts on student engagement and instructional methods were mined for resources to be utilized in this literature review and assessed for their value in adding to the body of knowledge.

As a result of the above-mentioned research topics, a gap in the literature pertaining specifically to upper elementary mathematics and engagement was identified. The researcher extensively scoured research websites, journals, and books for information on upper elementary mathematics and how teachers made instructional decisions to no avail. The research on student engagement is reflected throughout this study and links to relevant research are made where appropriate. Additionally, numerous searches through books and journals utilizing several variations of search terms such as "teacher influences in instructional decision-making", "teacher address student attitudes

in mathematics", and "student engagement upper elementary mathematics" all lead to tangent studies sharing just pieces of each element being researched. Therefore, this research aims to add to the information available in the area of upper elementary mathematics regarding proficient teachers' experiences and what influences their instructional decision making when it comes to student engagement.

Epistemology

The epistemology of this study was constructivism as learning is something students do as a result of their experiences (Ambrose, Bridges, DiPietro, Lovett, & Norman, 2010; Dewey, 1917; Piaget, 1950). Furthermore, what may start out as participation or a student enjoying learning about a particular concept, can grow into engagement behaviorally, emotionally, and cognitively; thus fostering student buy-in and enhancing learning (Fredricks, Blumenfeld, & Paris, 2004). Student engagement involves instruction that promotes student action and identity-as-learners through classroom discussion, challenging tasks, and ongoing formative assessment that provides feedback to guide the learning process (Goldman & Pellegrino, 2015). Therefore, this research on student engagement attended to the beliefs of constructivism, which is constructing knowledge through experiences.

Two very influential theorists in the area of educational pedagogy and constructivism were Dewey and Piaget. In the early 1900's Dewey claimed that learning should not be passive and that students should be active participants in their learning. Dewey was a proponent of hands-on learning experiences and learning through play to provide interaction with concepts as a method of constructing knowledge (Dewey, 1917). Later, in the mid 1900's, Piaget supported Dewey's views as he believed learning was an

active process where the student constructs meaning and knowledge through experiences (Piaget, 1950). Piaget (1950) also proposed that learning occurs through interaction with others and the environment. Dewey and Piaget's research directly relate to the influence that actively engaging students can have on the learning experience.

Theoretical Framework

The theoretical framework of this study attends to the beliefs of constructivism as well. Since constructivism is developing knowledge through experiences (Dewey, 1917; Piaget, 1950), it was a natural fit for this study revolving around teachers' uses of instructional strategies involving student engagement. Engagement includes students actively participating in learning and it is through those experiences that they construct knowledge (Goldman & Pellegrino, 2015), therefore establishing the connection between constructivism and student engagement.

Subsequently, the researcher believes in the importance of these theories relating to learning through experiences as a direct result of her own experiences. As a classroom teacher and an instructional coach to peers, she has witnessed the power of hands-on learning, learning by doing, and productive struggle in problem solving. Furthermore, placing students in unfamiliar situations where they are required to apply prior knowledge and adjust what they thought they knew is beneficial to student learning. In addition, these experiences allow students to transfer skills to other situations and subject areas where applicable

Student Engagement

Student engagement is difficult to define due to the many moving parts and variables that can influence engagement. Several researchers have developed their own

definitions, but three main components appear throughout the review of literature: Behavioral engagement, cognitive engagement and emotional/psychological engagement (Fredricks, Blumenfeld, & Paris, 2004; Lee, 2014; Mahatmya, Lohman, Matjasko, & Farb, 2012). These elements combine to make up the whole of student engagement where students actively take part in their learning, work through tasks, and emotionally invest. It is also acknowledged in the literature that student engagement is not a fixed characteristic of a student, it is malleable and can be changed depending on the context (Appleton, Christenson, & Furlong, 2008; Reschly & Christenson, 2006a, 2006b; Wylie & Hodgen, 2012).

Behavioral engagement includes physical participation, attendance, and effort (Fredricks, Blumenfeld, & Paris, 2004; Lee, 2014; Mahatmya, Lohman, Matjasko, & Farb, 2012; Wentzel, 2003). Therefore, students would be observed actively participating in class. This behavior could include: Asking questions, making eye contact with the teacher, or working through an activity.

Cognitive engagement consists of actively thinking about the task or problem at hand and students' investment and willingness to participate (Fredricks, Blumenfeld, & Paris, 2004; Mahatmya, Lohman, Matjasko, & Farb, 2012; Metallidou & Vlachou, 2007). Cognitive engagement is less observable, compared to behavioral engagement since it involves thought processes, which cannot be seen. Therefore, the actions that may be seen as a result of cognitive engagement are asking questions related to the concept at hand, talking through problem solving with a partner, or articulating their thinking process to the teacher or other students.

Emotional/psychological engagement encompasses attitudes; negative and positive feelings about teachers, learning, and school in general (Finn, 1993; Fredricks, Blumenfeld, & Paris, 2004; Lee, 2014; Mahatmya, Lohman, Matjasko, & Farb, 2012; Willms, 2003). Emotional/psychological engagement also involves drive, determination, and how one handles stress. These mental components to engagement are imperative to learning, as a student who is emotionally disconnected will not be open to participating or learning.

Astin (1984), a notable researcher in the area of student engagement and involvement, developed student involvement theory which includes engagement and is defined as the amount of physical and psychological energy a student invests. Astin's theory places the student at the center of learning and requires physical and psychological involvement, which is also in line with the more commonly used term of student engagement. The terms student involvement theory and student engagement are so similar they can be used interchangeably as they involve the same focus areas. For the purpose of the study at hand, the term student engagement will be used as it is most commonly utilized throughout the literature and refers to behavioral, cognitive, and emotional/psychological aspects, which are more clearly defined.

Behavioral, Cognitive, and Psychological Effects of Engagement

Student engagement is important to achievement, which will be discussed later, but also to students' social and cognitive development (Eccles, 2004; Mahatmya, Lohman, Matjasko, & Farb, 2012; Marks, 2000). Engaging in school activities in turn provides opportunities to build social skills and relationships, learn about oneself, and develop new ways of thinking (Mahatmya, Lohman, Matjasko, & Farb, 2012). In support

of these statements, a self-report study consisting of 1,020 third through sixth graders identified that highly engaged students were more adept at strategizing, seeking help, encouraging themselves, and committing when confronted by academic stressors (Skinner, Pitzer, & Steele, 2013). Consequently, learning environments need to endorse student agency by presenting challenging tasks that allow for self-regulation and development of self-esteem throughout the learning process (Goldman & Pellegrino, 2015). Thus, the more engaging the environment and instruction, the more students will learn.

Furthermore, engaged students also tend to monitor their own behavior and stay on task (Klem & Connell, 2004). Students usually choose friends who perform similarly academically and this can be a major influence on academic success and behavior (Bergin & Bergin, 2015). Just like students make judgements about others, teachers have been found to favor students who are well behaved, put forth effort, and demonstrate ability which leads to those students getting more help in class (Ambrose, Bridges, DiPietro, Lovett, & Norman, 2010). Therefore, one can see how behavioral, cognitive, and emotional/psychological engagement play a role in student development as a whole.

Academic Effects of Engagement

Engaged students do more than show up or participate; they also put forth effort, persevere, push themselves to exceed, and appreciate challenges and learning (Klem & Connell, 2004; National Research Council and the Institute of Medicine, 2004). Support for this finding is shown in a study involving 1,058 college students at 14 different universities where researchers found encouraging links between engagement and desirable learning outcomes, like critical thinking, as well as higher scores on

standardized tests (Carini, Kuh, & Klein, 2006). The correlations between engagement and positive performance in school were small but statistically relevant (GPA bivariate correlation with enriching educational experiences =.10, $p<.01$) (Carini, Kuh, & Klein, 2006). Interestingly, there was a higher positive correlation between engagement and academic performance when specifically looking at students in the lowest academic quartile. Furthermore, skills attained by being engaged in college coursework lead to development of productive traits that aid students in being successful adults and prepare them to be lifelong learners (Kuh, 2003; Shulman, 2002). Consequently, student engagement may begin with enjoyment or participation but can lead to commitment and investment, resulting in enhanced learning (Fredricks, Blumenfeld, & Paris, 2004).

Along a similar research path, Astin (1984) conducted a longitudinal study involving 200,000 college freshmen and found a link between active involvement in all elements of school and improved motivation, attendance, self-esteem, and several other aspects of individual growth. While Astin's study looked at external factors such as living arrangements and Greek affiliations, his research findings promoted a learner-centered approach as opposed to teacher-centered when it comes to academic influences. Although Astin (1984) and Carini, Kuh, & Klein's (2006) research focused on college students, it is perceivable that these findings are not solely related to this age group and may be applicable to younger students. It is also important to note that neither of these referenced studies address engagement and involvement as they relate to specific courses, just college as a whole.

Posing an alternate view to Astin (1984) and Carini, Kuh, & Klein (2006), a study involving 77 undergraduate business school students revealed no statistically relevant

correlation between engagement and learning (Lewis, Freed, Heller, & Burch, 2015). Neither cognitive engagement (M=84.0, SD= 8.10, *p*=.94) nor emotional engagement (M=82.9, SD= 7.40, *p*=.40*)* were found to be statistically significant in relation to meeting learning objectives. However, physical engagement (M=80.1, SD= 7.11, *p*=.03) was strongly correlated to performance on learning outcomes. Interestingly, the study also found that age had a strong correlation to physical and emotional engagement, but not cognitive engagement. The findings relating to emotional and cognitive engagement being classified as "not relevant" to meeting learning objectives could be due to interest level in the courses selected to investigate for this study, as well as the type of business program the undergraduates are enrolled in (part-time, distance learning, on campus, etc.). Additionally, the researchers used grades as a measurement and not actual learning outcomes, which could cause a discrepancy as instructors grade differently and sometimes factor in elements not related to actual learning.

Role of the Teacher in Engagement

As this study investigates the influences of teachers in their selection of instructional methods, it is important to examine the role of the teacher in engagement. Educators confront complex decisions daily that depend on various types of knowledge and judgement, including those that can have high-stakes for students (Darling-Hammond & Bransford, 2005). One of those complex decisions is how to effectively aid students in learning required content. Moreover, when it comes to academic work, students do not often push themselves to go beyond their own expectations, but high teacher expectations that challenge and support students has been found to be a motivator (Kuh, 2003; Willis, 2010). Students also feed off the excitement of their teacher,

therefore teachers must set the expectation of engagement and positivity, not negativity or anxiety (Boaler, 2016; Willis, 2010).

Adding to the above-mentioned assertions, a quantitative study involving three fourth grade math teachers and one fifth grade math teacher found a significant positive correlation ($r = 0.51$, $p < 0.05$) between advancement of student understanding and encouraging student effort (Kazemi & Stipek, 2001). Strategies included focusing on deeper learning, providing support while students worked on their own, and deemphasizing the importance of correct answers (Kazemi & Stipek, 2001). The researchers divided the teachers into two groups; low-press and high-press. Press referred to the level of questions teachers asked students and the responses they accepted as a result. Kazemi and Stipek (2001) found the higher degree of press presented by the teacher, the more deeply students developed an understanding of the concept being taught. Therefore, Kazemi and Stipek (2001) identified an obligation for teachers to go further than simply asking questions, having students solve problems, or accepting procedural answers. Thus, teachers need to ask why a process worked, make sure students understand the relationships between multiple strategies, and set a precedence that errors encourage growth (Boaler, 2016; Dweck, 2008; Kazemi & Stipek, 2001).

Furthermore, Ing and colleagues (2015) conducted a study involving 71 intermediate grade students (ages eight to ten) in mathematics to investigate the link between teacher instructional strategies, student participation, and individual student learning outcomes. Results indicated that student participation effectively predicted positive learning outcomes [$r(71)=0.165$, $p<.05$]. Also, when teachers made a focused effort to provide opportunities for students to explain their thinking and interact with

other students' ideas, the students scored higher on assessments (Ing, et al., 2015). Additionally, the more effectively a student could explain their thinking and ideas of others, the better they performed on achievement tests (Ing, et al., 2015). Although this study assessed learning as performance on achievement tests, it supports the link between teacher practices and student performance, as well as the need for intentional implementation of instructional strategies.

Teachers are an integral piece of student engagement and performance as just two years with an ineffective teacher can have severe long-term effects (Wong, 2007). The aforementioned research studies support a distinct need for a paradigm shift that places the student at the center of instruction, not the teacher or standardized assessments (Aslan & Reigeluth, 2016; Kauchak & Eggen, 2012). Classroom teachers must be willing to put the responsibility of learning onto the students, which can be stressful in this time of teacher accountability and state mandated testing. Although uncomfortable for some, teachers must assume the role of learning facilitator rather than the disseminator of knowledge (Astin, 1999; Boaler, 2016). Additionally, teachers who utilize differentiated strategies have greater success in meeting the needs of all learners (Willis, 2010).

Role of Curriculum in Engagement

In researching engagement, it is important to not only look at how the teachers and students affect engagement, but also what role curriculum plays in instructional decisions. Through numerous searches in online libraries and journals, the researcher was unable to find any research articles specifically pertaining to how curriculum effects student engagement. However, one study conducted with college students in a sports program found that changing to immersive experiences from workshop and lecture type

teaching modules resulted in increased student learning and satisfaction (Nixon & Williams, 2013). One would expect the curriculum and what is being taught to have an effect on student engagement, even though it is difficult to find information supporting such claims. The apparent lack of research regarding this topic provides an opportunity for the study at hand to add to the body of knowledge in this area as well.

Student Disengagement

Disengaged students tend to perform poorly in school and end up feeling marginalized, resentful, and unproductive (Skinner & Pitzer, 2012). In addition, students who are not engaged are less likely to attend school and more likely to misbehave when they do show up (Finn, 1989; Klem & Connell, 2004). It is also important to identify that truancy not only affects the student missing school, but also has a negative impact on peers' engagement (OECD, 2016). Finally, in the most severe cases, disengagement in school ultimately results dropping out (Appleton, Christenson, & Furlong, 2008; Lehr, Sinclair, & Christenson, 2004). Consequences for dropouts; such as lower pay, meager job prospects, and less education also have an impact on the economy and society (Appleton, Christenson, & Furlong, 2008; Rumberger & Rotermund, 2011). Unfortunately, dropouts are not only more likely to depend on social services but are also at a higher risk for incarceration (Christenson, Sinclair, Lehr, & Hurley, 2000).

Furthermore, in studies conducted over the past 20 years researchers have documented low levels of student engagement in the classroom (Marks, 2000). Students that are not engaged socially or academically are less likely to attend, learn, and finish school than those who are engaged (Klem & Connell, 2004; Rumberger & Rotermund, 2011). Student disengagement has been a problem in schools for a while, effecting

students throughout their schooling years, and has lingering negative life-long effects. Despite the research on engagement and the effects of disengagement, there has been very little change made within schools in the areas of curriculum, instruction, and assessment that reflect research-based practices (Goldman & Pellegrino, 2015).

Engagement and Disengagement in Mathematics

When investigating student engagement as it specifically relates to mathematics, as disengagement is not limited to the subject area, there are several acknowledged reasons why students disengage. The two most reoccurring explanations throughout the research are: Negative attitudes towards mathematics and a lack of identifying real world application of skills.

Math, specifically, is an area in which people do not usually have a positive attitude, yet it is involved in nearly all professions and life skills to some degree (Willis, 2010). Getting students actively involved in their learning has been shown to have a positive effect on achievement and building buy-in for applicable uses in the real world (Boaler, 2016; Fredricks, Blumenfeld, & Paris, 2004). When students are not engaged they tend to withdraw, act out, and in the worst of scenarios, drop out of school (Klem & Connell, 2004; Rumberger & Rotermund, 2011).

Students develop negative attitudes about mathematics for a multitude, or combination, of reasons: Negative past experiences, feelings of inadequacy, low self-expectations, perceptions that mathematics is difficult, and parental negativity towards the subject area (Boaler, 2016; Willis, 2010). There is also a common belief among students and adults that people are either naturally good at mathematics or they are not, as well as the acceptance that mathematics is for "nerds" (Boaler, 2016; Dweck, 2008).

Furthermore, self-perceptions students develop have a strong correlation to how they perform as they need to feel capable of success (Jansen et al., 2013; Rumberger & Rotermund, 2011). Students' negative feelings can also instigate a disconnection between skills and real world use resulting in stress, lack of motivation, unwillingness to participate, boredom, avoidance behaviors, and many other symptoms that lead to disengagement (Willis, 2010). Students who experience mathematics anxiety are not only more likely to disengage, but also less likely to take courses in the subject area beyond the minimum requirement (Fennema & Sherman, 1976). A three-year longitudinal study of 480 first graders identified as at-risk and enthusiastic about being engaged in their own learning, showed greater achievement and higher trajectories of math performance in later grades (Luo, Hughes, Liew, & Kwok, 2009). Thus, Luo, Hughes, Liew, and Kwok's (2009) findings indicate a strong link between attitude and performance.

Offering a different view, a study comparing the 1999 and 2007 Trends in International Mathematics and Science Study (TIMSS) found that students' attitudes towards mathematics improved from 1999 to 2007 (Bilican, Demirtasli, & Kilmen, 2011). TIMSS assesses student self-efficacy perceptions about mathematics and science. When specifically looking at the results for mathematics, students responding as "Completely agree" to the statement "I am good at Maths" revealed an increase from 1999 to 2007 [$z(2514)=3.95$, $p<.05$]. Another increase from 1999 to 2007 was indicated in the amount of students selecting "Completely agree" [$z(5067)= 20.30$, $p<.05$] and "Partly agree" [$z(4508)=12.70$, $p<.05$] in response to the statement "I enjoy learning Maths." While this study reveals promising improvements in student attitudes towards

mathematics, the question of why this increase happened is not answered. It is interesting to note that 7,834 eighth grade students participated in 1999 but only 4,498 students were involved in the 2007 report, therefore the improvements found could be due to significantly fewer students participating. Also highlighted in the comparison report was an increase in the use of cooperative instruction, essay assessments, and multiple-choice tests from 1999 to 2007, which could be a contributor to the improved attitudes. Thus, the shifting of teaching and assessment methods provide an argument for the impact that implementing student-centered practices can have on the attitudes and involvement of students.

