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Teacher experiences and perceptions in implementing instructional strategies for fostering student engagement in upper elementary mathematics

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TEACHER EXPERIENCES AND PERCEPTIONS IN IMPLEMENTING INSTRUCTIONAL STRATEGIES FOR FOSTERING STUDENT ENGAGEMENT IN UPPER ELEMENTARY MATHEMATICS

A dissertation submitted in partial satisfaction

of the requirements for the degree of

Doctor of Education in Educational Leadership, Administration, and Policy

by

Gail Willis

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Leo Mallette, Ed.D. – Chairperson

This dissertation, written by

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under the guidance of a Faculty Committee and approved by its members, has been submitted to and accepted by the Graduate Faculty in partial fulfillment of the requirements for the degree of

DOCTOR OF EDUCATION

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DEDICATION

I dedicate this dissertation to my Lord and Savior Jesus Christ who has led me on this educational journey, and has instilled in me unwavering faith. He has been the wind beneath my wings, which has enabled me to soar to the greatest heights. I can do all things through Christ who strengthens me (Philippians 4:13).

Secondly, I would like to dedicate this dissertation to my dynamic and spirt-filled mother who was a “hidden figure,” and icon whose soul is in heaven. She taught me the value of putting God first in my life, and to acquire a well-rounded education. My mother was my greatest inspiration and strongest advocate who continuously emphasized the importance of maintaining a positive attitude. Regardless of life’s obstacles, my mother believed in pressing on towards the mark, until one reaches the goals that are set forth in life. Thank you, mother for being my confidant, and steadily encouraging me to continue my journey in life.

Thirdly, I would like to give precedence to my family, friends, and mentors who are the angels who have inspired me on a daily basis, ensuring that I continue persevering with obtaining the completion of my dissertation. Finally, I love you all and without you, achieving this milestone in my life would not have been possible. Thank you for keeping me steadfast and immovable.

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VITA

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Credentials and Certifications

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LAUSD EDUCATOR | 03/1996 to Present

- Educator extraordinaire, and a dynamic teacher/leader at school sites, focusing on student engagement instruction for Los Angeles Unified School District

SOUTHERN CALIFORNIA, SPECIAL ASSISTANT/DEPUTY | 04/2016 to 12/2018
California Department of Insurance | Community Programs & Policy Initiatives|
California Insurance Commissioner, Dave Jones

- Maintained and expanded community and business partnerships in support of the insurance department programs and policy initiatives throughout Southern California

Accomplishments

- Chair and organized the fundraising committee for U.S. President Joe Biden/Vice President Kamala D. Harris, and organized the fundraising committee in Southern California, raising over $100,000 for the November 2020 election

- Co-Chaired and organized the fundraising committee for Governor Gavin Newsom from June 2018 to September 2018, and raised over $100,000

- Appointed to the South Los Angeles Area Planning Commission on September 3, 2013 by the Mayor of Los Angeles, Eric Garcetti, and was elected President for two years, and currently serving as Vice President. Responsible for approving municipal land, environmental conditions, and zoning ordinances of redevelopment projects in Los Angeles

ABSTRACT

The purpose of this qualitative phenomenological research study was to investigate the factors that influence mathematical instruction of upper elementary teachers in school districts within Southern California. More specifically, this research study examined teaching strategies of upper elementary teachers' experiences and perceptions regarding implementing student engagement in mathematics in school districts within Southern California. This qualitative phenomenological research study involves teachers who utilize instructional strategies based on their best practices that foster students engaging in upper elementary mathematics. In this research study, the participants explained their lived experiences and perceptions of utilizing their chosen strategies to engage students in mathematics instruction. The literature review referenced in this study exemplifies instructional strategies, which include student engagement in the upper elementary grades that are important to life-long learning. Mathematics was specifically targeted due to the negative perceptions that students have that are often associated with the subject. Students' lack of motivation and low academic achievement are a few of their negative interpretations that are affiliated with mathematics. This study adds to the body of knowledge regarding the factors that influence teachers' instructional decision-making when it pertains to fostering student engagement in mathematics instruction. The study participants included nine upper elementary math teachers, who are working currently in school districts within Southern California. The researcher conducted semi-structured interviews to gather participants' insights and experiences, presenting an opportunity to explore their various perspectives individually. Due to the Covid-19 previous state-mandated restrictions, the examiner conducted the interviews in a Zoom virtual environment. The investigator interviewed nine participants each for one hour with ten open-ended questions that were distributed electronically. There were seven comprehensive themes that emerged during the qualitative analysis process: (a) engaging students in small group collaboration, (b) motivating students through rigorous instruction, (c) utilizing scaffolding techniques, (d) magnifying students' leadership through self-directed activities, (e) implementing high-level cognitive development activities, (f) engaging students in differentiated instruction, and (g) integrating of 21st century technology. The seven themes were congruent to the theoretical framework of constructivism, and the literature review.