Common reasons students provide for not enjoying mathematics are the abstract concepts and the lack of relevance to the world (Boaler, 2016). Also, the way a subject is taught has been found to affect student attitudes and beliefs throughout their lives (Stodolsky, Salk, & Glaessner, 1991). American mathematics classrooms often involve teacher-directed learning, memorization of algorithms, and simple computation (Boaler, 2016; Stodolsky, Salk, & Glaessner, 1991; Willis, 2010). With this abstract type of instruction, it is no wonder students have a difficult time understanding mathematics and its relevance to the real world.

Providing more information on mathematics' lack of relevance from student perspectives, a study conducted in New Zealand using the "Kids Talk About Maths" survey revealed that students understand mathematics' importance but more as resulting in a good job, as opposed to mathematics' actual value in the real world (Grootenboer & Marshman, 2015). This study involved 1,880 middle school students ages eight to 13 (mean = 10.6 years) and identified two additional interesting beliefs: Students looked at

mathematics as only involving numbers and that the most important thing in mathematics is getting the correct answer (Grootenboer & Marshman, 2015). These findings indicate a lack of understanding as to *why* mathematics is important and how it is authentically used in the real world. While this study was conducted in New Zealand, it is conceivable that students in the United States have similar beliefs about mathematics.

Moreover, there is great room for improvement in the area of mathematics education in the United States and genuine opportunities to employ high-quality, research-based instructional strategies (U.S. Department of Education, 2008). Therefore, schools are slowly making a transition from a model built to produce factory workers to a more personalized approach tailoring to student needs (Aslan & Reigeluth, 2016). In the past, mathematics has been taught as a relatively abstract concept fostering a lack of buy-in and not providing students with opportunities to realize the importance of mathematics (Cathcart, Pothier, Vance, & Bezuk, 2005). There are now ample research findings that support when students see evidence of real world application of skills, they become more motivated to learn and participate (Cathcart, Pothier, Vance, & Bezuk, 2005). Thus indicating that integrating real world mathematics application is an important part of instruction.

Strategies That Facilitate Mathematics Engagement

To fight students' negative attitudes towards mathematics and the perceived lack of real world application of mathematics skills, instructional strategies that facilitate engagement can be employed. There has been such a push for more engaging instructional methods to be utilized in mathematics that the national governing body for education introduced the Common Core State Standards Initiative for Mathematical

Practice (Ing, et al., 2001). This initiative comprises eight mathematical practices; including being able to construct practical arguments for answers, critiquing others' methods of problem solving, modeling with mathematics, and using appropriate tools and strategies (National Governors Association Center for Best Practices & Council of Chief State Officers, 2010). These practices lend themselves to engaging students in the workings of problem solving and mathematics while simultaneously fostering a deeper understanding of mathematical concepts. Problem solving engages numerous cognitive elements: Information networking, conceptual networking, and analogizing in addition to increasing motivation and encouraging persistence (Jonassen, 1997). Providing opportunities for students to question, explain, and re-explain their own ideas, as well as others', have been found to positively increase students' understanding of mathematics (Warner, 2008). Furthermore, when students can justify their findings and methods, as well as assess the workings of others, comprehensive learning occurs and students are genuinely engaged.

By utilizing engaging instructional methods in the classroom, education becomes more relevant and useful compared to more traditional "sit and get" instructional methods of the past (Jafari, 2014). Moreover, students have a preconceived notion about what it means to be "good" at mathematics, using a variety of engaging methods provides all students with a chance to experience success and develop excitement about mathematics (Boaler, 2016; Dweck, 2008). Additionally, neuroscience research identified a link between enjoying and participating in learning and committing skills to long-term memory (Willis, 2010). Thus, integrating rich experiences allows opportunities for

students to be enthusiastic about learning and to enjoy the satisfaction of successful problem solving opportunities mathematics presents.

Teacher-centered instructional strategies are often used in mathematics courses (OECD, 2016). However, there has been an increase in the amount of research that reflects a need for more emphasis to be placed on student-centered mathematics due to concern for student performance in the subject area (Holmes, 2013). Student-centered learning involves students taking a more active role in their learning and being completely involved in the learning process while the teacher serves as facilitator (Asoodeh, Asoodeh, & Zarepour, 2012; Hidden Curriculum, 2014; Judi & Sahari, 2013). Also, student-centered learning moves students from passive acceptors of knowledge to a dynamic element in their own learning (International Society for Technology in Education, 2017). Student-centered learning includes methods such as hands-on learning, problem-based learning, and cooperative group activities; since students take an active role, they are naturally engaged.

One of the most important pieces of quality instruction is providing opportunities for students to access and build upon prior knowledge (Goldman & Pellegrino, 2015). Therefore, proposing open-ended, real world problems to students provide opportunities for accessing and using prior knowledge, applying knowledge in new and different ways, as well as developing integral problem-solving abilities (Boaler, 2016; Jonassen, 1997). Updating teaching practices and incorporating engaging instructional strategies are the beginning of change and integrating more student-centered strategies (International Society for Technology in Education, 2017).

Furthermore, twenty-first century learners need to be adaptable problem solvers and able to comprehend complex ideas (Goldman & Pellegrino, 2015; Martinez, 2010). Therefore, students must develop the skills and knowledge essential to performing complex tasks, but they must also be able to combine and apply those skills to develop fluency and automaticity (Ambrose, Bridges, DiPietro, Lovett, & Norman, 2010; Goldman & Pellegrino, 2015). Additionally, providing time for metacognition, rich discussion, hands-on learning, and application of skills in real world situations are key to developing future forward thinkers (Boaler, 2016; Martinez, 2010). The aforementioned strategies put students in situations where they are afforded opportunities to apply prior knowledge, be exposed to different ideas, and are encouraged to create their own path to problem solving involving important life-long skills.

Providing gradual guidance to students as needed, referred to as scaffolding, is another technique employed by teachers that has been found to be effective at increasing engagement (Marshman & Brown, 2014). Marshman and Brown (2014) conducted a case study to aid the classroom teacher that involved 27 students in Year 9 (ages 13-14) who were identified as "disengaged" in mathematics. This action research project utilized a scaffolding technique called collective argumentation to see if engagement was improved. Collective argumentation involves talking through problem solving with peers and teachers in order to understand concepts (Marshman & Brown, 2014). The students were identified as disengaged by the teacher in that they were deemed as lacking the mathematical aptitude to effectively engage in the mathematics being taught. The researchers found collective argumentation had a positive effect on engagement by providing opportunities for sharing ideas and discussing problem solving methods which

foster comprehension. At the end of the study, students reflected in journal entries regarding their feelings about mathematics and 81% responded positively. These entries revealed students felt more empowered and valued than before and that they preferred the collective argumentation method to previous instructional methods. Since scaffolding is the basis of collective argumentation, this study provides evidence as to the effectiveness of scaffolding as an engagement strategy in mathematics.

Conclusion

Even though there is little information available on the specific topic of what influences instructional decisions of upper elementary mathematics teachers, the research supporting the implementation of engaging student-centered instruction is profound. Using the lens of constructivism and the theoretical framework of phenomenology, this research sought to understand the phenomenon(a) occurring that influences third through fifth grade elementary mathematics teachers to utilize strategies that increase engagement. There is a need for the United States to encourage high-quality, rigorous instruction to inform educational policies and practices (U.S. Department of Education, 2008). Improvements to instruction begin with the teacher as they are the instructional decision-maker in most cases. Therefore, this study is focusing on the teachers' experiences and aims to get to the essence of what influences their instructional decisions when it comes to engaging students in mathematics.

This review of literature has indicated that student engagement is an influencer in the greater education experience; therefore, it is imperative that measures are taken to increase engagement in the mathematics classroom. Getting students engaged in mathematics learning is fostered when student-centered instructional strategies are

implemented (Holmes, 2013). Furthermore, students who are mathematically competent have additional practical real world skills like the ability to reason, think conceptually, and apply what they know to a variety of situations (U.S. Department of Education, 2008).

With the student experience in the later elementary years having significant lingering effects on learning throughout one's schooling, it is imperative to close gaps in research on increasing student engagement at these grade levels in mathematics. According to the findings throughout this literature review; utilizing student-centered instructional methods, providing opportunities for students to think critically about mathematics, and improving the elementary experience will help students maintain engagement throughout the course of their schooling. While the research study at hand focused on the area of mathematics, findings may also be applicable for improving student engagement across other subject areas.

CHAPTER 3

METHODOLOGY

Innovative teaching, as defined by Kőrös-Mikis (2001), is integrating new and different ways of providing instruction that is not common practice. Therefore, teachers must be flexible in their methods and adjust to student and subject area needs (Kauchak & Eggen, 2012). This adjustment to needs increases student engagement which is a key component to learning. Furthermore, learning is something students do as a result of their experiences (Ambrose, Bridges, DiPietro, Lovett, & Norman, 2010). What may start out as participation or a student enjoying learning about a particular concept, can grow into engagement behaviorally, emotionally and cognitively; thus, fostering student buy-in and enhancing learning (Fredricks et al., 2004).

This qualitative research study investigated the influential factors and experiences of proficient upper elementary teachers that implement engaging instructional strategies in their mathematics classrooms. Qualitative research aims to understand meaning through words (Schwandt, 2007). Consequently, semi-structured interviews were the method used to identify the essence of what influences teachers' instructional decision-making. Semi-structured interviews are conversational yet use pre-planned questions (Guion, Diehl, & McDonald, 2011). Then, meaning units were identified through thorough reading of transcripts and provided insight into the phenomena that influence teacher participants to integrate innovative strategies during mathematics instruction.

Researchers have to be very sensitive to meaning units in order to obtain true psychological richness (Giorgi, 2009).

Purpose

Just two years with an ineffective teacher can have irreparable severe effects on student achievement (Wong, 2007). Implementing innovative and engaging strategies differentiates instruction so all students have an opportunity to learn and experience success. In support of this claim, an analysis of 25 world school systems including the top 10 performers utilizing the Programme for International Student Assessment (PISA), the US National Assessment of Educational Programs (NAEP), and Trends in International Mathematics and Science Study (TIMSS) was conducted and the three top influencers of successful school systems were identified (Fullan, Schleicher, Kong, Gopinathan, & Hill, 2007). These influential aspects were: Hiring the right people, developing them into effective educators, and ensuring the best possible instruction for every child (Fullan, Schleicher, Kong, Gopinathan, & Hill, 2007).

Considering the information above, the purpose of the study at hand was to identify influential factors in teachers' instructional decision-making in using strategies that increase engagement in mathematics classrooms. Consequently, the results could potentially be used to help identify the right people to hire, provide guidance for helping teachers develop in the profession, and aid in the development of teacher preparation programs therefore providing quality instruction to all students.

Research Question, Rationale, and Design

In alignment with the above purpose, the following research question was utilized throughout this study: How do proficient teachers' experiences and influences impact

instructional decisions regarding student engagement in mathematics? The researcher's goal was to utilize the information discovered in this research to influence professional development for administrators and teachers, as well as have an impact on teacher preparation programs to encourage the use of engaging strategies.

Employing qualitative methods provides a holistic view and validity in truth as it relates to the situation, values subjectivity and gives participants a voice (Grbich, 2013). Qualitative inquiry focuses on learning the views of participants as related to the exploration of an issue (Creswell, 2007). Therefore, the rationale for using qualitative methods for this study was to provide teachers an opportunity to express their influences and experiences in an uninhibited manner. Interviews are supported as an effective method for gathering qualitative data (Denzin & Lincoln, 2005). Accordingly, using interviews allowed participants to elaborate on their answers and provide more in-depth information. Brinkmann and Kvale (2015) state "the purpose of the qualitative research interview … is to understand themes of the lived daily world from the subjects' own perspectives" (p. 27). Thus, the research process involved in qualitative inquiry is ever flowing as processes may change as data is collected, allowing for perceptions of participants to be discovered in relation to the issue being explored (Creswell, 2007).

Influences and experiences of proficient mathematics instructors working in upper elementary grades implementing student engagement strategies was explored utilizing the four elements of research. Crotty's (1998) four elements to guide researchers are methods, methodology, theoretical perspective, and epistemology. Crotty (1998) defines methods as "the techniques or procedures used to gather and analyze data" and methodology as the strategy for why a researcher chooses the method (p.3). Theoretical

perspective is “the philosophical stance informing the methodology” which relates to epistemology (Crotty, 1998, p.3). Epistemology is “the theory of knowledge embedded in the theoretical perspective”, thus inspiring the methodology (Crotty, 1998, p.3). All four elements intertwine and together form a solid research foundation.

Epistemology and Theoretical Framework

The epistemology of this study was constructivism in that experiences and observations are how one constructs knowledge. Schwandt (2007) states, “We do not construct interpretations in isolation but, rather, against a backdrop of shared understandings, practices, language and so forth.” (p. 38). Likewise, Dewey was a proponent of hands-on learning experiences and learning through play in order to provide interaction with concepts in order to construct knowledge (Dewey, 1917). Similarly, Piaget’s constructivist learning theory explains that people construct their own knowledge, which he referred to as “schema” and then build upon constructed schemas (Bergin & Bergin, 2015). Following in this belief, the teacher participants in this study have worked in their classrooms teaching math and have completed college coursework in the field of education, both of which help the individuals construct knowledge of teaching practices through experiences. There are also experiences with students, co-workers, and administrators that influence decision making regarding implementation of new strategies.

The theoretical framework used in this study was also constructivism, as student engagement involves students actively participating to grow in their knowledge. Furthermore, Piaget’s constructivist learning theory explains that children are active participants in their learning, not passive bystanders (Piaget, 1977). Moreover, the

learning process involves actively constructing knowledge, not sitting submissively attempting to simply soak in new information (Duffy & Cunningham, 1996). Constructivism further explicates that interaction with the environment and exploring is key to learning (Scholnick, Kol, & Abarbanel, 2006). Therefore, it is the position of the researcher that learning through experiences and building on one's experiences is vital to the learning process. Thus, constructivism is fitting with this research as student engagement aims to keep learners active in the process through experiences.

Methodology

The methodology of this qualitative study was phenomenology as the inquiry process focused on identifying the essence of influences and experiences upon participants that implement engaging instructional strategies. Phenomenology is a philosophy that aims to identify and describe a shared meaning of lived experiences (Giorgi, 2009; Schwandt, 2007). Husserl (2014) explains that phenomenology is not about facts, it is about understanding peoples' perceptions of an experience and getting to the essence. Aligning with these beliefs, the researcher investigated phenomena occurring that influences elementary mathematics teachers' implementation of engaging teaching strategies. The definition of phenomenon employed in this research study is a person's perspective of an entity (Giorgi, 2009).

Therefore, phenomenology is important to this study as each teacher has different experiences that influence instructional decisions. So, the use of semi-structured interviews in combination with a classroom observation provided the researcher with participants' insights and experiences presenting an opportunity to discover the essence of the phenomenon or phenomena. In alignment with Giorgi and Giorgi (2003) the most

influential factors in upper elementary mathematics instructional decision making revealed in interviews and observations by identified reoccurring meaning units will be described.

Methods

Methods utilized throughout this study began with strategic selection of participating schools. The three schools chosen needed to be of similar make-up in order to make accurate comparisons of instructional strategies and decision making. All participating schools are Title I, have similar performance levels on state academic testing in mathematics, and are within a 10-mile radius of one another. Since the researcher has worked in the school district previously she has quality professional relationships with the three administrators utilized in this study, and knows they believe in the power of student engagement and make student engagement a priority in their school. These administrators were contacted, provided the definition of student engagement being employed by this research, and asked for three participants they believe effectively integrate strategies that increase student engagement within their upper elementary mathematics classes in reference to the definition provided. Each administrator was asked to list the three candidates in order of who they believe most closely fits the definition, even though all meet the criteria of utilizing engaging strategies. The participants who were identified by administrators as using engaging instructional practices in mathematics, being proficient, having at least five years teaching experience, and teach in the upper elementary grades. This method combined convenience sampling as these participants are easily accessible to the researcher, as

well as purposeful sampling as these participants were identified as using student-centered strategies by school-based administrators (Schwandt, 2007). Only one participant from each administrator was used, the extra recommendations were in case someone nominated did not want to participate. The researcher did end up using each of the top choices from all administrators, therefore representing the most engaging mathematics teachers within each school.

Once participants were identified, interviews were conducted independently utilizing the questions below. Debates have occurred as to whether interviews are free of bias but in the area of qualitative research interviews are historically and presently utilized and accepted as valid (Denzin & Lincoln, 2005). Additionally, in following phenomenological form, the researcher employed bracketing throughout the process. Bracketing is the term employed by phenomenology which involves the researcher putting aside any preconceived notions as to not taint findings (Giorgi, 2009; Grbich, 2013; Schwandt, 2007). The initial interviews took place over the phone so participants could be in an environment that was comfortable for them at a convenient time. Interviews were recorded, transcribed, and then analyzed by the researcher for meaning units, aligning with phenomenology.

After the initial interview was conducted and analyzed for common meaning units, a classroom observation of a mathematics lesson was scheduled. The purpose of the observation was for the researcher to witness first-hand what strategies teachers were implementing and if their instructional methods aligned with their answers to interview questions. During the observation, the researcher took note of what the teacher was doing and saying, as well as what the students were actively doing.

Next, after the observations had been completed and findings were organized and analyzed by the researcher, a final follow-up interview was conducted to dig deeper into the lived experiences of teachers and their influences relating to integrating strategies that increase engagement in mathematics. This deeper dive aligns with phenomenology as the researcher is trying to get to the essence of the lived experience to identify any phenomena influencing instructional decision-making. Finally, the shared meaning units from the initial interview, the observations of the researcher during a mathematics lesson, and the results of the final interview were all combined to identify the most influential factors relating to instructional decision-making in mathematics based on commonalities among the three participants. The findings have been discussed in detail in Chapter Four and include tables.

Participants and Sampling

The participants of this study were teachers who have at least five years' experience teaching mathematics in a third, fourth, and/or fifth grade classroom. Due to a professional relationship with administrators who focus on student engagement, all teacher participants work in Title I, Low Socioeconomic schools with at least 81% of students on free or reduced lunch (this is for comparison sake, not a factor being addressed in this research). These schools, administrators, and teachers were also easy for the researcher to access due to a familiarity with the schools and administrators involved. Patton (1987) described this type of purposeful sampling as convenience sampling since it was used for ease of selection.

This study also employed purposeful sampling as described by Schwandt (2007) as these participants were identified by school-based administrators as utilizing

instructional methods involving student engagement aligning with the definition provided by the researcher to each administrator. According to Kvale and Brinkmann (2009) quality qualitative research interviews are an active process and develops as research progresses and since the methodology is phenomenology, interviews lend themselves perfectly to obtaining information as to the lived experiences of participants. Giorgi (2009) states, "There is a certain spontaneous quality to a good interview that cannot be completely prescribed" (p.122). Furthermore, the sample size was three due to the in-depth nature of investigation when utilizing phenomenology as a methodology. This study aimed to get to the root of the lived experiences of participants to provide insight into influences affecting integration of student engagement strategies in their mathematics classrooms.

Subjectivity Statement

The researcher has experience teaching upper elementary mathematics, as well as providing instructional coaching for teachers of theses grades in mathematics. It has been the experience of the researcher that teachers are either: eager for professional development and learning new instructional strategies or they are content utilizing the same instructional methods year after year. As a college instructor, classroom teacher, and instructional coach the researcher is always eager to learn new instructional strategies, talk to other teachers about what worked for them, and willing to integrate methods on a trial basis to see what fits student needs best resulting in the highest level of student engagement and learning. Therefore, the researcher is interested in exploring the essence of influences on teachers to try engaging strategies in the area of mathematics.

While there is a relationship between the researcher, administrators involved, and one participant, the use of bracketing reduced any influence or bias. Only one teacher participant ended up being known to the researcher as they worked together previously, but they were not very familiar with one another. The other two teacher participants were unknown to the researcher. Understanding the climate of the participants' schools and having a relationship with administrators and some of the participants' co-workers was an asset to this research, as rapport developed naturally (Giorgi, 2009) due to the researcher's reputation in the district. Since the researcher no longer works or lives in the county, participants felt comfortable answering questions openly and honestly.

Role of the Researcher

The researcher has experience as an upper elementary classroom teacher (including teaching mathematics) and has also filled the role of instructional coach for upper elementary mathematics teachers. Currently, the researcher teaches Master's and Undergraduate students in an education program at the University level. It is through these roles and experiences that she has gained knowledge and understanding of best pedagogical practices and is a true believer in the power of engaging students in their own learning. Due to this belief she is truly passionate about getting to the essence of what influences upper elementary mathematics teachers use of student engagement strategies. It is the researcher's hope that this information will be used to help provide beneficial professional development for teachers and administrators, as well as help guide in hiring and pre-service teacher education program development.

In the researcher's time as an instructional coach and classroom teacher, she developed quality relationships with teachers and administrators that shared her passion

for engaging instruction. These connections have been an asset in this research as the administrators involved brought forth quality participants since they prioritize student engagement in their schools. By providing the same definition of student engagement to all administrators and the first interview question asking for the participant's definition of student engagement, a common thread was established so participants and researcher are all on the same page. The researcher is respected and valued in the county where participants teach which resulted in quality participants, thorough answers from participants, and a natural comfort level between participant and researcher.

Validation

Since this was a phenomenological study and sought to understand the essence of influences affecting teachers of upper elementary mathematics and their experiences, the validity lies in knowledge gained from the qualitative research situation (Giorgi, 2002). While there is no way to get an exact representation of a participant's experience, strategically wording interview questions in an open-ended fashion can allow for the structure of a phenomenon to be revealed (Giorgi, 2009). Furthermore, interviews are accepted as a legitimate research tool and widely used in qualitative inquiry (Creswell, 2007). Thus, interviews were recorded and transcribed in order to have a written version to facilitate data analysis (identification of shared meaning units). Interview transcripts were provided to participants for their review, ensuring their comments were recorded correctly. Additionally, this provided participants with an opportunity for correction of any miscommunication, though none of the participants identified any needed edits. The researcher chose to do her own transcription so she knew the interviews more thoroughly. Afterwards, she conducted a complete read-through of all transcripts in order to get a

sense of the whole description from participants prior to any analysis (Giorgi, 2009). This allowed the researcher to explore the essence of the phenomena prior to identification of themes and meaning units.

Findings from this initial interview data analysis were then applied to the classroom observation by the researcher looking for evidence indicating that what was found in the interviews was also seen in the classroom. This step added validity to the initial findings as well as provided an opportunity to develop deeper questions for the final follow-up interview. The final interview transcripts were also provided to participants for their review, just like the initial interview transcripts. Reduction (also called bracketing) was employed throughout the entire research process, which calls for the researcher to set aside their own experiences in order to enable a true picture of a phenomena to develop (Giorgi, 2009; Grbich, 2013). Validity in a phenomenological qualitative study occurs when themes align and findings are based in rationality (Giorgi, 2002).

Data Collection

The methods used to research the essence of teacher influences upon utilizing instructional strategies involving engagement were interviews, as supported by phenomenologist Giorgi (2009) and recommended by qualitative researcher Creswell (2007), and a classroom observation in between the initial and final interviews to provide validation. Teacher participants were identified by school-based administrators in Title I elementary schools as using engaging instructional strategies in their mathematics classrooms aligning with the definition of "student engagement" provided by the researcher. Furthermore, establishing rapport is an integral part of the data gathering

process (Giorgi, 2009). Since the researcher has a professional relationship with the administrators and some of the teachers within the schools being employed in this study, a bond was already established and grew organically involving a mutual respect. The researcher is also familiar with the climate at participants' schools aiding in the ability to collect quality data by asking specific questions relating to this as a potential influential factor (Glesne, 1999). Creswell (2007) supports data collection for qualitative studies "taking place in a natural setting sensitive to people and places under study" (p. 37). Therefore, this qualitative data was collected through interviews conducted over the phone so the teachers can participate wherever and whenever is most comfortable to them. Additionally, the observations were conducted in the participants' classrooms on a time and date they selected.

Moreover, the researcher consistently applied common sense and maintained focus on getting to the essence of the lived experiences of participants throughout the interview process. Furthermore, interviews were semi-structured allowing for participants to answer freely and guide the researcher to ask additional in-depth questions as necessary, as supported by Creswell's (2007) "emergent design." The semi-structured interviews were pre-arranged with participants and involved predetermined open-ended questions and allowed for other questions to be asked as the interview progresses (DiCicco-Bloom & Crabtree, 2006). Moreover, open-ended questions provided participants with the opportunity to explain their feelings and experiences more in-depth and for the interviews to flow more naturally (Guion, Diehl, & McDonald, 2006). The goal of these interviews was to obtain concrete, detailed descriptions of influences through point of view and experiences (Giorgi, 2007). While it is never quite possible to

remove all researcher influence from a phenomenological study, validation procedures and reduction were utilized to reduce bias (Giorgi, 2009). Attempting to uncover the essence of the phenomena, variables were singled out in order to see if they are integral or not (Giorgi & Giorgi, 2003), this occurred in the final interview. The last steps of this phenomenological study, "is to describe the invariant aspect of the object, or its essence" (Giorgi & Giorgi, 2003, p. 247). Therefore, the most influential meaning units identified in influencing teachers to innovate and try engaging strategies are described in the results.

The interview questions utilized were developed by the researcher, which is common in qualitative data (Creswell, 2007). The questions started off with number one and number two being basic and relevant to the main topic of student engagement and mathematics. Then, since the goal is to identify the phenomena occurring that influences choices of instructional methods, questions three through 11 center around influences and experiences. These questions were intended to highlight specific factors that may be of influence on teachers' instructional decision-making which guided what the researcher would see in the classroom observation, as well as what factors to focus on for the follow-up interviews.

Initial Interview Questions

1. What is your definition of student engagement?
2. What instructional methods do you use to engage students in mathematics?
3. What influences you to integrate instructional methods in mathematics that are engaging for students? (List any and all

4. In your experience, which one of those identified influences would you say is most impactful? Why?In your experience what do you consider the most when deciding to use an engaging teaching strategy?
5. What has been your experience with administrators regarding instructional decisions as a whole?
6. What has been your experience with administrators regarding integrating strategies that increase student engagement?
7. What have you experienced with students when you integrate strategies that increase engagement in mathematics?
8. What have your experiences been like with parents regarding utilizing strategies that increase engagement in mathematics?
9. What experiences have you had with co-workers in regards to integrating strategies that increase engagement?
10. In your experience, does the climate of the school/faculty affect yours or others instructional decisions?

Final interview questions can be found in Chapter Four as they were dependent upon research findings during the initial interview and classroom observations.

Table 1
Timeline of Research

Date	Task
End of November 2017	Defended research proposal to committee
December 2017	Submitted documentation to Mercer's IRB committee
Early January 2018	Received IRB approval from Mercer, Submitted to the participating county for approval
February 2018	Approval received from the participating county's IRB committee to conduct research, obtained recommendations for participants from administrators, secured participant approval/informed consent
March 2018	Conducted interviews and observations, transcribed interviews, analyzed interviews and observation findings

A proposal outlining this research study was submitted to Mercer University's Institutional Review Board (IRB) and received approval in January 2018 (See Appendix A). IRB approval means the researcher is aligning with responsible research practices and can continue with their research plan. The participating county also has an IRB committee review process and approval was granted in February 2018 to conduct this research within their school district (See Appendix B). Participants' identities and the schools in which they work were protected by using pseudonyms in the transcription and reporting results portions of this study, as well as blacking out identifying information on submitted paperwork within this document. Participant information and data from this study is stored securely on a password protected computer.

Reporting Results

Using the interview transcripts and analysis of observation notes, the researcher employed Giorgi's (2009) method of data analysis: Reading for a sense of the whole, determining meaning units, and transformation of participants' expressions into phenomenologically sensitive expressions. According to Creswell (2007) qualitative researchers aim to paint a picture of a problem being studied which involves reporting all perspectives and identifying all factors involved. Therefore, results were reported by describing the influential factors identified by teacher participants relating to engaging instructional strategies in mathematics as identified by common meaning units.

After all of that, a descriptive analysis was constructed that focused strictly on the data and findings, without interpretation (Giorgi, 2009). Influential factors were identified by themes that emerged through analysis of interview transcripts and observation notes. Findings, which can be found in Chapter Four, were supported by using participant responses directly from the transcripts and notes.

Summary

Through this qualitative research study, the essence of influential factors and experiences of proficient upper elementary teachers to implement student-centered instructional strategies in their mathematics classrooms was explored. The rationale for employing qualitative inquiry methods was to gain perspective from teachers about their influences by posing open-ended interview questions, analyzing responses for common meaning units, and the researcher actually witnessing what occurs within these classrooms. Teachers with at least five years of teaching mathematics in upper elementary grades were interviewed and observed. Interviews were recorded and

transcribed, then the observation notes and interview transcripts were analyzed to identify meaning units. Reduction, also called bracketing, was used by the researcher to remove bias and preconceived notions, in order to truly listen to participants and engage in meaningful conversational interviews. The essence was determined by identified themes and the results were supported with quotes from transcripts.

The research design was structured around Crotty's (1998) four elements of research: methods, methodology, theoretical perspective, and epistemology. The methods utilized a combination of convenience and purposive sampling as defined by Schwandt (2007) by involving teachers at schools where a relationship has been established by the researcher and a trust in administrators to understand the provided definition of student engagement and innovation exists. The methodology was phenomenology as the research process aimed to unveil the essence of the phenomena that influences participants to use engaging instructional strategies. Furthermore, the theoretical framework was also phenomenology in an effort to understand the lived experiences and factors relating to participants' instructional decision-making. Constructivism was the epistemology in that one constructs knowledge based on experiences (Dewey,1917; Bergin & Bergin, 2015).

Validation lies in the knowledge gained from the interviews and observations (Giorgi, 2002). Therefore, interviews were recorded, transcribed, and analyzed to identify meaning units which aligns with the phenomenological research process (Giorgi, 2009). The same process occurred (using researcher notes instead of a recording) for the classroom observations conducted. The researcher employed phenomenological reduction, also called bracketing, to remove any personal bias throughout the research

process. Furthermore, interviews are a widely accepted form of data collection utilized by qualitative researchers (Creswell, 2007). A descriptive analysis as explained by Giorgi (2009) was developed that focused solely on what the data shows, no interpretation was conducted by the researcher until the final stage of the research which can be found in Chapter Five. All of this was done in order to get to the essence of the phenomena that influences third through fifth grade math teachers to utilize instructional strategies that increase engagement.

CHAPTER 4

RESEARCH FINDINGS

This chapter contains the findings from the initial interviews, classroom observations, and follow-up interviews conducted in order to answer the research question: How do proficient teachers' experiences and influences impact instructional decisions regarding student engagement in mathematics? Also included within this chapter is additional information about the school district, schools, teacher participants, and curriculum utilized in this research study. This information is important to the research in that it paints a picture of the type of schools and students with which the teacher participants work. Following this explanation of overall information, the findings are explained for each part of the research process.

The School District

The participating county is located on the central west coast of Florida and was chosen by the researcher because she used to work there and knows student engagement is a priority for this district. "Participating county" and "Participating district" is used in order to protect the identity of the school district participating in this study, as well as the administrators and teacher participants. Florida defines school districts by county, therefore the words "county" and "school district" may be used interchangeably. In total,

the participating district has 73,340 students enrolled with 31,369 of those being elementary students (Participating District Fact Sheet, 2017).

Furthermore, there are 47 elementary schools within the district (Participating District Fact Sheet, 2017). The school district employs 5,155 instructional employees and 3,664 instructional support staff (Participating District Fact Sheet, 2017). According to the Florida Department of Education's School Grades data, the participating county attained an overall mathematics achievement of 60%, 60% of students demonstrated learning gains in mathematics, and 40% of the lowest 25% of students showed learning gains (FLDOE, 2017). One final note, 55.5% of the students enrolled in the participating county are of low socio-economic status, therefore several schools within the district receive Title I funds (Participating District Fact Sheet, 2017). Title I funds are provided to schools that have greater than 40% of students on the free/reduced lunch program which means they are considered "economically disadvantaged" and qualify for this program (NCES, 2017). The funds are provided to help schools level the playing field for other higher income schools by using this money to pay for additional support staff, professional development for teachers, and any other resources deemed beneficial by school-based administrators. For comparison purposes, all three schools utilized in this study are Title I schools though this is not a factor examined in this research. Table 1 shows how each school compares to district-wide data. As can be seen in the table, the three schools involved in the study have a much higher rate of economically disadvantaged students when compared to the district as a whole yet perform at and above the district in learning gains in most areas.

The Schools

The three schools utilized in this study were chosen by the researcher for their similarities in student body, mathematics performance, and the administrators' commitment to applying strategies that increase engagement. Florida participates in a grading system and all three schools received a "C" for the 2016-2017 school year (FLDOE, 2017). School grades range from A-F and are calculated using results from annual state testing called The Florida Comprehensive Assessment Test (FCAT). The FCAT for elementary level students consists of a fourth-grade writing assessment, and assessments in mathematics and language arts at the third through fifth grade levels. This assessment is used to measure student performance and learning gains/losses from year to year. For the purposes of this study, only mathematics performance was referenced for each school and a summarized version can be found in Table 1.

While it may seem illogical to study "C" schools, all three schools show great improvement in student performance when it comes to demonstrating learning gains as demonstrated on year to year statewide assessment results. Therefore, the students are starting out as lower performers but increasing in their knowledge each year (See Table 1). While specific teacher performance data is not available, the teacher participants mentioned during their interviews that because their students are performing, they feel they have more freedom to make instructional decisions. Additionally, these teachers were chosen by their administrators for their successful implementation of engaging strategies in mathematics by their administrators. Thus, these teachers are considered proficient and effective educators. Specific school performance data is referenced below.

All numbers have been rounded to protect the identity of the district and schools yet continue to provide an accurate report of the data.

For reference purposes, Florida's statewide data shows that 57% of all students (elementary was not singled out in any available reports) performed at or above a satisfactory level in mathematics for the 2016-2017 school year. Satisfactory is defined as reaching a Level 3 or higher, out of five, on the FCAT. Additionally, 48% of economically disadvantaged students performed at a satisfactory level.

School One (S1) received a grade of C in 2016 and maintained that C for the 2016 school year (FLDOE, 2017). This school had a low socio-economic population of 82% for the 2016-2017 school year (data for the 2017-2018 school year has not been publicly released) (FLDOE, 2017). This school tested 100% of their students on the 2017 FCAT and had the following results as specifically pertain to mathematics performance: Overall mathematics achievement was at 50%, learning gains were achieved by 60% of students, and within the lowest performing 25% of students 60% showed learning gains when compared to the previous year (FLDOE, 2017).

School Two (S2) received a grade of D for 2015- 2016 but improved to a C for the 2016- 2017 school year (FLDOE, 2017). Their free/reduced lunch population was at 88% for the 2016- 2017 school year and 99% of students took the FCAT (FLDOE, 2017). This school's performance in mathematics for the 2017 FCAT was 40% of students rated as achieving, 40% of students made learning gains compared to the previous year, and 50% of their lowest 25% demonstrated learning gains (FLDOE, 2017).