Keywords: phenomenological, qualitative research, mathematics, instructional strategies, student engagement, upper elementary teachers, decision-making, credibility, validity

Chapter 1: Introduction and Overview

Context and Background Information

Abramovich et al. (2019) suggest that the elementary education system in California faces a severe crisis with upper grade students scoring academically low in mathematics due to a lack of adequate instruction within the classroom climate. Students who are scoring low academically are experiencing barriers in learning mathematics due to a lack of engagement and motivation within the classroom environment (Abramovich et al., 2019). Abramovich et al. (2019) further emphasize that in order for students to become engaged and motivated to learn mathematics, they must have an instructional environment conducive to actively experiencing mathematical concepts. Currently, most elementary teachers instruct students in a traditional capacity, which encompasses teachers lecturing to students in a whole group formation (Turner et al., 2011). Minimal participation is applicable to teachers not having students actively engaged in learning mathematics by having students listening quietly to teachers lecturing during instructional time (Harrington, 2017; Turner et al., 2011). As a result, students experience difficulties in learning mathematical concepts (Ferguson, 2010).

According to Bodovski and Farkas (2007), providing instruction that pertains to student engagement and motivation are essential in improving mathematics learning outcomes. Bodovski and Farkas further contend that student engagement instruction improves students' conceptual understanding of mathematics when they verbally interact with one another, which stimulates their cognitive development. Additionally, students can share their reasoning through small group collaboration with their peers, which increases their motivation and interest in learning mathematics. Durksen et al. (2017), argue that when students can socially interact with each other and the teacher, exhibiting strong confidence and pride while constructing math equations, this is considered student engagement.

Durksen et al. (2017), further contend that when teachers concentrate their instruction on students being actively engaged in learning mathematics through small group collaboration, they are motivated to learn mathematics, which exhibits an interconnection between student engagement and motivation. Durksen et al. (2017), further suggest that student engagement refers to the degree of inquisitiveness, curiosity, interest, optimism, and passion that students exhibit in the learning acquisition process, which extends to the level of motivation that they have acquired through the instructional practices of the teacher. Moreover, when students begin to believe in themselves and have a student-centered classroom environment, as a result, they demonstrate growth and development in their mathematical skills (Bodovski & Farkas, 2007). A student-centered environment is comprised of students who are actively engaged in learning mathematics through small group collaboration, which involves students engaging in critical-thinking and analysis (Bodovski & Farkas, 2007).

Furthermore, when teachers use instructional strategies that focus on students being actively engaged in mathematics, it exemplifies that students are motivated and interested in the subject (Attard, 2012). Goldman and Pellegrino (2015) argue that student engagement involves instruction, promoting student action, and learners who participate in rigorous collaboration, critical-thinking activities, and continuous informal diagnostic evaluation that dispenses feedback to guide the learning acquisition procedure. Hence, this research project pertains to the factors and experiences of upper grade elementary teachers that utilize student engagement strategies in mathematics using rigorous collaboration (Schunk, 2012).

Raines and Clark (2011) suggest that technology is one of the main ingredients in students becoming actively engaged in mathematics within the classroom atmosphere, enabling them to connect math with 21st Century Science, Technology, Engineering, and Mathematics (STEM). Raines and Clark further contend that if more teachers would incorporate technology in the classroom climate while teaching mathematics, it provides differentiated learning for students, which encompasses a variation of learning tools that increase their motivation to learn. Moreover, integrating technology with mathematics in the learning process will enable students to improve their reasoning skills, which will increase student motivation and student engagement (Raines & Clark, 2011). Apkon (2013) suggests that students must become prepared to learn mathematics within a collaborative environment, because our society is on the brink of 21st century high-level technology. This requires businesses to become more innovative in the 21st century (Apkon, 2013). Furthermore, student engagement instruction will allow pupils to work collaboratively as a group and create innovation abilities, which is pivotal in planning them for the work atmosphere to become competitive in today's world (Apkon, 2013). Bodovski and Farkas (2007) argue that student engagement instruction in mathematics will increase student motivation, and will improve students' academic performance.