Similar to S2, School Three (S3) also received a D for the 2015- 2016 school year but improved to earn a C for the 2016-2017 school year (FLDOE, 2017). S3 tested 98%

of their students and had 87% of their students qualified as economically disadvantaged (FLDOE, 2017). This school's 2017 FCAT scores in mathematics were as follows: Overall mathematics achievement was 40%, 60% of students demonstrated learning gains, and 60% of the lowest 25% of students accomplished learning gains (FLDOE, 2017).

Table 2
School Grade and Performance in Mathematics

School and District	2017 School Grade	Percent of Economically Disadvantaged Students 2017	Overall Mathematics Achievement (Level 3 or above)	Percent of students Demonstrating Learning Gains in Mathematics	Percent of the Lowest Performing 25% of Students Demonstrating Learning Gains
S1	C	82	50%	60	60
S2	C	88	40%	40	50
S3	C	87	40%	60	60
District		56	60%	60	40

The Teacher Participants

The participants utilized in this study were recommended by their administrators due to thorough and effective use of engaging instructional strategies in their upper elementary mathematics classrooms. The administrators of each school recommended their top three teachers in order of effective use of engaging strategies although all nominees were considered engaging. A definition of student engagement (See Table 2) and examples of student engagement strategies (See Table 3) were provided to the administrators by the researcher to insure they aligned with the same beliefs and definition. It was also specified by the researcher that all nominated teachers have at

least five years teaching experience in grades three through five mathematics. The researcher ended up with all administrators' number one picks agreeing to participate. As a result of the nature of the recommendation process, two third grade and one fourth grade teacher ended up participating. This does not affect the results of this study as all upper elementary grades are quite similar and build on one another. It can be assumed that results revealed in this study would not change had a fifth-grade teacher participated as the engagement strategies used across these grade levels are comparable. Only proficient teachers who utilize engaging instructional strategies in their upper elementary classrooms were utilized as this is a desired behavior based on the research establishing that student engagement is beneficial to effective teaching and learning.

Participants are referred to as Participant A (PA), Participant B (PB), and Participant C (PC) in order to protect their identity. All identifying demographic information has been omitted to prevent identification of participants as well. Anonymity was important in this study so participants felt comfortable answering openly and honestly without fear of reprisal.

Table 3
What is Student Engagement?

Student engagement involves behavioral engagement, cognitive engagement and emotional/psychological engagement (Fredricks, Blumenfeld, & Paris, 2004; Lee, 2014; Mahatmya, Lohman, Matjasko, & Farb, 2012).		
Behavioral engagement includes physical participation, attendance, and effort (Fredricks, Blumenfeld, & Paris, 2004; Lee, 2014; Mahatmya, Lohman, Matjasko, & Farb, 2012; Wentzel, 2003).	Cognitive engagement consists of actively thinking about the task or problem at hand and students' investment and willingness to participate (Fredricks, Blumenfeld, & Paris, 2004; Mahatmya, Lohman, Matjasko, & Farb, 2012; Metallidou & Vlachou, 2007). Cognitive engagement is less observable, compared to behavioral engagement since it involves thought processes, which cannot be seen.	Emotional/psychological engagement encompasses attitudes; negative and positive feelings about teachers, learning, and school in general (Finn, 1993; Fredricks, Blumenfeld, & Paris, 2004; Lee, 2014; Mahatmya, Lohman, Matjasko, & Farb, 2012; Willms, 2003). Emotional/psychological engagement also involves drive, determination, and how one handles stress.

Table 4
Examples of Strategies that Increase Student Engagement

Student-centered learning	Opportunities for application	Scaffolding
Involves students taking a more active role in their learning and being completely involved in the learning process while the teacher serves as facilitator (Asoodeh, Asoodeh, & Zarepour, 2012; Hidden Curriculum, 2014; Judi & Sahari, 2013). Also, student-centered learning moves students from passive acceptors of knowledge to a dynamic element in their own learning (International Society for Technology in Education, 2017). Student-centered learning includes methods such as hands-on learning, problem-based learning, and cooperative group activities; since students take an active role, they are naturally engaged.	One of the most important pieces of quality instruction is providing opportunities for students to access and build upon prior knowledge (Goldman & Pellegrino, 2015). Therefore, proposing open-ended, real world problems to students provides opportunities for accessing and using prior knowledge, applying knowledge in new and different ways, as well as developing integral problem-solving abilities (Boaler, 2016; Jonassen, 1997).	Providing gradual guidance to students as needed, referred to as scaffolding, is another technique employed by teachers that has been found to be effective at increasing engagement (Marshman & Brown, 2014).

The Curriculum

The participating district adopts curriculum programs across school levels, meaning all elementary schools utilize the same curriculum program and this adoption process is revisited about once every five years for each of the main subject areas (English Language Arts, Mathematics, Science, and Social Studies). The curriculum program selection process is driven by the Common Core State Standards (CCSS), also referred to as the Florida Core

Standards (FCS), and a textbook adoption is based on the program's ability to meet the needs of the FCS.

The program being utilized this year in mathematics is Eureka Math. According to the publisher's website, "Eureka Math— also known as EngageNY- is a complete, Pre-K through 12 curriculum that carefully sequences the mathematical progressions into expertly crafted modules. Eureka provides educators with a comprehensive curriculum, in-depth professional development, books, and support materials" (Great Minds, 2018). Based on the researcher's observations, Eureka Math contains scripted lessons that break down mathematical concepts into pictorial representations, skill application opportunities, and teaches multiple ways to problem solve. According to the teachers interviewed, the program is exactly 180 days of lessons, which aligns with the exact amount of school days within the school year. Therefore, the program intends for each lesson to take just one day and be completed every day of the school year.

Regarding the experience of participating teachers with the Eureka Math program, this was PA's first year teaching using Eureka Math as it was just rolled out county-wide for the 2017-2018 school year. However, PA did supplement by using some of the resources from Eureka Math throughout the previous school year. PB had experience using Eureka Math during the 2016-2017 school year as a pilot/test school. PC also taught using Eureka Math in previous years but at another school that was using it when it was called EngageNY. The comfort level with the material, set up of the daily assignments, and teaching methods were reflected in the participants' responses in the initial interview by them mentioning that their prior experience, or lack thereof, influenced their use of engaging strategies while implementing Eureka Math. Therefore, those who had used Eureka in the past felt more

comfortable in integrating instructional strategies that increase engagement because they knew more about the structure of the program and included lessons. Additionally, all participants mentioned that Eureka has 180 days of lessons, which is the number of school days in the year. Furthermore, participants elaborated that this adds pressure to their planning in that they feel the need to stick to this schedule when sometimes their students need more or less time on a topic. Participants also revealed that there is added pressure from the participating district's head office to stay on schedule which can be seen in the breakdown of the interviews below.

The Initial Interview

For consistency, all three participants answered the same set of 11 questions discussed in Chapter Three. Following phenomenological form, the interview transcripts were read for a sense of the whole and then read multiple times afterwards to identify common meaning units. The main factors identified by the teacher participants as influencing their instructional decisions when it comes to utilizing engaging strategies were: Students' needs, administrators, the curriculum (Eureka Math), the task being taught, and time. All teachers alluded to these factors in their initial interview in some form or another based on their lived experiences and their meaning is explained further below. Due to the nature of phenomenology these were the surface findings, the final interview was used to dig deeper into these aspects and will be explored later in the chapter.

Question 1: What is your definition of student engagement?

When posed this question, all participants alluded to students being actively involved in the learning, as aligns with the definition of student engagement provided throughout this research. PA stated, "All students are participating and actually actively listening and

learning." Adding to this sentiment, PB mentioned seeing students interacting with each other, focusing on the learning goal, and having conversations about their learning and problem solving methods. PC said, "They [students] were up and moving, they weren't just sitting the whole time, but they were grasping what was being taught, as well as their attention being fully on the lesson."

Question 2: What instructional methods do you use to engage students in mathematics?

The researcher felt this question was beneficial to see what strategies are actually being employed in these classrooms that increase student engagement. PA mentioned that she likes to start off with something engaging, like using manipulatives or whiteboards that involve solving a problem based on a skill they learned the previous day. (Manipulatives are physical items students can use to develop understanding of a concept, some examples are: fraction tiles, student created flip books, and number lines.) PB stated, "I teach a variety of strategies whenever is possible with the mathematical concept we're covering because everybody's brain is kind of different." She listed specifically using interactive notebooks, dry erase boards, charts, quick fluency problems, and gallery walks to get students involved in the learning. In alignment with responses from the other participants, PC said, "A lot of it is hands on, a *lot* of it is hands on. We do a lot of whole brain teaching, so they do a lot of mirrors with voice, or there's movement with their hands, sometimes we come to the carpet and just take a few notes… there's always movement, there's got to be movement." The main strategies being utilized involve movement and the children actively participating in processing new learning through physically completing tasks.

Question 3: What influences you to integrate instructional methods in mathematics that are engaging for students? (list any and all)

In response to this question, PA referred to enhancement in students' ability to use what they have learned as opposed to not understanding the purpose of what they are learning. She stated, "Math has come a long way from wrote memory where you just memorize it, but let's not use it, to actually let them understand when they use it and that it's all tied together." PB mentioned that the type of students she has in her classroom need movement and engagement, and that is what influences her. She said, "I need to have the kids moving, not necessarily from one place to one place but even from the dry erase board into the mathematical notebook is a change for them. They all have different learning styles, so I have to keep moving… I will lose them if they're not being engaged in the learning." PC mentioned that student success is what influences her. PC stated, "I want them to have lightbulb moments. I want them to be successful because when they're successful they make learning gains and feel better about themselves." In summation, all participants mentioned their students being the main influence on their decision to integrate strategies that increase engagement. Furthermore, none of the participants went on to discuss any other factors specifically in relation to answering this questions despite the question asking them to "list any and all."

Question 4: In your experience, which one of those identified influences would you say is most impactful? Why?

All teachers mentioned their students as the only influence in their responses to Question 3, therefore it seems to answer this question participants went deeper into specifics relating to their students, as opposed to singling out any one of many potential influences as the researcher intended. Therefore, when asked about the most impactful of influences, PA focused on students being able to apply what they are learning and realize the importance of

using what they learned. The first response PB had was, "That's a hard question." She then proceeded to explain that she really does not have one strategy she finds the most beneficial but really doing whatever it takes to meet students where they are and achieve learning gains. PB further explained that her decisions really depend on the lesson and how her students are behaving that day. She said she gets a feel for what they are going to need in order to be successful. She used the example that if her students have had a rough morning, she may need to use more physical movement than planned to get them fully involved. She continued on to discuss that she may sense that they are tired and not willing to do too much and therefore need to pull in some technology to gain their attention and interest. She ended her answer with this, "It's definitely knowing my learners and where they are on that particular day for what I need." PC stated that the main influence is her students' success. She said, "That drives my instruction and how I present it." Since questions three and four did not yield exactly what the researcher had intended (i.e. listing multiple influences, then driving down to the most influential) a deeper dive into these influences were a focus for the final interview.

Question 5: In your experience what do you consider the most when deciding to use an engaging teaching strategy?

As a result of the previous two answers being answered in a way that alluded to this question, Question 5 seemed a bit redundant. However, PA dug a bit deeper and said, "What's going to grab the most kiddos." PB again mentioned the needs of her students. She also mentioned the required curriculum and making an effort to combine what is required with what she feels her students need in the form of instruction and application of new skills. PC also went a bit deeper from her previous responses and said she not only thinks about her

students, but she also tries to foresee what misconceptions they may have with the concept so she can plan around it. She provided an example, "…like today I was teaching and was like, oh gosh, they don't understand. So, I tried to integrate more movement. Whereas yesterday, we were drawing pictures, so I knew I needed to do this [activity] today to see growth and for the lightbulbs to go off." Again, the teachers focused on the needs of their students in response to what they consider most but also mentioned the needs of the curriculum; therefore identifying the curriculum as another influential factor.

Question 6: What has been your experience with administrators regarding instructional decisions as a whole?

This question was written with the intention of seeing what role, if any, administration plays as an influence in teachers' instructional decision-making. PA stated she feels supported by her administration but also pushed a bit to stick to the strict outline of Eureka Math and its one lesson per day schedule. This participant continued to go on about the math program and did not divulge any additional information about the role administration plays in her instructional decision-making. PA's response could indicate that the program has more influence over her instructional decisions than administration, therefore this will be looked at more thoroughly in the final interview. PB also stated she feels supported to make decisions regarding her instructional methods. Additionally, she cited her student performance data in relation to the school and the district as being consistently above the average. She went on to indicate that her data is one of the reasons she feels she has freedom, "I think they [administration] trust that I know my kids the best and I think that my data is backing that up so I've gotten some positive feedback." PB closed with mentioning that her instruction sometimes goes outside the lines of Eureka Math when

she feels her students have achieved mastery and she wants to push their critical thinking skills. Similar to PB, PC stated, "They're [administration] supportive. As long as my data matches what I'm supposed to be doing. As long as they're [students] making gains… they know whatever's best for my students I'm going to know, so they trust my expertise." She continued on to mention that the support at her school is great and that she can always get ahold of materials and manipulatives if it is something she feels her kids need in order to grasp a concept. Therefore, all participants mentioned that they feel supported by their administration but some mentioned the caveat that it is because their student performance data is good. Thus, the influence of administration was further investigated with the final interview.

Question 7: What has been your experience with administrators regarding integrating strategies that increase student engagement?

To answer this question, PA stated that her administrators are very supportive of integrating strategies that increase student engagement and that this is even a part of their yearly evaluations. Similarly, PB said, "My administrators really are looking for best practices that are working for kids and they have the trust element that if you really feel like you're hitting the standards and that you're making the shifts you need and deepening learning that may look different from what Eureka is looking for, then that's what's best for the kids. I've had positive interaction and feedback for that." Also following along the same lines as PA and PB, PC said, "It's been really positive and they would tell me if it's not and I haven't had that." So, it appears all three participants have received positive feedback from administrators for integrating strategies that increase student engagement.

Question 8: What have you experienced with students when you integrate strategies that increase engagement in mathematics?

PA began her response by stating, “They [students] are more receptive of the lesson.” She continued to elaborate, “Once I pull them in with, I don’t want to say ‘trick’, but the engagement tool, and they’re working they’re actually doing the math… they’re doing the practice and using the strategies.” PB stated, “I think that they enjoy it. I think that the type of class I have really enjoys the variety.” She also mentioned that she gets positive feedback from students when she breaks students into ability groups so the higher performing students can move on to more in-depth tasks while those who may be struggling stay in a small group with the teacher scaffolding the concept. Going back to data, PC stated, “I see their scores go up.” She also said that she sees excitement and hears the students asking, “When are we doing math?”

Although Question 8 was alluded to in previous responses, at the time the question was created the researcher was unaware this would happen. Therefore, responses to this question ended up going even deeper into the influence students have on teachers’ instructional decisions aligning perfectly with the richness required in phenomenological studies. All of the teachers mentioned more specific signs of engagement in their students and the results they get when students are engaged.

Question 9: What have your experiences been like with parents regarding utilizing strategies that increase engagement in mathematics?

Similar to the targeted nature of those posed before it, this question aims to get at any influence parents may have on instructional decision-making. “They struggle more than the kiddos do,” said PA referring to parents’ reactions to the material. She went on to mention

the additional resources students have at home through the Eureka Math program, like online resources involving homework help and instructional videos. PA went into more detail about how the parents struggle with the way math is taught but that "we can't worry about them, we only have to worry about the kiddos." Therefore, this indicates the parents are not an influence on the way PA teaches as she made no mention of it when specifically asked. PB said that she only ever has a few parents that reach out but when they do, she directs them to the students' interactive notebooks they are allowed to take home. Within these notebooks are examples, and fully worked problems with pictorial representations or whatever else helped the student understand the material. Again, this participant did not mention that the parents do or do not have any influence on how she teaches. Further demonstrating parents having a lack of influence on instructional decisions, PC only talked about trying to be involved with parents and that occasionally parents will share that their child was excited about something they did on a certain day in mathematics. She stated, "The kids are excited [about mathematics], so I hope they go home and are excited." Additionally, all three teachers mentioned a lack of parent involvement in their schools which could be a direct relation as to why participants' responses indicated that parents do not have any effect on instructional decisions.

Question 10: What experiences have you had with co-workers in regard to integrating strategies that increase engagement?

PA responded, "Oh, they love it [strategies that increase student engagement]. I mean, I think our team, across the board school-wide are trying to engage kiddos, they are very receptive to that [strategies]." Similarly to PA, PB also mentioned that her grade level team enjoys integrating strategies that increase student engagement. She said they use PLC

(Professional Learning Community) time to discuss various strategies they can utilize for upcoming lessons and units in mathematics. Alternately, PC mentioned that it is just another teammate and herself that really get excited about using engaging strategies in mathematics. She stated that she "shares ideas with them [other teammates] all the time" and that she is really enthusiastic about them [ideas] but that it ends up being just one other teammate and herself using the strategies. PC then stated, "I know if I'm not excited my kids aren't going to be excited, so I try really hard." She went on to explain that not every lesson involves an elaborate plan to get students engaged (she provided an example involving dressing up as characters), but that all of her lessons center-around getting the students active in their learning. When probed a bit more for clarification on the role her co-workers play in her instructional decisions, she said she does not let their attitudes and excuses affect what she does in her classroom. Therefore, it seems that co-workers can work together to plan engaging strategies to utilize in their classrooms, thus possibly providing positive encouragement and that, at least for PC's experience, teachers can look past the negative attitudes of others and not let that influence their instruction. Due to the participants mixed experiences with this, the influence of co-workers was further investigated in the final interview.

Question 11: In your experience, does the climate of the school/faculty affect yours or others instructional decisions?

PA stated, "Yes, because of all the changes just with everything, but I don't think it effects it negatively… we always turn to each other and we work together to make the best decisions for our kiddos." She continued on to discuss how her team, and the school as a whole, really band together to plan and work together, especially when it comes to

integrating the new to them curriculum of Eureka Math. PB also indicated that climate has an effect on her instructional decisions. She indicated that she wished they had more flexibility than the curriculum schedule allows, stating; "Sometimes I feel like if we were able to have a little bit more flexibility in what we could plan or how we plan it would be better." She continued on with an example, "For example, there are things that Eureka has one day of a lesson on that my kids really struggle on and struggle with the concept, where if I had the flexibility to plan my days, I may have taken two days to get that concept across." PB goes on to say that the pressure to be where she is supposed to be with the 180 days of lessons calendar is coming from the district. Additionally, she mentioned that the district is supportive in providing what teachers need as far as materials and instructional coaches but that sometimes she knows her students need a bit more time to grasp an important concept before moving on, therefore she has to find a way to integrate it again later while simultaneously moving onto the next lesson. Alternately to PA and PB's responses, PC did not feel that the climate of the school affects her instructional decision making. She stated that she is going to do what is best for her kids. She went on to explain, "It's that moral imperative and compliance piece- I need to do what's best for my kids. I'll stand on my head if I need to, but I do know I have certain compliance pieces I need to do so I am doing Eureka and following the lesson plan, but I can put my own twist on it." However, she did go on to indicate that while climate does not affect her, she does believe it affects others. She elaborated by explaining that there are a lot of behavior issues in her school that she feels parents should be held more accountable for, and that there is also a morale issue among the teachers that leads to negative attitudes. She believes that not everyone remembers their "why" when they come to work to teach these students each day. Due to the mix in

responses from the teacher participants, climate continued to be a focus for the final interview in an attempt to get to the essence of participants' experiences.

In sum, the initial interviews revealed an energy among participants that demonstrated excitement for teaching mathematics using engaging strategies based on their students. They all mentioned that they enjoy integrating engaging strategies because they feel it is what their students need and they love the responses they get from students when they make learning connections. Additional effects of utilizing strategies that increase engagement in mathematics were providing opportunities for students to apply what they were learning, students being more receptive to learning, and students understanding the purpose of why they were learning something. The positive attitude among all three teachers about the effect engaging strategies has on their students was clearly revealed in this initial interview.

When it came to administrators' influence on instructional decisions, all teacher participants said they felt supported by their school-based administrators. In their responses they revealed that as long as their data was consistent with or above district level data, they felt the freedom to use whatever strategies they believed would be beneficial to their students as long as they also integrated parts of the Eureka program. All participants also acknowledged that the pressure they feel to stick with the specific outline of Eureka Math comes from the District Office, not their administrators specifically. Furthermore, two of the three participants mentioned that they believe any pressure to stick to Eureka that does come from administration is because they are feeling pressure from the district to do so. In regard to curriculum, every participant mentioned that they "dance around" within the box they feel Eureka and District Office put them in concerning the instructional timeline in order

to meet the needs of their students. When asked for clarification on this, they all mentioned that they stick to Eureka and the task or skill they are supposed to be covering, but they change the way in which they teach the material based on their students. They still utilize the workbook that comes with the Eureka program but teach the skill using more tailored methods that involve engagement. This way, they feel they are staying with the strict requirements imposed by Eureka and the district while also meeting their specific students' needs.

The skill being taught was also mentioned as a factor in what strategies the teacher participants choose to use with their students. The participants mentioned that sometimes students need to move and actually experience a task. For example, PC mentioned that her class was doing fractions and that her students had to physically get up and move themselves onto a number line taped to the floor representing zero through one so students could really see how one fraction was related to another on a number line. She stated her students, "just needed the movement. I could tell." Additionally, participants two and three mentioned the use of interactive student notebooks as an engaging strategy when the task requires some reflection time. The notebooks are used by students to record their thinking in a way that makes sense to them after a lesson is taught and they are comprehending the skill. Also, utilization of the notebooks provides a place for students to draw picture representations of a method or thought process. Furthermore, all participants mentioned the use of dry erase boards for each student to be able to record their thinking or as a process to show what they know without feeling like it is fully committed to paper. It is apparent through the interviews

and explanations by the teachers that the task or skill being taught is an influencer of what strategies they decide to use during instruction.

The final common theme identified throughout the initial interview process was time. Time was referred to as an influence in two different ways; one was time for planning, or lack thereof, and the other was actual time provided to teach the concept each day. All participants mentioned time is provided for planning with their grade level teams, as well as within Professional Learning Community (PLC) time but that it is never enough. Also stated by each participant, was the pressure to keep moving each day to keep up with the Eureka timeline. They all expressed frustration when they had lessons they felt like their students needed more time with, yet they were forced to move on to the next task due to the timeline of the program. However, two of the three participants remarked that they just have to get creative and integrate that skill again the next day so students are being exposed to the concept once more. Also, PA mentioned that the Eureka curriculum spirals, so it touches on topics multiple times throughout the year but that sometimes it is just not sufficient for her students, yet she is forced to continue to the next lesson.

These common identified themes were found throughout the interviews depending upon the question that was asked. Furthermore, participants elaborated on their experiences and provided examples which gave the researcher a clearer picture of what was being described. Using what was discussed in these initial interviews, the researcher moved on to the next step of this research study, completing classroom observations.

Classroom Observations

The researcher pre-arranged classroom observations with each teacher for the mathematics lesson of their choosing. Teachers were instructed to teach as they normally

would, in whatever manner they had originally planned. Therefore, the researcher sat in the back of the classroom as not to disturb the lesson but did walk around when appropriate to witness what the students were doing as far as if they were engaged or not. The purpose of these observations was to dig deeper into what strategies these teachers actually use to increase engagement, assess whether or not students are really engaged, and for the researcher to experience these classrooms and teachers' strategies first hand. Furthermore, the researcher felt this added a more personal touch to the aspect of the lived experience that phenomenology aligns with, as well as provided an opportunity to get an in depth look into what the participants explained in their initial interviews.

During the observations, the researcher took notes of what was occurring. Table 4 is a summary of the researcher's notes and what was witnessed during the observations. To organize her thoughts, the researcher divided the columns by participant and sorted observations into categories. There were things the students were doing and phrases the teacher was saying that elicited a response from students which is also represented in the table. From the table, one can see the similarities between all teachers' expectations and language that encourages students to take control of their learning and explain their thinking. There are also common tools and strategies that are utilized by each teacher to help facilitate student learning.

Table 5
Researcher Notes from Observations

	PA	PB	PC
Tools/ Strategies Used by Students	- Students using dry erase boards to write out thinking process and draw pictures to aid in understanding - Fraction cards: Cutting index cards into halves, fourths, and thirds (actively engaging in splitting apart the whole) - Compares visual aid of fraction cards to number bonds to the number lines they drew	- Students using dry erase boards to write out thinking process and work through problems - Student created number bonds as visual aid - Picture representations (student drawn); Number boxes to show distributive property	- Teacher provides options on how students complete their work i.e. dry erase boards, workbook, manipulatives (fraction tiles), iPads, small group, come to carpet (movement- mental and physical shift) - Number bonds visual aid (student created)
Teacher Actions	- Randomly calls on students (draws name sticks out of a bucket) - "I should see red when you're done" (establishing expectations, back of dry erase boards are red, so when they're done they turn them over as a signal to teacher)	- Randomly calling on students - Discusses vocabulary and uses - Asks students about their thinking - Establishes expectations "If you made a mistake, I want to see where" appropriate vocabulary	- Randomly calls on students - Asking questions of students as word problem is read to encourage understanding of the problem and reinforce what the students need to know to solve the problem - Sets expectations i.e. "pencils in your hand" "Goggles on, eyes up here" cueing, setting expectations

Table 5 continued

	PA	PB	PC
Teacher Language	"Show me" "Thumbs up if you agree" (Accountable talk) "How do you know?" "What do you see" "I love when I hear those gasps!" (referring to the "ah ha" moment connections)	"Show me what you know" "Tell me why…" "Is there another way?" "Walk us through what we're going to do" "Show us how your brain thought about this problem"	"Show me" "Why?" Accountable talk (agree/disagree, me too, etc.) "Talk with your partner" encouraging conversation and sharing of ideas "What do you notice?"
Classroom Environment	- Students complete an application problem on their own, without instruction but can use their neighborhood to work through it, then it's discussed whole class - Celebrates success	- Neighborhoods (students' desks together in groups) -Learning goal posted on board (also part of expectations) -Students share their thinking with the whole class	- Partner/groups - Neighborhoods (students' desks together in groups) - Students up to board to share thinking - Class cheer, encouraging each other (climate)

Based on the identified themes in the initial interview, during the observation the researcher paid specific attention to what the teacher did and the reactions of students based on the teacher's actions. Common themes arose from the observations, just like they did from the initial interview. The common meaning units identified were student action and teacher action as previously mentioned, as well as indicated in Table 2. Student action meaning units involved students actively creating picture representation of the skill being taught, engaging in discussions with each other and the teacher, as well as showing their thinking on dry erase boards. In addition, teacher action meaning units encompass phrases

like “show me” referring to students’ thought processes, asking students to demonstrate another way of solving the same problem, and providing students with the tools to use and make visual representations of their thinking and learning. As one can tell from these descriptions, the teachers were facilitating the learning by what they were saying and asking, but the students were doing the cognitive and physical work.

In addition to the facilitation of learning using engaging strategies, there were other common themes identified in all of the classrooms. Every teacher encouraged students to show what they knew and explain their thinking. Additionally, all teachers provided the tools and opportunities for each student to create a visual aid, whether it was on a dry erase board or actively constructing a model. Also, each classroom had a very noticeable classroom climate of learning and acceptance of making mistakes. Students encouraged one another and helped each other naturally. Another final observation was that all teachers explained their expectations, both at the beginning of the lesson as well as through completion. Therefore, students knew exactly what they were supposed to be doing even though they had freedom of deciding how they were completing each task.

The Final Interview

As mentioned in the research process, the final interview questions were constructed in order to specifically dig deeper into meaning units expressed in the initial interviews and the classroom observations. Furthermore, additional questions were developed due to the researcher’s thoughts on other possible influences that may not have presented themselves in the initial interview, but may carry relevance. Below are the questions conducted in the final interview:

Follow-up interview questions (all pertaining to mathematics):

1: Is there something in your personal schooling experience (growing up) that influences your use of engaging strategies in mathematics? Explain that experience.

2: Is there something since you've been teaching that you have experienced that influences your use of engaging strategies in mathematics? Explain that experience

3: Rank in order of influence on instructional decisions and explain why you put each one in that spot. (Participants were asked to write down the following terms, then take their time ranking each one.)

Administration. Classroom environment. Students. Skill/task. Time. Curriculum. School climate/co-worker attitudes.

1.

2.

3.

4.

5.

6.

7.

4: Are there any other influential factors I missed in the above list?

5: Is there something about your personality that you feel influences you to utilize strategies that increase engagement?

6: You've mentioned your students need engagement, why?

7: What do you see when you use engaging strategies?

8: What would you need in order to increase your use of engaging strategies?

9: Have you had any negative experiences when attempting to integrate engaging strategies in mathematics?

Participants' individual responses to each follow-up interview question are described below.

Question 1: Is there something in your personal schooling experience (growing up) that influences your use of engaging strategies in mathematics? Explain that experience.

This question was posed to see if there was some sort of major influence in the teachers' lives that may continue to influence their use of engaging strategies. PA stated that there was not really anything growing up that she could think of but that once she arrived at college and was actually practice teaching, her instructors and colleagues are what inspired her to begin utilizing strategies that increase student engagement. She said, "They taught strategies and used strategies that increased engagement. I was surrounded by great people. I was lucky." An alternate influence was described by PB in that her father was a superintendent of schools so education was always a priority in their house. She went on to mention that she always enjoyed the challenges mathematics presented and that she particularly liked when teachers provided her with additional processing time, talking ideas over with a partner, and putting her thoughts down before talking about her problem solving process. "That's [writing down thoughts and problem solving strategies prior to sharing out] a strategy I always use with my kids because I know it helped me and I know it helps a lot of students." Therefore, she enjoys employing these same strategies that helped her in school to aid in her students' learning. Another influential factor in a teachers' life was identified by PC, other teachers. PC stated, "My first and second grade teacher (the same person) was very engaging and caught our attention. She inspired me to become a teacher and I think I

took a lot of her teaching practices and made them my own." From this interview question, one can see that there are multiple past experiences, as well as elements of those experiences, that can affect a teachers' use of engaging instructional strategies.

Question 2: Is there something since you've been teaching that you have experienced that influences your use of engaging strategies in mathematics? Explain that experience.

This question is similar to the first but aims to strictly focus on the participants' professional lives since beginning teaching. Furthermore, aligning with constructivism in that our experiences shape what we know, all three participants answered this question affirmatively. PA mentioned that her colleagues are a huge asset when it comes to integrating instructional strategies that increase engagement. She went on to include the benefit of sharing ideas, "Being able to see grades above me and below me, seeing how they use strategies and then I modify them to meet the needs of my students." Adding to the list of professional influences, PB stated, "There's not just one incident but I think that over the years of teaching, going through the Common Core changes, the state assessment changes, and having been exposed to how students need to show their work and understand what they're doing influences me." Similar to PA, PB also mentioned that seeing other grade levels and the strategies they use helps her construct her own engaging lessons. Another influence was introduced by PC in that she mentioned where she used to teach influences the way she teaches now, "Where I used to teach was all about thinking outside the box and creating lessons that are rigorous but also engaging for students." PC went on to mention that those engagement strategies could include dressing up as characters, using flip books, and even following a highly engaging teacher on social media. Overall, influences identified by these teacher participants range from colleagues, to past employers, and overall teaching

experience to social media resources which shows influence can come from any type of experience.

Question 3: Rank in order of influence on instructional decisions and explain why you put each one in that spot. (Participants were asked to write down the following terms, then take their time ranking each one. They were also asked to identify if one of the factors listed was not an influence.)

Administration. Physical classroom environment. Students. Skill/task. Time. Curriculum. School climate/co-worker attitudes.

Each participant took some time to answer this as many influential factors were involved. These factors were identified as meaning units in the first interview, therefore the researcher was trying to understand how each of those influences ranked according to influences upon the participants' instructional decisions. For a more easily comparable format these findings have been put in table format, see Table 5. The information will be further discussed after the findings are presented in the table as this set up provides an overview first, then delves deeper into each participants' reasons for their rankings.

Table 6
Influences Identified in Initial Interview Ranked

Rank (most influential to least influential)	PA	PB	PC
1	Students	Students	Students
2	Skill/Task	Curriculum and Skill/Task (evenly ranked)	Classroom environment
3	Curriculum	Classroom environment	Administration
4	Classroom environment	Time	Curriculum
5	Administration	School climate/Co-worker attitudes	Skill/task
6	Time	Administration	Time
7	School climate/Co-worker Attitudes		School climate/co-worker attitude

PA ranked students first stating, “They’re first, always.” She ranked skill/task next as it is the skill and task that influence how she will teach. Then came curriculum because, “We have to stay in line with the curriculum.” Next was classroom environment in which she mentioned that if you do not have the proper classroom environment (involving routines and management) the students will not be engaged. PA ranked administration at number five stating, “It plays to my thought of the kiddos come first, so their classroom environment is important however admin needs do come in play. If it’s an assessment they have the final say; but as far as the engagement part, they let us figure that out.” While PA ranked time in sixth place she said, “This would probably be number one, it would be all of them because it does affect everything, but I was trying to think ‘ideally’ it would not play such a role. We never have enough time and never will.” Finally, she ranked school climate last and did not elaborate but as her previous responses

show, she has a very positive relationship with her grade level team and feels supported by her administration. Therefore, since the climate of her school is positive in her eyes, she may not view climate as much of an influence as the other elements provided.

Furthermore, PB also ranked students first stating that she utilizes different strategies based on how her students enter the classroom each day. "Just kind of knowing where they are and what they come to me with that day," she stated indicating how well she knows her students and how their daily attitudes influence her instructional decisions. PB then ranked curriculum and skill/task evenly for second place mentioning that she felt those two elements were closely related and that she has to take both of them into consideration when balancing all students' needs. She then went on to rank classroom environment her third influence as she looks to create a calm learning environment for her students. She went on to mention, "For working in groups and having conversations, I have some kids that really need that think time, that wait time…" indicating that a calming classroom is conducive to providing her students with the environment they need in order to learn. Next, she listed time as fourth and stated, "With Eureka and what we're required by the district, there are times when I feel a lesson could be a lot quicker than required and then there are other times I feel we need to take two days but can't because Eureka has only given it one day. It's hard to balance that piece." This indicates that by "time" she means time to actually teach the skills in a manner that is fitting for her students. Then, the fifth most influential factor from the list was climate of the school/co-worker attitudes. PB went on to mention that she works with a productive grade level team but again feels like they could be more productive with additional time

to plan lessons that meet the needs of their students specifically. Additionally, she mentioned that she felt that since her school is not an A/B school (school grade wise) that teachers have less freedom to veer away from the scriptedness of the Eureka Math program and the tight schedule that accompanies the program. This is of note as all teacher participants in this study work at C schools and have all mentioned how they dance around the requirements of Eureka by integrating strategies that increase student engagement, which is something they have all mentioned their students need, so they are finding ways to work within system constraints. Lastly, PB stated, "Administration is the least influential because I feel like admin basically lets me do my thing. My data is the same, if not better, than fourth grades across the district. I believe that they trust me, so they're not really an influence." This statement seems a bit contradictory since all participants have mentioned the pressure to stay on track with the Eureka Math schedule, but as the participants have also mentioned, they feel that pressure from the district more than their administrators.