According to Durksen et al. (2017), students who are very low academically in mathematics exemplify increased student engagement growth compared to students of high academic ability. Hence, the implementation of student engagement instructional strategies in mathematics has a stronger effect on lower academic students than higher-ranking students. Durksen et al. (2017), further argue that it is essential for teachers to make learning mathematics meaningful for children to interact with one another, and become excited about the learning process.

Hill and Corey (2016) indicate that there is professional development training throughout the state of California that is specifically designed to demonstrate effective instructional strategies for teachers to implement in the classroom while teaching mathematics. The strategies concentrate on students being actively engaged in the learning process in small discussion groups; however, many of the teachers are continuously teaching in a traditional format (Harrington, 2017). California needs to take more measures to support the educational system by narrowing the achievement gap to ensure that disadvantaged minority students have equal access through effective instruction within the classroom atmosphere, specifically in mathematics (Hill & Corey, 2016).

This research study primarily investigates classroom strategies that teachers utilize to promote student engagement and motivation in students learning mathematics within an upper grade elementary classroom. There is an opportunity to formally discuss and analyze classroom practices in mathematics that upper grade elementary teachers utilize to engage students in mathematics. Through the questions posed in interviews, upper grade teachers are provided an opportunity to become reflective about their instructional practices that pertain to student engagement in mathematics. The insight gathered in this study could help teachers with implementing more engaging instructional methods in mathematics.

For many years, studies have exhibited an increasing number of elementary students who demonstrated a lack of motivation to learn mathematics because students were not actively participating in the learning process (Cox, 2018; Crean, 2016; Marsh, 2014; Pantziara & Philippou, 2015). Harrington (2017) and Scheidler (2012) argue that teachers are not enforcing the California Common Core State Standards to include pupils in the learning acquisition process actively. This concept of engaging students in the learning process will enable pupils to procure a more profound understanding of mathematical concepts (Harrington, 2017; Scheidler, 2012).

Harrington (2017) further contends that teachers have been providing math instruction in a traditional capacity for years, which encompasses lecturing to the students in a whole group formation without them being actively engaged in the lesson. Freedberg (2015) suggests that teachers providing instruction in a traditional environment have caused students to become bored and frustrated with learning mathematics and have performed poorly on the Smarter Balanced Assessment, which is aligned with the California Common Core State Standards. Table 1 is what the investigator created, which consists of the California Smarter Balanced Assessment math scores in upper grade elementary for three years from grades three through five.

Table 1

California Department of Education Math Scores

California Department of Education
Smarter Balanced State Assessment in Mathematics

3rd Grade:

	Did Meet The Math Standard	Year-Over-Year Percent Change	Did Not Meet The Math Standard	Year-Over-Year Percent Change
2016-2017	27.56%		28.17%	
2017-2018	27.82%	0.26%	27.55%	-0.62%
2018-2019	27.71%	-0.11%	26.75%	-0.80%

4th Grade:

	Did Meet The Math Standard	Year-Over-Year Percent Change	Did Not Meet The Math Standard	Year-Over-Year Percent Change
2016-2017	23.62%		28.01%	
2017-2018	24.45%	0.83%	26.27%	-1.74%
2018-2019	24.92%	0.47%	24.75%	-1.52%

5th Grade:

	Did Meet The Math Standard	Year-Over-Year Percent Change	Did Not Meet The Math Standard	Year-Over-Year Percent Change
2016-2017	15.83%		39.11%	
2017-2018	16.36%	0.53%	37.09%	-2.02%
2018-2019	16.80%	0.44%	35.27%	-1.82%

Note. Retrieved from *California assessment of student performance and progress*, by the California Department of Education, 2022, Sacramento, CA: California Department of Education. Copyright 2022 by the author.

The California Department of Education (2022) suggests that in the past three years, the Smarter Balanced State Assessment results have indicated that overall, there has been a slight increase in the math scores ranging from grades three through five. The third grade math scores in 2018-2019 slightly decreased. There is continuously a major challenge with most elementary school students not being engaged and motivated to learn mathematics within the classroom environment (Smith, 2018). In March 2020, the U.S. Department of Education approved California's request to waive statewide accountability and reporting requirements for the 2019-2020 school year (California Department of Education, 2020).

In June of 2020, the Governor of California approved Senate Bill 98, which prohibits the California Department of Education from publishing state and local indicators in the 2020 Dashboard due to Covid-19 previous state-mandated restrictions, and distance learning (California Department of Education, 2020). Hence, the 2020 Dashboard can only report the local educational agency and school details, student population data, and a webpage that reports the graduation data (California Department of Education, 2020). Currently, the California School Dashboard goes beyond test scores, it exhibits more of a complex picture of how schools and districts are meeting the educational needs of all students (California Department of Education, 2020).