Keeping in line with PA and PB's responses, PC also listed students as the most influential factor when it comes to instructional decision-making. Second, she had class environment because, "It kind of relates to the students and how you handle them." Then she ranked administration third mentioning that as long as her data shows growth she feels administration would be okay with the decisions she is making. Next was curriculum, "Because I want to make sure everything's aligned." Finally she ranked skill/task as number five, time as number six, and school/co-worker attitudes as not an influence. She did not divulge her reasonings for places five and six but did state, "I don't really care what they think, so that's not an influence, it's the least of my worries,"

in reference to the role her co-workers play in her instructional decisions. PC is the only participant that has indicated a negative experience with her grade level team. This comment of not caring really says a lot about how she feels and aligns with the experiences she explained in the initial interview when mentioning that it is tough to get her team involved in utilizing engaging instructional strategies in mathematics. Judging by her response to this question in the final interview though, she does not really let the attitudes of others stop her from utilizing strategies that increase engagement.

Question 4: Are there any other influential factors I missed from the above list?

Obviously, this question was created to confirm the meaning units that became apparent in the initial interview, as well as provide an opportunity for participants to add their own influences that may not have presented themselves in the initial interview due to line of questioning or thought process at the time. PA said the list covered everything for her. Introducing another influential factor, PB talked about how speaking with other professionals outside of her team and school are helpful. Additionally, she mentioned that bouncing ideas off of her instructional coach is extremely helpful, as well as talking to other teachers at other schools to see what is working for them in teaching various mathematics concepts. PC added that having access to materials in an influential factor. She feels she could do a lot more hands on activities with access to more manipulatives like fraction tiles.

Question 5: Is there something about your personality that you feel influences you to utilize strategies that increase engagement?

Question five was intended for participants to self-identify qualities they possess that may be internal influential factors innate to their personalities or characteristics, as

many of the previous questions from the initial interview and this follow-up interview focused on external influences. PA said she is kind of goofy and likes to have fun with the kids. She mentioned they love the movement, excitement, and fun that she integrates into their daily classroom activities. The researcher probed asking, "Do you think internal drive has anything to do with it [instructional decision-making]?" PA replied, "Oh yeah, absolutely" but did not elaborate. On an alternate note, PB was not sure if there was anything about her personality that comes into play when she makes instructional decisions. She said, "I'm not sure. I'm low-key, pretty patient. I'm a big picture thinker and I've had experience teaching upper grades so I think my experience helps drive my instruction [I know where they need to go in future grades with their mathematics skills]." She continued on to mention again that she was not really sure of personality traits that played a role but that she does enjoy the challenges of mathematics because it makes her think differently. Perhaps this is something she enjoys having her students experience as well, therefore they get excited because they see her enthusiasm. Similar to PA's response regarding excitement and having fun, PC alluded to her passion for teaching. She answered, "I'm really passionate about what I do. I'm really enthusiastic. Even though math isn't my favorite, I need to fake that to help them be excited. I hope that my personality and enthusiasm helps them [students]." Therefore, PA and PC's references to their attitudes and passion for teaching and PB's enjoyment of challenges all play a role in their decisions to integrate strategies that increase student engagement in their mathematics classes.

Question 6: You've mentioned your students need engagement, why?

Since all participants specifically said their students require engagement, the researcher wondered what it was about engagement that was so effective for these students. PA talked about how she still feels school is school and that most students would rather be somewhere else. She continued, "So that's where engagement comes in, if you can get them to want to be there then it's less of an uphill battle." This indicates the students find engagement fun or enjoyable in some way that makes them want to come to school. PB mentioned something that is common in the literature presented earlier in this study, student attitudes. She specifically referenced that she believes her students have had negative experiences with mathematics in the past and that they do not really "care" for the subject area. "It's my toughest [subject] to get them to do," she said. PB continued on to say that she has to "push the boundaries" of Eureka Math and combine it with the needs of her students in order for them to be successful. She continued on, "They need to be able to move. We do gallery walks and sharing of ways to solve problems, then switch papers and making them solve them in a different way. They have such a negative experience with math that I really need to keep it engaging." Therefore, this indicates that because engaging strategies involve movement and other ways of thinking about problem solving, the students are more willing to participate in their own learning. Furthermore, PC believes there is a tie to being a Title I school and a lack of importance placed on education in the homes of students. "They just don't have, being at a Title I school and I'm not making excuses just a comparison to the non-Title I school I worked at, there's no sense of urgency. They don't care, I don't want to say it in a mean way but it seems they just don't have that parental support at home that says

school is important. So I try to make it fun so they want to come to school," she said. As the participant stated, she is not making an absolute judgement call but just in her experience these are things she has noticed about her students. While this study does not focus on the fact that all of the schools are Title I schools, it is of note that there could be attitude differences in the students due to their previous experiences with mathematics and/or the perceptions they receive from their parents about school. PC went on to discuss her belief in the importance of building relationships with each one of her students and how encouraging that is for her and for them. She also mentioned her enjoyment of providing them with a truly rich learning environment by "giving them an experience they may not experience elsewhere." She closed her answer with, "If I don't keep their attention they're just going to have that attitude. I want them to find the happiness in engagement and make something boring into something fun, even on their own." Again, this suggests that using engaging strategies increases students' attention and involvement in their learning while facilitating positive feelings of accomplishment.

Question 7: What do you see when you use engaging strategies?

The researcher noticed during observations that the students in all classrooms seemed eager to share their thinking and their problem solving processes with one another. They did not appear to be worried as to whether or not what they did was correct and they never downgraded one another. Therefore, the researcher wanted to see if this is something the teachers also noticed, if it was a common occurrence, and if there were other things being observed while engaging lessons are being taught. PA answered, "I see them wanting to share what they are doing, what they are learning, with their groups where they can talk to their partners and explain how they did that problem; they

are excited to talk about the actual task at hand." She went on to mention that students no longer just want to fill in answer blanks and be done with their work, that they enjoy the problem solving process and sharing with others which engaging instructional strategies encourage. PA also mentioned that there is a climate of learning from mistakes that has been established and that the students understand that it is okay to not get the correct answer; that the importance lies in being able to figure out what went wrong and learn from that. PB did not discuss her class as a whole other than to say that she sees engagement, but did mention that for her "tougher" kids who are not necessarily excited about mathematics cause behavior issues in the classroom if they are not engaged. "When I don't use engaging strategies, I end up with behaviors- acting out, they don't want to do the math, they don't have success, and they end up having a non-learning day, then I have to catch up on that," she stated. Then, PC simply answered, "I see them learning, making progress." All of these statements align with what was witnessed by the researcher during observations. The researcher even had a chance to see exactly what PB was talking about with the behavior issues as the students were off their normal schedule that day and it took PB a bit of time at the beginning to get everyone effectively engaged in the lesson to where they stopped participating in off-task behavior.

Question 8: What would you need in order to increase your use of engaging strategies?

Since these teachers have already been identified as thoroughly employing engaging strategies, the researcher wanted to see if there was something that even these successful teachers were lacking that could help them in their efforts to increase student engagement. This information could be used to help those teachers who are less engaging or less likely to utilize engaging strategies, but also to help those already using

engaging strategies to improve their practices. PA got right to it with saying, "The big T-time." She went on to divulge that this meant more time to plan and more time spent with students on the actual skills. She continued, "A lot of times there are things I want to do that would be more engaging but we don't have time." She concluded her answer by again referring to the tight schedule teachers' feel they must adhere to by the adoption of Eureka Math, but did mention that she feels they may get better at balancing the curriculum with student needs as they become more familiar with the program. Similar to PA's reference to the expectations of Eureka Math, PB stated, "I think the release of feeling like I completely needed to use the script and concept development in Eureka, like the freedom to decide." She continued on by explaining that there are times that she knows a better way to teach a concept but feels compelled to stick to the program. She too mentioned needing more time with students and time for planning. Agreeing with PA and PB, PC also mentioned time and materials being two things she feels could really help her increase engagement even more than she is currently. She also alluded to the constraints of Eureka, "Eureka is so dry but we need more time to think about ideas that will engage and help students grasp the concepts. Having time to plan it all out and gather materials." Therefore, from this question a constant theme emerged of needing more time to plan engaging lessons and more freedom to execute those lessons in the best format for the students.

Question 9: Have you had any negative experiences when attempting to integrate engaging strategies in mathematics?

The researcher included this question in an effort to expose any negative experiences teachers had with utilizing instruction strategies that increase engagement in

their mathematics classrooms. When looking at the effectiveness or usefulness of something, it is important to also look at when and where it does not work. All teachers answered in the affirmative, that they have had negative experiences and they all related to a lesson not being as effective as planned or that the students just were not responding as needed that particular day. PA mentioned that engaging lessons fail when her students are "just off." She went on to explain, "Either they weren't having it or I was not fully prepared. You live and learn. Sometimes the kids just don't take to a lesson, they're looking at me like 'huh?'" Leaning towards these same sentiments, PB stated, "I think the only negative would be like if I have kids that are kind of off for the day and then they're too cool to go draw me a picture or engage in a group then they bring others that I could get involved down with them." She continued, "It usually stems from something unknown to them and that's their first defense mechanism, 'I'm gonna say I don't like this because I don't know what it is and everyone will follow me.' But once I can ease them into it, then they're good to go." PC echoed the sentiments of PA and PB by saying that some lessons are just too much for her students some days, depending on what has been going on around them or any changes in their schedules. Similar to PA, she also mentioned that sometimes she just simply plans incorrectly and is either lacking materials or missed some element of instruction that would have been helpful in making the lesson a success. All of the negative experiences mentioned by the teacher participants could also happen with traditional, more direct instructions methods. Furthermore, some days the students are less receptive to learning and sometimes teachers do not effectively plan, these are just things that happen.

When looking at the final interview as a whole there are some common themes that develop, similarly to those that developed in the initial interview and the classroom observations. First of all, it is evident that constructivism is a good fit for this research as all teachers identified past experiences in their schooling and professional careers that influence their instructional decision-making. Additionally, like the initial interview, it is apparent that the curriculum program, Eureka Math, has a great influence upon the teachers' instructional decisions both when it comes to planning time and implementation of engaging strategies.

All participants continued throughout the final interview to mention how they attempt to find a delicate balance between the needs of the program and the needs of their students. Furthermore, participants revealed that there may be parts of their personality, like the love for their job and enjoying a challenge, that encourage their use of engaging strategies because they find it enjoyable. Also, all participants talked about the positive changes they see in their students when engaging strategies are utilized- like improved attitudes, willingness to participate, and encouraging one another throughout the learning process. Consequently, certain needs involved with employing engaging strategies were also identified throughout this interview: the need for more time to plan, more autonomy to take the time to conduct lessons based on student need, access to materials to create more hands-on learning activities, and the feeling of freedom to do whatever it takes to help their students feel accomplished and be successful. Overall, the participants mentioned many benefits to their students and the effectiveness of their instruction when engaging strategies are utilized during their mathematics time.

Overall Findings

After reading through the initial interview, notes from classroom observations, and the final interview the teacher participants consistently alluded to their most influential factor in instructional decision-making being the students. However, there were various elements of this influence that kept resurfacing throughout the research process. The main element mentioned was student needs, meaning the teachers felt their particular students actually require physical movement and cognitive engagement to be productive in their learning. Additionally, student need did not just refer to academic needs but also behavioral needs and student attitudes overall and daily. Other elements falling under the influential element of students were providing genuine opportunities for application of skills. This was done so the relevance of the skill could be experienced and include time for students to develop multiple problem solving methods. These elements all involve the students being active participants in their own learning and understanding the purpose of what they are learning in order to build buy-in.

Even though it was not clearly apparent from the ranking chart constructed by participants in the final interview, it is reflected throughout responses that while students are a major influence on instructional decision-making the curriculum is the driving force. However, even though students were identified by participants as the most influential factor, the research revealed adhering to the curriculum comes first and then student needs are taken into account as teachers move through each skill. In this case, the curriculum is Eureka Math as that is the program teachers are required to follow to meet state standards. A clear majority of responses centered around the delicate balance teacher participants' must employ in order to meet the needs of their students while

also attending to the required curriculum program. Additionally, meeting the needs of the curriculum included making instructional decisions based on the skill being taught as not all strategies work for every skill. All in all, the top two influences identified in the research were students and curriculum.

Also identified as an influence was time, as in the amount of time provided for planning and the amount of time needed to teach each skill. The participants all mentioned that in an ideal world time would not be such a factor, which is reflected in their responses in the follow-up interview, but that it really has an effect on everything teachers do. Moreover, all teacher participants expressed frustration with the requirement of staying on the strict schedule provided to them by the district office through the implementation of Eureka Math and the need for more time to plan more effective lessons. All participants mentioned that there is never enough time and they feel that there probably never will be. The final main influential factor identified in the research were the teacher participants' experiences both professionally and while they were in school. The participants referenced positive role models they experienced while they were in school as well as how much constructive co-workers can influence one another. Two out of the three participants referenced their effective working environment with their grade level teammates to be very influential since they do a majority of their planning together and get ideas from one another. Furthermore, it was identified that teachers talking with one another and sharing ideas, across grade levels and with teachers at other schools, can be very beneficial to adding tools to one's instructional tool box. Additionally, past teaching experiences help shape what instructional strategies they use in their classrooms. Over their years of experience, they have developed tools they know

are effective at engaging the students in their classrooms and they adapt these tools to meet the ever-changing needs of their students. Furthermore, all participants also mentioned changes they make daily based on their experience with students the prior day or even as recently as right before they begin a lesson.

Overall, those were the main influences identified and experiences explained throughout the research process. An additional factor discussed was personality of the teacher, which all participants mentioned was a factor in how they taught but they did not seem to give this factor much thought. Also, administration was discussed but since these teachers feel they are trusted by their administrators to do what is best for students, administration really is not a highly influential factor. Furthermore, the element of classroom environment and school climate were also examined but were not found to be mentioned as much as the previously referenced factors throughout the research process. While all of these are factors in the teacher participants' decision-making process they were not the most influential.

Summary

The research process for this study involved three similar elementary schools in the participating county in Florida. For comparison purposes all three schools received "C's" as their school grade for the 2016-2017 school year and are identified as Title I (see Table 1). Then, administrators from each school identified three nominees that consistently integrate instructional strategies that increase engagement in their mathematics classrooms. In order to make sure the researcher and participants had a common classification of student engagement, administrators were provided a definition of student engagement and examples of engaging strategies to help them make an

informed decision about who to nominate for this study (See Table 2 and Table 3). Finally, from the three nominees at each school, the researcher contacted the first candidate on each administrator's list and all agreed to participate.

Once participants were secured, initial interviews were scheduled and conducted over the telephone. The initial interview consisted of eleven questions aiming to get at the essence of what influences the instructional decision-making of grade three through five mathematics teachers when it comes to integrating engaging strategies. After conducting, transcribing, and analyzing the interviews it was identified by the researcher that all teacher participants demonstrated an enthusiasm for teaching mathematics and making the subject enjoyable for their students. In alignment with the topic of the study at hand, all teachers utilize engaging instructional strategies to help their students be active participants in their learning. The main influential factors identified in the initial interview were: Administrators, students, classroom environment, skill/task, time, curriculum, and school climate/co-worker attitudes. Therefore, these elements were explored further in the final interview.

After the initial interviews were completed, transcribed, and analyzed classroom observations were scheduled. The researcher felt conducting classroom observations added to the quality of the research by providing a lived experience in the classrooms of the teacher participants. Additionally, observations provided the researcher an opportunity to witness what strategies were being utilized by teachers and how. From the classroom observations, the researcher witnessed teachers facilitating learning as opposed to utilizing direct instruction. Teachers were sticking to the curriculum program, Eureka Math, but also providing students opportunities to explore the concept being taught

through whatever method worked best for them. Therefore, teachers provided manipulatives, dry erase boards for students to draw their problem solving process, and other hands-on student created materials to help all students learn the skill. One final take-away from the observations was the community of learners that was established in each classroom. Students were excited to share their thought processes, were not afraid to make mistakes as they knew they could learn from them, and truly encouraged one another.

Using what was learned in the initial interviews and the classroom observations, the researcher created nine questions aimed to dig deeper into identified influences for the final interview. Similarly to the initial interview, teachers continued to mention student needs being of concern but more thoroughly went into the strong influence the curriculum has on their instructional decisions. Additionally, participants discussed another influential factor- their experiences. These experiences included past experiences from when they were in school, as well as their professional experience as a teacher and with other teachers. Furthermore, all participants talked about the positive changes they see in their students when they utilize engaging instructional strategies. They provided examples of improved attitudes, willingness to participate, and students encouraging one another throughout the learning process.

Overall, when examining every element of data gathered in the study together it is clear that what influences the teacher participants the most is a delicate balance of the required curriculum and the needs of students. Another big influence identified through this study was the element of time; time with students to cover the skills and time to plan for how to effectively facilitate students learning the required skills. The final most

influential factor identified were experiences had by the teacher participants. Experiences ranging from when they were in school as students themselves, to their college years, to professional experience, and even daily experiences with students all influence their instructional decision-making.

CHAPTER 5

RESEARCH CONCLUSIONS AND IMPLICATIONS

The purpose of this study was to gain better insight into the influences that play a role in teachers' instructional decision-making when it comes to integrating strategies that increase student engagement in mathematics. The specific research question addressed was: How do proficient teachers' experiences and influences impact instructional decisions regarding student engagement in mathematics? As can be seen from the research included in Chapter Two and other preceding chapters of this study, it is well documented that student engagement is an important element of learning. Therefore, the researcher aimed to get a better understanding of what influences proficient mathematics teachers the most and what are their experiences. Then, these findings can hopefully be utilized in future professional development regarding student engagement in mathematics for teachers who are already in the profession and also for pre-service teachers. Additionally, influences and experiences were explained that may also help administrators hire teachers that implement engaging instructional strategies, as student engagement has been identified as important to learning.

Conclusions

It became apparent though this research that the curriculum program and student needs are the main driving forces behind teacher participants' instructional decisions in mathematics. Nixon and Williams (2014) support this finding by stating, "Curriculum

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design is crucial to maximising the students learning experience and is often overlooked and underutilized" (p. 26). Therefore, school districts must be very careful when choosing a program to which teachers are expected to adhere while attempting to meet the requirements of the compulsory state standards. Curriculum is not always synonymous with a defined program but in the participating county this does seem to be the case, or at least is how teachers are interpreting the Eureka Math provided by District Office. After completing this study it is clear that the curriculum program has great control over what teachers are doing in their classrooms. Ideally teachers would be provided the state standards and time to go through each one to compile the best activities that meet the needs of their specific students while using the provided program as a tool to support learning, not a controlling element. Teachers having a deep knowledge of the standards and the material being taught is imperative to student performance and providing an effective learning environment (Zhang & Chen, 2017). However, it is understood that this would take a lot of time outside of teaching hours, therefore requiring teachers to be compensated for this planning time. Time is of the essence and budget constraints tie school districts' hands as to how much they can compensate teachers for additional time spent on this type of task. The teachers in the study have found ways to work within the required curriculum while also meeting student needs but it was still quite evident that there are times they know a better way to teach a skill but feel obligated to stick to the provided program.

As a direct result of the research conducted during this study, the phenomena occurring that most influence teachers' instructional decision-making when it comes to integrating strategies that increase engagement in mathematics is the perception that they

must stick to the strict guidelines of the curriculum program provided by the district. It is unknown if this is the message the county is intending to push forward but that is the way teachers are interpreting what is being said. All teacher participants in this study mentioned that they felt pressure, not from their administrators, but from the Eureka Math program and that district pushes teacher to stick to the one lesson a day structure of the program. Therefore, this perception is the driving phenomenon behind instructional decisions being made in mathematics.

In the researcher's opinion, school districts should allow teachers the professional autonomy to do what is best for their students. Teacher and learner autonomy has proven to be beneficial to student learning (Smith & Erdogan, 2008). As all teacher participants in this study mentioned, their student performance data is good and as a result their administrators leave them to do what is best for their students. Why could that not be the case at the district level as well? It is the teachers who spend the most amount of time with students, they should be the ones making instructional decisions as they know their students best. While it is a fact that there will always be teachers who need more guidance; alternatively, there will always be those who have proven themselves professionally. For the latter, autonomy to fully make instructional decisions may yield better student performance results than strict adherence to a program. Conversely, beginning and less proficient teachers may benefit from the guidelines of a specific curriculum program. According to teacher responses to the interviews in this study, it appears pairing newer teachers with more experienced teachers would help provide more guidance for creating meaningful learning experiences as opposed to following scripted lessons. The fact that the teacher participants mentioned their experiences in the profession help influence their instructional decision-making, time

mentoring newer teachers is an excellent development opportunity for both parties to learn and grow. Education is not one size fits all; therefore, using a program stringently will not yield the best results.

In addition to student needs and the requirements of the curriculum, time was another major influence in teacher participants' instructional decision-making. As mentioned in the interviews, the participating county does utilize professional learning communities (PLCs) which provide specific blocks of time to teachers for planning together. However, as was also mentioned, on many occasions this earmarked block of time is reserved for English Language Arts. Therefore, specific time for planning for mathematics should also be provided. Furthermore, it is the researcher's belief that if the district backed off from pushing the strict schedule of Eureka Math, teachers could really use planning time wisely and create mathematics lessons that are truly valuable to students' learning. Fostering autonomy and professional decision-making is important for current and pre-service teachers (Smith & Erdogan, 2008). Additionally, teacher participants mentioned they need more time with their students teaching the actual skills on occasion. Again, this is another opportunity for the district to provide teachers with the autonomy to make instructional decisions that most benefit the students. If a teacher sees students need more time with a skill before moving on providing additional time will give students a more solid knowledge base from which to build. Yes, at some point they will need to move on, but professionals know when that point will come and will work in strategies that make better use of their time and insure coverage of all required standards are met throughout the school year. The firmer a foundation of knowledge students have to build on, the quicker they can grasp topics that build upon that base; therefore, time to thoroughly build those foundational skills is critical to

future success. It is of note though, that the participating district may also hold these beliefs but according to interview responses from this study, that is not how teachers are interpreting the messages received from the district.

The final most influential factor in the teacher participants' instructional decisions was their past experiences. They all referenced experiences while they were in school as students themselves, in college, during their professional teaching years, and experiences with other teachers. Therefore, based on these findings, it is important that teachers are provided opportunities to talk with one another and share ideas. Additionally, opportunities to attend professional developments revolving around specific needs of teachers and students must be encouraged. Furthermore, pre-service education programs also need to educate teachers on how to effectively plan mathematics lessons using engaging strategies. This includes learning how to decide if students are understanding what they are learning, as well as how to engage the hard to involve. As was mentioned many times by the teacher participants in this study, teachers notice improvement in student attitudes as well as their willingness to learn when engaging strategies are implemented.

Figure 1 represents the findings of this study that at the center of everything is the student, as teachers are trying to meet the learning needs of each student daily. However, the curriculum affects what teachers have students do. Therefore, the student is at the center of the graphic, but curriculum surrounds them due to the control curriculum has over what students learn. Furthermore, time influences everything since there are only so many hours in the day, therefore it surrounds/influences the students and the curriculum. Lastly, experiences enclose all of the other elements because experiences run in the background, influencing all decisions whether one is aware of their effect or not.

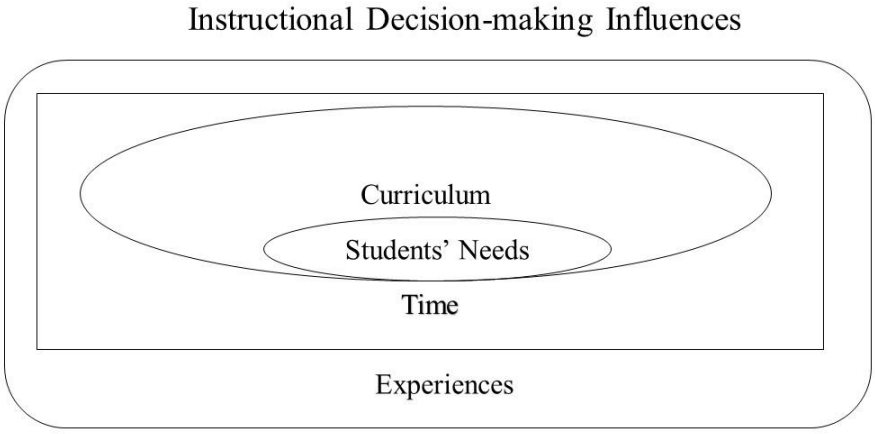

Figure 1. Pictorial representation of research findings as described in previous paragraph.

Implications

The implications of this study can be far-reaching as they can effect change at the district level, school level, and within teacher preparation programs. This research reveals the power of decisions made at the county office and how severely they impact classroom instruction. Therefore, curriculum programs need to be selected with extreme caution and the expectations of adherence explicitly communicated. The programs must be researched thoroughly and even tested out to evaluate their effectiveness with various types of students. Furthermore, it must be taken into account that there are times these requirements will stifle professional decision making that could severely impact student learning. Thus, there must be room for concessions to be made when students are making learning gains and performing well.

There seems to be a bit more freedom at the school level as administrators know the teachers at their schools and can make decisions based on the abilities of each professional.

It is clear, however, that the freedom insinuated by administrators does not necessarily affect the teachers as much as the message they believe they are receiving from the higher-ups at District Office. As a result of the decisions at the county level and the freedoms allotted by administrators, teachers are finding ways to work within the confines of the curriculum and still meet student needs even though it may not be exactly what is required by the selected curriculum program. However, this results in discrepancies in instruction as not all teachers feel comfortable or confident in doing this as reflected in some of the participants' interviews. Therefore, a happy medium must be established where teachers are provided the standards to work through and come up with their own activities that are effective for their particular group of students, while using the textbook curriculum as a guide for instruction and activities as well. They must not only be provided time to do this but also time to work together to make sure all students are receiving effective instruction. This time for planning could include Professional Learning Communities where teachers are working together to plan meaningful learning experiences, as well as discuss what has worked in the past and share effective and ineffective strategies for specific skills.

Furthermore, this research could also be utilized to provide quality professional development in integrating engaging instructional strategies within upper elementary mathematics classrooms. Encouraging and developing deep knowledge of pedagogical practices enhances the quality of instruction students experience (Marzano & Waters, 2009). Professional development centered around creating engaging learning experiences for all students would not only demonstrate support for using such strategies but also give teachers time to plan together and be creative. Integrating more engaging strategies in their mathematics classrooms should yield better learning results in students.

Lastly, when hiring for open positions, administrators could structure interview questions to gain an understanding of the candidate's ability to create meaningful learning experiences for students, integrate engaging strategies, and think outside the box while maintaining the integrity of the curriculum. They could ask questions about how a candidate views the curriculum provided by the District Office, what experiences a candidate has with integrating engaging instructional methods, and ask candidates to provide examples of engaging strategies they employ. This type of questioning would help administrators decide if a candidate fits with their schools' goals and student needs.

In relation to teacher preparation programs, this research indicates a need for the skills involved in planning from the ground up. Teaching cannot just be reading scripted lessons out of a Teacher's Edition, we must teach future educators how to interpret state standards and create activities that are engaging and beneficial to students. Furthermore, teachers should be facilitators of learning, as was demonstrated in the classroom observations, in order to keep the students' brains engaged and developing problem solving strategies. As an instructor in a pre-service teacher education program, the researcher has witnessed the requirements imposed on teachers to adhere to scripted lessons and strict timelines. Therefore, it should be a purpose of teacher preparation programs to help teachers learn to work within the confines of a curriculum and the expectations set forth by the decision makers. It is imperative that future teachers are provided opportunities to integrate strategies that increase engagement, as well as create meaningful learning experiences for their students.

Engaging Strategies Being Utilized

Throughout this research study, teachers mentioned various strategies they use to increase engagement in mathematics and many of those strategies were also witnessed during the classroom observation. For example, all teacher participants utilized dry erase boards for students to work through their thinking and problem solving methods. Additionally, they all used specific language to facilitate learning so the students were doing most of the thinking and talking, not the teacher. Table 6 below provides a breakdown of the strategies utilized by the teachers participating in this study who effectively integrate strategies that increase student engagement in their mathematics classrooms.

Table 7
Effective Engagement Strategies Utilized by Teacher Participants

Tool/Strategy	Uses/Effects
Dry erase boards	Students work through problem solving methods without committing to paper, can constantly revise their thinking, provides a visual for teachers to assess quickly, provides a visual to support class/partner discussions
Teacher language	Establishing expectations, asking students to "Show me" how they came to their answer, providing encouragement, asking students to explain their thinking, asking students "How do you know," asking students "What do you see," encouraging explanation of mistakes in order to correct any misconceptions, asking "Is there another way," to encourage various ways of thinking about a problem
Randomly calling on students	Keeps everyone engaged because they do not know who will be called on next, provides equal opportunities for all students to be involved in the discussion
Manipulatives	Provides a visual and tactile representation for students to maneuver and physically experience concepts (example: fraction tiles)
Other strategies mentioned	iPad educational applications, students sharing thinking with partners and whole class, small groups, providing opportunities for students to agree/disagree with classmates

The utilization of the strategies highlighted in Table 6 are excellent examples of engaging instructional strategies that can be implemented in mathematics classrooms. The teacher participants in the study indicate that these strategies are effective with their particular students but that student needs change daily. Therefore, the teachers use a variety

of strategies they have collected over the years to ensure all students are engaged and invested in their own learning, despite their comfort level with the subject area or skill at hand. Additionally, many of the strategies mentioned in the table do not require any special planning or materials, like the questioning phrases, making them easy to integrate into any lesson or subject area. In fact, any teacher at any ability level could easily integrate the above mentioned strategies with minimal effort, yet making a great impact on student engagement and learning. Due to experience, it is the researcher's belief that if teachers are made aware of how easily simple strategies can be integrated to increase student engagement and therefore improve student performance, more teachers would be willing to utilize these instructional methods.

Limitations of this Study

Due to the nature of phenomenology, a small sample size was utilized to dig deeply to get to the essence of teachers' influences to utilize engaging instructional strategies in their upper elementary mathematics classrooms. While this is typical of phenomenology and should not be considered a limitation; some may view it as such. The study was also conducted in just one county in Florida, as opposed to multiple counties across various states, however that is also acceptable with phenomenological studies. It is the firm belief of the researcher that the main findings would be similar no matter where the study was conducted as long as the district has the same amount of control over the curriculum as they do in the participating county.

Additionally, teacher participants were selected by school-based administrators. Therefore, the researcher was reliant upon the familiarity of the administrator with the instructional strategies of the nominated teachers. In order to ensure the administrator and

the researcher were on the same page as to what student engagement is and involves, a definition of student engagement and examples of strategies were provided to aid in the selection process. Furthermore, the classroom observation helped confirm the use of engaging strategies in mathematics by the selected teacher participants and they were aligned with the provided definition.

Furthermore, school performance data from 2017 and 2016 (as comparison) were utilized since current 2018 data was unavailable. Therefore, this is a limitation as observations and interviews were conducted in 2018 for which there is no current data to reference. Even though the referenced data is for the previous school year, it is believed by the researcher to be relevant to the current situation of the teachers and students involved.

Finally, the researcher is clearly very passionate about the benefits of utilizing engaging instructional strategies in mathematics. In order to circumvent this bias, bracketing was employed throughout the study. Bracketing is when the researcher puts aside any preconceived notions to not influence the research process (Husserl, 2014). While conducting all research, the researcher put aside all personal beliefs in order to truly study the greatest impacts to teacher instructional decision-making in relation to integrating engaging strategies in mathematics.

Recommendations

Based on the information revealed in this study through participants' experiences and influences, the researcher has developed recommendations to help encourage the use of engaging strategies in upper elementary mathematics classrooms. Since it is well documented that student engagement in the upper elementary years is important to students' school careers, it is important that engaging strategies be implemented in classrooms.

Mathematics often has negative attitudes associated with the subject area, therefore there is even more of a need to get students engaged and actively learning. Thus, pre-service and current teachers should be provided opportunities to not only attend targeted professional development opportunities but also be given time to go observe co-workers to integrate engaging strategies well. In the interviews with participants, they revealed the power of talking to other professionals and sharing ideas, therefore actually being able to witness effective strategies in person would be even more beneficial. Perhaps administrators or other school personnel could take over a class so that the teacher could be free to go watch another teacher's engaging mathematics lesson. Then they could get together afterwards to discuss what students were doing and what strategies were utilized. Additionally, this model would provide teachers with more experiences, which this research has revealed to be a very powerful influence on instructional decision-making.

If school districts want to promote a student-centered learning environment, they must also be cautious of what curriculum program they choose to implement. While Eureka Math has engaging strategies interwoven into the curriculum, it appears that teachers are not getting the message that it is okay to use the provided strategies, they are needing additional strategies, or they simply do not have the time to implement the provided strategies in the manner the program intends. This is apparent in their interviews where they constantly refer to the constraints they feel Eureka Math or the participating district place them in that restricts professional discretion in their choice of instructional method. Therefore, not only is the program important but also the message teachers are receiving about how to implement the chosen program. The proficient teachers in this study have found work arounds for meeting student needs and integrating the curriculum but not all teachers are this capable.

The students in these classrooms are having quality learning experiences through engagement, however this is most likely not the case for all students and classrooms. Making sure each child receives quality instruction can be aided by providing professional development, mentorship programs, and a clear message of what implementation of the chosen curriculum program looks like.

This research has also lead the researcher to develop some general recommendations referring to instruction as a whole, not just related to integrating student engagement. First, teachers who have proven themselves to be effective instructors should be provided autonomy to make instructional decisions that meet the needs of their students in the most effective manner. Additionally, for those teachers who are not as competent, they can be paired with a high performing teacher to form a mentor-mentee type relationship where they can learn from the highly qualified teacher. Second, great care must be taken when selecting a program to serve as a district-wide curriculum. School districts need to make their expectations of program execution explicitly clear to teachers so there is consistency from teacher to teacher and school to school. Finally, teachers need to be provided time to talk to one another and share ideas. It was revealed in the interviews that experiences and professional conversations are very beneficial to teachers. Therefore, protected planning time that focuses on all subject areas must be worked into the schedule somehow. As is noted throughout this study, time is a major factor in effective planning and quality teaching therefore this is a lofty goal but with the importance of experiences revealed in this study it is a beneficial focus.

Summary of Study

This study aimed to get to the essence of what influences third through fifth grade teachers to integrate instructional strategies that increase student engagement in mathematics. To begin, a definition of student engagement needed to be identified. Behavioral engagement, cognitive engagement and emotional/psychological engagement were elements aiding in defining such a difficult term that repeated regularly throughout the research (Fredricks, Blumenfeld, & Paris, 2004; Lee, 2014; Mahatmya, Lohman, Matjasko, & Farb, 2012). Behavioral engagement includes physical participation, attendance, and effort (Fredricks, Blumenfeld, & Paris, 2004; Lee, 2014; Mahatmya, Lohman, Matjasko, & Farb, 2012; Wentzel, 2003). Cognitive engagement consists of actively thinking about the task or problem at hand and students' investment and willingness to participate (Fredricks, Blumenfeld, & Paris, 2004; Mahatmya, Lohman, Matjasko, & Farb, 2012; Metallidou & Vlachou, 2007). Emotional/psychological engagement encompasses attitudes; negative and positive feelings about teachers, learning, and school in general (Finn, 1993; Fredricks, Blumenfeld, & Paris, 2004; Lee, 2014; Mahatmya, Lohman, Matjasko, & Farb, 2012; Willms, 2003).

This study was conducted to help add to the body of knowledge regarding the influences affecting teacher decision-making and implementation of strategies that increase student engagement. Accordingly, students' engagement in elementary school has a strong correlation to their continued engagement throughout the remainder of their schooling years (Mahatmya, Lohman, Matjasko, & Farb, 2012). Likewise, early school failures result in low self-esteem and over time students disengage and behavior declines (Finn, 1989). Therefore,

engagement is an important element of the learning process in elementary school that affects students throughout their school careers.