Smith (2018) further argues that if pupils are not actively collaborating in learning mathematics, their interest in the subject will decrease tremendously. Smith states that encouraging students to learn mathematics has been one of the major challenges that teachers face daily. Posamentier (2013) suggests that teachers need to become professionally trained in utilizing student collaboration strategies so that students will become excited to learn mathematics and excel academically. As a result, this study aims to add to the body of knowledge by combining the elements of student engagement in upper elementary school mathematics and what influences teachers' instructional choices.

Problem Statement

The problem is that for many years, teachers have been teaching mathematics in a traditional capacity, which includes teachers lecturing to students in a whole group formation with very limited student engagement instruction and participation (Harrington, 2017; Scheidler, 2012). Consequently, students have become extremely bored with learning mathematics, and have scored low academically on math assessments (Freedberg, 2015). The fact that students have scored low academically has created a learning gap, which consists of the difference between what students are expected to know compared to what they have actually learned (Freedberg, 2015).

Due to the lack of teachers using student engagement instruction in the classroom climate, there have been an increasing number of upper elementary students who lack motivation and interest in learning mathematics (Cox, 2018; Crean, 2016; Marsh, 2014; Pantziara & Philippou, 2015). Harrington (2017) proposes that teachers providing instruction with pupils acquiring knowledge in mathematics is the most challenging task that is encountered. Hence, a need exists to collect data from upper grade elementary teachers regarding the factors that influence student engagement instruction in mathematics. The researcher has a need to investigate the current practices of mathematics instruction, and how, if at all, to maximize pupil collaboration utilizing various teaching strategies.

Purpose Statement

The purpose of this qualitative phenomenological research study is to explore how teachers of upper elementary students in school districts within Southern California explain their experiences, and perceptions of using their chosen strategies for engaging students in mathematics instruction.

The research question that the examiner has identified for this qualitative phenomenological research study is specified below:

Research Question

How do upper elementary teachers in school districts within Southern California explain their experiences, and perceptions for engaging students in mathematics instruction?

Importance of Study

The students may ultimately benefit from the importance of the research study since research has indicated that students who are actively engaged in the learning process will become motivated to learn and possibly excel academically (Bodovski & Farkas, 2007). Furthermore, the teachers may benefit from the importance of the research study, since they are focusing on effective instructional practices to engage students in mathematics. The schools where the teachers are implementing student engagement instruction in mathematics within the classroom atmosphere will benefit if the students' state assessment scores increase (Bodovski & Farkas, 2007). The state measures schools on their proficiency through the test rating system, which measures whether students are making academic progress over time and compares them to other schools in the state utilizing the dashboard system (California Department of Education, 2019).

Hence, if the students improve their overall percentage in mathematics; as a result, the school will receive a higher proficiency rating within the state, which will enhance the student math proficiency scores at the school site (California Department of Education, 2019). Additionally, students could benefit from this research study by having higher self-esteem, improved emotional and social behavior, and feeling more productive due to earning grade promotions (Bodovski & Farkas, 2007). Additionally, the parents may benefit from students actively becoming engaged in learning mathematics since they are part of their child's learning community, which will create a positive learning environment for the student with the parent's ongoing support.

The outcome of the research study could be applied in various capacities. For example, suppose the study's outcome is favorable, and students are motivated to learn mathematics and excel academically. In that case, the entire school could have professional development training that implements student engagement instruction in mathematics and gradually implement this type of education in other subject areas. Furthermore, the schools in the local district could have professional development training that implements student engagement instruction in mathematics, and eventually, it may become a district mandate through the approval of the board of education for elementary and secondary schools. Moreover, the researcher could share the findings with members of the state legislature, and they may create a legislative bill and have the state house of representatives, and the state senate to support it. Mandating student engagement instruction within the classroom environment for mathematics in correlation with the core subject areas of teaching in elementary and secondary schools with the Governor's signature could change the way students acquire learning.

The existing literature which exemplifies the importance of students being actively engaged in learning mathematics indicates that students who excel in mathematics through the collaboration process will possibly become more excited about STEM learning (Apkon, 2013; Raines & Clark, 2011). STEM learning is indicative of Science, Technology, Engineering, and Mathematics for 21st Century learning. Incorporating students in STEM learning through active participation will possibly enhance student creativity, inquiry skills, and critical thinking, which are essential tools for students to eventually become competitive in workforce development (Apkon, 2013; Raines & Clark, 2011).

This research study is compelling at this time since many students are potentially not motivated to learn mathematics, and as a result, their academic performance has suffered drastically (Harrington, 2017). Hence, teachers must think of innovative and creative ways to improve their instruction in mathematics in order for students to become actively engaged, and have a student-centered environment. Due to the fact that teachers have been providing mathematics instruction in a traditional capacity for many years, which encompasses them lecturing to students with limited student involvement, students have not been motivated to learn mathematics (Freedberg, 2015). Additionally, for years, educators have seen students who have possibly had a strong dislike for learning mathematics due to a lack of confidence and belief in their abilities to acquire the problem-solving skills and academic rigor required to learn mathematical concepts (Attard, 2012).

Therefore, it is crucial to distinguish the individual contrasts amongst learners, which may enable the instructor to have a better understanding, so that guidance is provided to pupils so that they could have the opportunity to become motivated to learn mathematics (Attard, 2012). Through the process of collaboration and relating mathematics to the real world, students will begin to excel academically and become motivated and enthusiastic about learning the subject (Attard, 2012). Hence, it may become imperative for teachers to implement student engagement instruction, which may empower the students, but they may take ownership and accountability for their learning acquisition (Attard, 2012; Mata et al., 2012).

Theoretical Framework

This research study is based on the seminal work of Lev Vygotsky, a twentieth-century Russian psychologist who was best known for his sociocultural theory (Schunk, 2012; Vygotsky, 1978). Furthermore, the study was based on the work of John Dewey, an American logician, clinician, and instructive reformer who was known for experiencing learning in education, which is comprised of student engagement (Schunk, 2012; Williams, 2017). Schunk (2012) and Williams (2017) further suggest that Vygotsky and Dewey's theories concentrate on the constructivism learning phenomenon, which focuses on engaging students in higher-order thinking. Vygotsky believed that engaging in one's social environment plays a crucial role in cognitive development through its cultural objects, and are considered the tools for learning acquisition; such as, technology usage and other machines (Schunk, 2012; Vygotsky, 1978).

Vygotsky further believed that language acquisition and social institutions, such as the schools, are critical to increasing students' cognitive development (Ormrod et al., 2017; Schunk, 2012; Vygotsky, 1978). Moreover, Vygotsky led the concept of student engagement through cooperative learning in the classroom setting and the theories of assistance and scaffolding that help students learn in various capacities (Schunk, 2012; Vygotsky, 1978). The Zone of Proximal Development was proposed by Vygotsky, which indicates that pupils learn subjects best past their extension of existing involvement with help from an educator or another classmate (Ormrod et al., 2017; Schunk, 2012; Vygotsky, 1978). This will help bridge the gap from the knowledge students have acquired, or what they can attempt freely, and what they can procure or execute with help (Schunk, 2012; Vygotsky, 1978). Vygotsky's theory of student collaboration is congruent to Socrates' discovering the truth through social conversations, and Dewey's concept of prior knowledge before experience (Vygotsky, 1978).

Dewey argues that the significance of past involvement and prior information are vital ingredients in the advancement of new understanding, which are similar to Vygotsky's Zone of Proximal Development (Williams, 2017). Kincanon (2009) advocates an approach to advising that accounts for social as well as individual encounters. Kincanon further contends that instructors should consider a student's prior knowledge, and life experiences when giving scholastic direction or collaborate with capable peers. Understanding students' cultures, communities, and educational goals will allow teachers to help students achieve the best instructional program for their mathematical development and enable students to experience the learning process (Attard, 2012; Kincanon, 2009).

When implementing Vygotsky and Dewey's theories, the significance of prior knowledge is crucial in students acquiring learning (Schunk, 2012; Williams, 2017). Consequently, students will become challenged and engaged in the learning acquisition process (Schunk, 2012; Williams, 2017). For example, teachers can have students reflect on the positive learning experiences in the past. In that case, students can become interested in learning and experiencing mathematics, allowing the teacher to better challenge and engage them in the learning process (Goldman & Pellegrino, 2015).

Vygotsky's Zone of Proximal Development, and Dewey's emphasis on experience, can become integrated into academic instruction within the upper elementary school environment (Schunk, 2012). These two points of view complement one another, and when combined, may give instructors the apparatuses to account for both a student's scholarly execution and inspiration in learning mathematics (Schunk, 2012). The incorporation of Vygotsky and Dewey above that may provide academic instruction with upper grade students engaging in mathematics is only in its beginning stages, and should be continued throughout the instructional process. This will allow students to develop a deeper understanding of the concept being taught (Schunk, 2012).