Theoretical Foundations of the Research

The theoretical framework for this study was constructivism as student engagement involves students actively participating in their learning. Consequently, the learning process involves actively constructing knowledge, not passively sitting in class hoping to simply absorb new information which aligns with the usage of engaging instructional strategies (Duffy & Cunningham, 1996). Additionally, constructivism attends to the belief that the mind is not empty and waiting to be filled with knowledge; learning occurs through engagement, experiences, and interacting with the environment (Scholnick, Kol, & Abarbanel, 2006). Therefore, constructivism is appropriate for this research as student engagement aims to stimulate the minds of learners by providing opportunities for knowledge to be constructed in order to create understanding.

The epistemology of this study is also constructivism as experiences are how one knows what they know. Equally, learning is something students do because of and through their experiences (Ambrose, Bridges, DiPietro, Lovett, & Norman, 2010; Dewey, 1917; Piaget, 1950). Furthermore, student buy-in and enhancement of learning is fostered when students start out participating, then grow to enjoy learning by being behaviorally, emotionally, and cognitively engaged (Fredricks, Blumenfeld, & Paris, 2004). Integrating strategies that increase student engagement provides opportunities for students to be active participants in their learning and build upon experiences. Therefore, the epistemology of this study involving student engagement is aligned with the beliefs of constructivism; we know what we know as a result of our experiences.

The Research Process

This qualitative study involved three participants from three similarly performing elementary schools within the same county in Florida. Participants were selected by school-based administrators who are personally known to the researcher and consider student engagement a priority in their schools. Administrators were asked to provide the names of their top three engaging teachers in grades three through five that had at least five years' teaching experience. One participant from each school was selected to participate and agreed. The three main parts of the research were two semi-structured interviews (an initial and a follow-up) and a classroom observation occurring in between the interviews.

The initial interview was conducted over the phone involving the following questions posed to all participants:

1. What is your definition of student engagement?
2. What instructional methods do you use to engage students in mathematics?
3. What influences you to integrate instructional methods in mathematics that are engaging for students? (List any and all)
4. In your experience, which one of those identified influences would you say is most impactful? Why?
5. In your experience what do you consider the most when deciding to use an engaging teaching strategy?
6. What has been your experience with administrators regarding instructional decisions as a whole?

7. What has been your experience with administrators regarding integrating strategies that increase student engagement?
8. What have you experienced with students when you integrate strategies that increase engagement in mathematics?
9. What have your experiences been like with parents regarding utilizing strategies that increase engagement in mathematics?
10. What experiences have you had with co-workers in regards to integrating strategies that increase engagement?
11. In your experience, does the climate of the school/faculty affect yours or others instructional decisions?

The interviews were recorded and transcribed by the researcher for analysis and familiarity. Aligning with phenomenology, the interview transcripts were read for a concept of the whole and common meaning units were identified. The common meaning units when it comes to influences on teachers' instructional decision-making in their mathematics classrooms identified in the initial interview were: Administration, classroom environment, students, the skill/task at hand, time, curriculum, and school climate/co-worker attitudes.

After analyzing the data gathered in the initial interview, the researcher conducted classroom observations. Conducting the classroom observations were valuable to the researcher as they provided a first-hand experience of what strategies were being utilized in each classroom and how teachers were implementing engaging instructional strategies. After comparing notes across all observations the researcher noticed that there are things the teachers are doing (questioning, providing materials) and things the students are doing as a

result (completing problem solving activities, explaining their thinking) that facilitate learning.

In addition to the engagement strategies purposely being implemented to facilitate learning, there were other commonalities across all three classrooms. Every teacher encouraged students to show what they knew and explain their thinking by questioning their methods and reasoning. Furthermore, all teachers provided the tools and opportunities for each student to create a visual aid, whether it was on a dry erase board or using manipulatives of some sort. Likewise, students encouraged one another and helped each other genuinely. Finally, all teachers explained their expectations, both at the beginning of the lesson as well as through completion which allowed students to knew exactly what they were supposed to be doing throughout each task.

Using what the researcher learned in the initial interviews and the classroom observations, the flowing questions were developed to get to the true essence of what influences these teachers.

1. Is there something in your personal schooling experience (growing up) that influences your use of engaging strategies in mathematics? Explain that experience.
2. Is there something since you've been teaching that you have experienced that influences your use of engaging strategies in mathematics? Explain that experience.
3. Rank in order of influence on instructional decisions and explain why you put each one in that spot. (Participants were asked to write down the following terms, then take their time ranking each one.)

Administration. Classroom environment. Students. Skill/task. Time. Curriculum. School climate/co-worker attitudes.

4. Are there any other influential factors I missed in the above list?

5. Is there something about your personality that you feel influences you to utilize strategies that increase engagement?

6. You've mentioned your students need engagement, why?

7. What do you see when you use engaging strategies?

8. What would you need in order to increase your use of engaging strategies?

9. Have you had any negative experiences when attempting to integrate engaging strategies in mathematics?

In analyzing the responses to the above questions, it was clear that the curriculum program had the most influence over students. Even though each teacher mentioned that their student needs come first, the researcher believes this is what teachers would like to think, and even strive to achieve. As is clearly reflected in their constant reference back to the perceived inflexibility of Eureka Math, throughout both interviews, it is the strongest driving force. Of course, teachers come to school every day to help their students learn so it makes sense that they mention their students come first, and the researcher believes that to be true. However, when digging deeper through the questions posed in the follow-up interview, combined with the observation and initial interview, it became clear that while teachers would like to believe their students come first, it is actually the curriculum program that is in control. For The participating county, this is a result of the message teachers believe they are receiving from District Office but that may not be the actual intention. In the end, all participants continually mentioned how they attempt to find a delicate balance between the needs of the program and the needs of their students.

Research Findings

Combining all gathered data, the influence of time came in just behind curriculum and student needs. When participants mentioned time, they referred to time with students to actually work through the skills and time to plan meaningful lessons that align with the curriculum and student needs. The final most influential factor in instructional decision-making revealed by the research were the past experiences of the teacher participants. Furthermore, when participants discussed their experiences they mentioned experiences as a student themselves as well as their experiences within the teaching profession. This professional experience included learning strategies that have worked with prior students as well as productive conversations had with other teachers.

Overall, the most influential factors influencing teachers in grades three through five instructional decision-making when it comes to utilizing strategies that increase engagement were: the curriculum, students, time and experiences. Other factors also mentioned in different pieces of data were teachers' personalities, the classroom environment, and available materials. In order to increase student engagement, teachers identified that they would need more time for planning and greater freedom to integrate their own ideas and learning experiences tailored to their specific class.

Future Research

In the future, this study can be taken further by completing the same research process with additional teachers, in other school districts, and other states. These findings could further prove that the sentiments uncovered in this study are truly universal. Additionally, the same research methods could be employed in other subject areas since there is a clear benefit to utilizing engaging instructional strategies that is not specific to mathematics. In

support of the researcher's beliefs that teachers should have more autonomy in instructional decision-making, an action research study could be conducted to see what happens when teachers plan starting with the standard and not a curriculum program. It would be extremely interesting to see what teachers come up with when left to their own devices and expertise. The options for building upon this research are truly endless, as there are many aspects that can be investigated further. It is the intention of the researcher to continue this deep dive into the power of engaging strategies and how teachers can implement those strategies effectively, with support from administrators and district officials.

Specifically relating to this study, it would be worth investigating what it is that the participating county is doing or saying that makes teachers feel so restrained when it comes to making instructional decisions. It is clear from the interviews in this study that teachers feel forced by district to adhere to the strict nature of Eureka Math, but is that truly what the participating county is intending? Professional development opportunities could be observed, emails regarding the curriculum analyzed, and conducting interviews with curriculum decision-makers at the district level would provide clear insight as to the intention of the district. The findings from a study like this could help provide teachers additional clarification as to the exact expectations for instruction in relation to the utilization of Eureka Math. Additionally, in relation to pre-service teacher education, it would be of interest to investigate what happens when future teachers are purposefully trained to integrate strategies that increase student engagement in mathematics throughout their university programs. Teachers in a pre-service program could be followed throughout their student teaching experience, as well as their first few years of teaching, to see how learning about engaging strategies benefitted their students and themselves as professionals. Interviews with the

teachers and students could be conducted, as well as an analysis of student performance data compared to that of students whose teachers did not receive such purposeful instruction in integrating engaging strategies.

Final Thoughts

According to this research, the curriculum is the main influence on teacher participants' instructional decision-making in mathematics. Throughout the research, participants made it clear they feel bound by the confines of Eureka Math but do not necessarily dislike the program. It is of the researcher's opinion that if the message that the curriculum program is meant to be a tool to support teachers' instructional methods, not the main controlling element, they would feel more comfortable integrating their own methods that better suit the needs of students. Again, this could be the intended message of the district but that does not appear to be how teachers are interpreting what is being provided. The main focus of teachers should be helping students achieve success and make learning gains, therefore they should have the freedom to use their professional expertise to decide the best method for facilitating learning.

Furthermore, providing time for teachers to thoroughly look through the standards and plan meaningful learning experiences for students would be highly beneficial. It seems that the district is supplying the curriculum program to help alleviate this task from teachers, but teachers still need to be familiar with their grade level standards and be able to create meaningful learning experiences based on the needs of their particular students. Teachers know their students best, not a program, therefore they should have the autonomy to make instructional decisions fully and completely provided their students are showing growth and performing well. Perhaps in an effort to help teachers by

providing a strict curriculum, it has really hindered their professional growth and decision-making, therefore resulting in underperformance of students. Therefore, it is the researcher's hope that teachers will be provided further autonomy in decision-making so they can integrate more strategies that increase student engagement in their upper elementary mathematics classrooms.

As supported by the research in this study and review of the literature, it is clear that utilizing engaging instructional strategies in mathematics is beneficial to students. It has also been established that engagement in the upper elementary years has profound positive effects on student engagement throughout the rest of their schooling careers. Therefore, it is extremely important that teachers, administrators, and district leaders encourage the use of engaging instructional methods. Valuing teachers' expertise, not only when it comes to education but also in regards to truly understanding the needs of their students, is imperative. In the end, effective teachers should have full autonomy in making instructional decisions as long as the planned lessons meet the requirements of the standards.

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APPENDICES

APPENDIX A

Mercer University IRB Approval

MERCER UNIVERSITY

Institutional Review Board
For Research Involving Human Subjects

Tuesday, January 9, 2018

Ms. Kelly D. Shadden
1501 Mercer University Drive
Tift College of Education
Macon, GA 31207

RE: What Influences Mathematics Teacher in Third Through Fifth Grades to Implement Instructional Strategies That Increases Student Engagement (H1712333)

Dear Ms. Shadden:

On behalf of Mercer University's Institutional Review Board for Human Subjects Research, your application submitted on 08-Dec-2017 for the above referenced protocol was reviewed in accordance with Federal Regulations 21 CFR 56.110(b) and 45 CFR 46.110(b) (for expedited review) and was approved under category(ies) 6, 7 per 63 FR 60364.

Your application was approved for one year of study on 09-Jan-2018. The protocol expires on 08-Jan-2019. If the study continues beyond one year, it must be re-evaluated by the IRB Committee.

Item(s) Approved:
New student application for minimum risk study involving interviews, classroom observation, and note-taking in order to identify the phenomena occurring that influences teachers' instructional decisions in the upper elementary mathematics class.

NOTE: Please report to the committee when the protocol is initiated. Report to the Committee immediately any changes in the protocol or consent form and **ALL** accidents, injuries, and serious or unexpected adverse events that occur to your subjects as a result of this study.

We at the IRB and the Office of Research Compliance are dedicated to providing the best service to our research community. As one of our investigators, we value your feedback and ask that you please take a moment to complete our Satisfaction Survey and help us to improve the quality of our service.

It has been a pleasure working with you and we wish you much success with your project! If you need any further assistance, please feel free to contact our office.

Respectfully,

Ava Chambliss-Richardson, Ph.D., CIP, CIM.
Associate Director of Human Research Protection Programs (HRPP)
Member
Institutional Review Board

"Mercer University has adopted and agrees to conduct its clinical research studies in accordance with the International Conference on Harmonization's (ICH) Guidelines for Good Clinical Practice."

Mercer University IRB & Office of Research Compliance
Phone: 478-301-4101 | Email: ORC_Mercer@Mercer.Edu | Fax: 478-301-2329
1501 Mercer University Drive. Macon. Georgia 31207-0001

APPENDIX B

The Participating County IRB Approval/Consent to Conduct Research

[redacted]

Accountability, Research, and Measurement

[redacted]

School and district info is blacked out for privacy.

February 26, 2018

Ms. Kelly Shadden

[redacted]

Dear Ms. Shadden:

Attached you will find an approval for your research study in [redacted] entitled, "What Influences Mathematics Teachers in Third through Fifth Grades to Implement Instructional Strategies that Increase Student Engagement?"

The purpose of this study is utilize the findings to add to the general body of knowledge in the area, create meaningful professional developments that aid in the employment of strategies that increase student engagement, and to influence the development of teacher preparation programs.

Your [redacted] School contacts' for conducting your research are, [redacted], Principal, [redacted] Elementary School, [redacted], Assistant Principal, [redacted] Elementary School, and [redacted], Principal, [redacted] Elementary School.

We are always interested in the outcome of research conducted in our school system. When your study is complete, please forward a brief summary of your findings to the Office for Accountability, Research, and Measurement.

Sincerely,

[redacted]

Office for Accountability, Research, and Measurement

/jg
Attachments

[redacted]

APPENDIX C

INFORMED CONSENT FORM

MERCER UNIVERSITY

Tift College of Education

What influences mathematics teachers in third through fifth grades to implement instructional strategies that increase student engagement?

Informed Consent

*****This informed consent will not be sent to participants until approval from Mercer IRB AND the participating county has been provided.*****

You are being asked to participate in a research study. Before you give your consent to volunteer, it is important that you read the following information and ask as many questions as necessary to be sure you understand what you will be asked to do.

Investigators

Kelly Derry Shadden, PhD Candidate Tift College of Education, Mercer University, Curriculum and Instruction
1501 Mercer University Drive, Macon, GA 31207, [redacted]
Dr. Jeffrey Hall, EdD Tift College of Education, Mercer University, 3001 Mercer University Drive
Atlanta, GA 30341, (678) 547-6520

Purpose of the Research

This research study is designed to identify influential factors in teachers' instructional decision making in using strategies that increase engagement in upper elementary mathematics classrooms.

The data from this research will be used to identify influential factors in teachers' instructional decision making when it comes to utilizing strategies that increase student engagement in their third, fourth, and/or fifth grade mathematics classrooms. It is the hope of the researcher to utilize the findings to add to the general body of knowledge in the area, create meaningful professional developments that aid in the employment of strategies that increase student engagement, and to influence the development of teacher preparation programs.

The researcher is a student in the Curriculum and Instruction and this research adds to my knowledge and program education since student engagement involves instructional strategies and integrates curriculum.

Procedures

If you volunteer to participate in this study, you will be asked to participate in an initial interview via WebEx or telephone taking about one hour, a classroom observation of a mathematics lesson of your choosing, and a follow up interview to provide additional clarification and dig more deeply into your lived experience.
No controls will be utilized.
Your participation will take approximately three hours: about one hour for initial interview, about one hour for classroom observation and about one hour for follow-up interview.
All participants will be treated in the same manner and answer the same questions.
No procedures being utilized are experimental

Potential Risks or Discomforts

There are no foreseeable risks with this study.

Potential Benefits of the Research

Participating in this research provides participants with an opportunity to reflect upon their teaching practices and experiences.
Throughout the researcher's process a gap in information regarding the influences upon teachers' instructional decision-making was identified. Therefore, it is the goal of the researcher to add to the body of knowledge in this area as it relates to mathematics and student engagement in the upper elementary grades. Furthermore, it is reasonable that this information could further be utilized to construct meaningful professional development and help improve teacher preparation programs in the area of mathematics education.

Confidentiality and Data Storage

All identities will be protected by pseudonyms such as "Participant A". Additionally, school information will not be identified.
Data will be stored on the researcher's computer. All interviews will be transcribed by the researcher, therefore never leaving the possession of the researcher. Mercer University does require holding on to this information for 3 years.
This study does involve the recording of interviews. Recordings will be housed on the researcher's computer and will never leave the researcher's possession. Access to the WebEx recording will only be accessible to the researcher. Recordings will only be utilized for transcription purposes.

Participation and Withdrawal

Your participation in this research study is voluntary. As a participant, you may refuse to participate at any time. To withdraw from the study please contact [redacted]. You may also respond to the participant email previously sent to you.

Data is anonymous and participants may not withdraw after first interview has been conducted. A date will be provided to participants when the date of the first interview is established. For example, if the interview is scheduled for January 2nd, you will be notified that you may withdraw prior to January 6th.

Questions about the Research
If you have any questions about the research, please speak with Kelly Shadden or Kelly's Advisor Jeffrey Hall (678) 547-6520 hall_js@mercer.edu

[In Case of Injury]
It is unlikely that participation in this project will result in harm to subjects. If an injury to a subject does occur, he or she may be seen at their local or regional medical facility. All expenses associated with care will be the responsibility of the participant and his/her insurance.

[Audio or Video Taping]
Audio will be recorded and mentioning names will be avoided. Should a name be mentioned, it will not be recorded in the transcripts, a pseudonym will be utilized.

This project has been reviewed and approved by Mercer University's IRB. If you believe there is any infringement upon your rights as a research subject, you may contact the IRB Chair, at (478) 301-4101.
You have been given the opportunity to ask questions and these have been answered to your satisfaction. Your signature below indicates your voluntary agreement to participate in this research study.

Research Participant Name (Print)	**Name of Person Obtaining Consent (Print)**
Research Participant Signature	**Person Obtaining Consent Signature**
Date	**Date**