This research study is phenomenological since the primary focus are the participants' lived experiences, and perceptions of implementing student engagement instructional strategies in mathematics (Salmons, 2015). The phenomenological research design highlights the essence of individuals who have experienced a phenomenon (Salmons, 2015). Essentially, phenomenology is the study of human experiences and perceptions of a phenomenon, which enables one to develop an understanding of peoples' experiences (Salmons, 2015). Originally, the researcher considered looking at the qualitative exploratory research design for this study; however, this study did not fit into this category since qualitative exploratory research investigates a problem that is not clearly defined, and does not provide conclusive results (Pajo, 2018; Salmons, 2015).

Additionally, qualitative exploratory research does not specifically concentrate on the lived experiences of the participants (Pajo, 2018; Salmons, 2015). Moreover, this kind of research is usually undertaken when the problem is at a preliminary stage of development, and is often referred to as grounded theory (Creswell & Creswell, 2018; Pajo, 2018). An example of a scenario that is qualitative exploratory is increasing the variety of sandwiches at a sandwich shop, which the owner believes would enable an increase in customers. The owner could conduct an exploratory research study, collecting information regarding the possible expansion. The phenomenological research design is a deeper more philosophical approach that involves observation of the participants who are interviewed, and the phenomenon being described for the research study (Creswell & Creswell, 2018).

Limitations

The research study was limited to the ability of the staff members to recall and report their experiences accurately. Due to the Covid-19 pandemic, and the previous state-mandated restrictions, the researcher decided not to interview the participants in person; therefore, the interviews with the subjects occurred within a virtual environment via Zoom.

Delimitations

The research study consisted of a small sample size of nine subjects who teach upper elementary mathematics; thus, findings are not generalized to the larger population since the individuals are selected based on non-random criteria, and not every individual in the population will have a chance of being included (Denzin & Lincoln, 2005). According to Denzin and Lincoln (2005), this method of sampling has a higher risk of sampling bias. This means that inferences the investigator may have regarding the population are weaker than with probability samples, and the conclusions may become more limited (Denzin & Lincoln, 2005). Furthermore, the interviews are geared toward upper elementary teachers who have at least five years of teaching experience in mathematics.

Additionally, the participants were required to have a Multiple Subject Clear Credential, and utilize small group collaboration while teaching mathematics. Lastly, the subjects were required to use the six levels of Bloom’s Taxonomy of cognitive learning while engaging students in mathematics instruction, which emphasizes academic rigor in small group collaborative groups. The six levels of Bloom’s Taxonomy of cognitive learning are inclusive of remembering, understanding, applying, analyzing, evaluating, and creating (Adams, 2015; Ormrod et al., 2017).

Assumptions

The assumptions were that the participants in the research study would respond honestly in their interviews, and that they would meet the criteria for participating in the research study that was established by the examiner. Another assumption was that the subjects would adapt quite well to the remote interview circumstances, which consisted of a Zoom virtual environment due to the Covid-19 previous state-mandated restrictions.

Clarification of Terms

- *Cognitive Development:* Primarily focuses on the development of knowledge, skills problem-solving which enable students to investigate and analyze the world around them (Attard, 2012)
- *Constructivism:* A hypothesis based on perception and study, which demonstrates learners building their understanding and awareness of the world through encountering circumstances and reflecting on those encounters (Ormrod et al., 2017).
- *Holistic:* An educational perspective that is inclusive of an individual's spiritual, emotional, intellectual, social, and physical aspects of learning through student engagement (Ormrod et al., 2017)
- *Metacognition:* The ability to examine and control one's thoughts and feelings through self-regulation in correlation with organizing, guiding, and acquiring knowledge (Schunk, 2012)
- *Self-Efficacy:* A concept that is indicative of an individual's belief in their capacity to execute behaviors that are mandatory in promoting specific academic achievements (Myers, 2013)
- *Self-Regulation*: This theory is comprised of individuals controlling their learning environment through social interaction and reflection (Schunk, 2012)

- *Sociocultural Theory:* This theory was developed from the work of Lev Vygotsky and stressed the interaction between developing and the culture in which they live (Ormrod et al., 2017)
- *Student Collaboration:* A collaborative classroom atmosphere occurs when students are actively working with one another in small groups and are encouraged to think reflectively, critically, and analytically through language development (Haywood et al., 2008)
- *Student Engagement:* Concentrates on the degree of inspiration, interest, and motivation that pupils demonstrate when they are learning or receiving instruction, which amplifies the level of inspiration they have to learn and advance in their education (Martin, 2006)
- *Student Motivation:* This concept is indicative of students who naturally have the interest and desire to participate in the learning process (Stephani, 2008)
- *21^{st} Century Learning:* This concept alludes to the abilities and advances that will position pupils to succeed in a world that will progressively require collaboration, critical-thinking, versatility, and analyzing data (Apkon, 2013)
- *Zone of Proximal Development:* This concept was created by Lev Vygotsky and pertained to the zone of the nearest, most current mental advancement of pupils, which incorporates a wide array of their emotional, cognitive, and mental processes (Schunk, 2012)

Organization of the Study

This research study is presented in five chapters. Chapter 1 focuses on the study's background, which communicates why the study is essential, building a case for the problem statement that immediately succeeds in this section. Additionally, this section highlights what has been done and what has been studied in relation to the problem.

Chapter 2 concentrates on the literature review, which includes providing the historical background, describing the current status, supporting the purpose of this study, identifying the gaps in the literature, and understanding seminal studies about the variable connecting to the problem. Furthermore, this section is comprised of identifying leading scholars, proposing useful theoretical constructs for the study, and understanding the application in correlation with the methodologies and procedures. The theories of the renowned scholars will create an understanding of the research study application.

Chapter 3 is comprised of describing the research design, restating the purpose of the study in correlation with repeating the research question. Moreover, it entails the overview of content and organization regarding the research study.

Chapter 4 presents the study’s results and summary of key findings. Additionally, this section includes the data analysis within the major sections of the research study.

Chapter 5 provides a summary of the entire research study, a discussion of findings, conclusions, and recommendations. This segment of the research study is aligned with the proceeding chapters, and a summary of the entire dissertation.

Summary

Many studies have exemplified that there is a problem with upper grade elementary teachers not actively engaging students in mathematics instruction in school districts within Southern California. Researchers have emphasized the importance of teachers actively engaging students in mathematics instruction. This qualitative phenomenological research study will focus on upper grade elementary teachers in school districts within Southern California who will explain their experiences, and perceptions for engaging students in mathematics instruction.

Chapter 2: Literature Review

Introduction

This literature review provides readers with a background on student engagement, the effects of disengagement, and the importance of implementing instructional practices to keep students actively engaged in mathematics learning in the later elementary years, which entails grades three through five. The literature review 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 area. Additionally, peer-reviewed articles utilizing instructional methods that focus on student engagement were obtained for resources to be utilized in this literature review, and assessed for their value in adding to the body of knowledge.

The researcher extensively viewed research articles, journals, and books for information on upper elementary mathematics and how teachers made instructional decisions on implementing various instructional practices for fostering student engagement in upper elementary mathematics. As a result of the research mentioned above, a gap in the literature pertaining specifically to upper elementary mathematics and engagement was identified. The research on teacher experiences and practices attributed to student engagement is reflected throughout this study, and links to relevant research are made where appropriate.

Furthermore, research literature that has identified various methods techniques and strategies implemented by public schools to improve or increase student engagement in mathematics is reviewed. Hence, this research aims to contribute to the information available in upper elementary mathematics regarding teachers' experiences, and perceptions regarding their instructional decision-making pertaining to student engagement. Additionally, the research will concentrate on the issues surrounding the lack of motivation and interest that upper grade elementary students have in mathematics, and how it correlates with Southern California's elementary school system's current teaching practices.

Historical Background

Instructional Strategies

As this research study investigates the instructional strategies and practices in mathematics, it is significant to examine the teacher's role and how it has exemplified change over the duration of time. Educators confront complex decisions daily that depend on various types of knowledge and judgment, including those that can have consequences for students (Darling-Hammond, & Bransford, 2005). Historically, teachers have provided instructional practices in a traditional capacity, which encompasses teachers lecturing to students in a whole group formation with minimal participation (Turner et al., 2011). Minimal participation pertains to teachers not having students actively engaged in learning mathematics (Harrington, 2017; Turner et al., 2011). Teachers provided math instruction on a surface level through drills and timed tests without deep thought or analyzing the mathematical concepts (Kohn, 1999). Darling-Hammond and Bransford (2005) suggest that educators confront complex decisions daily that depend on various knowledge and judgment types, including those with high-stakes for students. One of those complex decisions is how to effectively aid students in learning the required content (Darling-Hammond & Bransford, 2005).

Moreover, students are not interested in progressing beyond their expectations regarding academic work, but high teacher expectations that challenge and support students have become a motivating factor (Kuh, 2003; Willis, 2010). When teachers exemplify motivation and excitement regarding the learning process, students begin to absorb it. Hence, teachers must set high expectations of engagement and confidence, opposed to projecting negativity and frustration (Boaler, 2016; Willis, 2010).

Lee (2012) infers that teachers are an integral segment of student engagement and academic performance. When students are in a harmful and ineffective learning environment for approximately two years; as a result, there are long-term effects (Lee, 2012). The research above exhibits a severe need for a transformation to occur in the existing instructional practices, instead of focusing on standardized assessments (Aslan & Reigeluth, 2015; Kauchak & Eggen, 2012). Classroom teachers must allow students to have autonomy within the learning process, challenging since emphasizing teacher accountability and standardized state testing (Aslan & Reigeluth, 2015; Kauchak & Eggen, 2012). Although it may become awkward for some, teachers should concentrate on being facilitators of learning instead of merely distributors of information (Astin, 1984; Boaler, 2016). Moreover, teachers who focus on implementing differentiated instruction within the classroom atmosphere will have a greater chance of meeting the students' academic needs (Willis, 2010).

Student Engagement

In researching student engagement, it is imperative to view how teachers and students affect concentration and the role curriculum plays in motivating students to learn mathematics (Attard, 2012; Ringwalt et al., 2009). Research has exemplified that if students are interested in the curriculum and engagement instructional practices are being implemented, pupils will actively become involved in the learning process (Attard, 2012; Ringwalt et al., 2009). Additionally, students will demonstrate a positive attitude toward their teachers and a positive mindset (Attard, 2012; Ringwalt et al., 2009; Zan & Di Martino, 2007).

Skinner et al. (2013), suggest that disengaged students in the learning process are not productive academically and feel insignificant and powerless. Furthermore, the lack of student engagement is more likely to result in students not attending school, and when they do attend school. When they attend school, they tend to exhibit frustration, which leads to behavioral issues in the classroom atmosphere (Finn, 1989; Klem & Connell, 2004). It is apparent that truancy hurts the students' attendance, and it creates an adverse effect on how their peers engage in the learning process (OECD, 2016).

Unfortunately, in extreme cases, students disengaged in learning tend to drop out of school (Appleton et al., 2008; Lehr et al., 2004; Wang & Fredricks, 2014). The dropout rate can result in students acquiring mediocre jobs in correlation with our economy and society suffering on a local, state, and national level through a loss of earnings and tax revenue (Appleton et al., 2008; Rumberger & Rotermund, 2012). Evidence has exemplified that students who drop out of school tend to depend on social services, and incarceration is at a higher rate (Appleton et al., 2008; Wang & Fredricks, 2014).

Marks (2000) indicates that over the past 20 years, there has been evidence of student disengagement within the classroom climate. Research suggests that students who are not actively engaged in learning socially or academically are not motivated to attend and complete school than those actively involved in learning (Klem & Connell, 2004; Rumberger & Rotermund, 2012). The decline of student engagement has been an ongoing issue for many years and has exemplified long-term lingering effects on students negatively throughout the school years (Rajaratnam, 2018). Although research has demonstrated the positive impact of student engagement and the negative results of student disengagement, minor changes have occurred in instructional practices, curriculum, and assessment that outline the research-based methods (Goldman & Pellegrino, 2015).

When exploring pupil engagement and how it particularly relates to mathematics, students withdraw a few recognized reasons. The two most prevalent clarifications throughout the research included negative demeanors towards mathematics and a need to identify aptitudes' real-world applications (Boaler, 2016; Fredricks et al., 2004). Math is mainly a zone in which individuals, as a rule, do not have a positive demeanor, yet it is inclusive in nearly all professions and life aptitudes (Willis, 2010). Creating an environment where students are actively involved in their learning positively impacts accomplishment and building buy-in for pertinent uses within the real world (Boaler, 2016; Fredricks et al., 2004).

Student Disengagement

When pupils are not actively participating in learning, they tend to retract, act out, and drop out of school within the most noticeably awful scenarios (Klem & Connell, 2004; Rumberger & Rotermund, 2012). Pupils create negative demeanors regarding mathematics due to past negative encounters, sentiments of insufficiency, scarce optimism, discernments that mathematics is complicated, lack of motivation, and low academic achievement (Boaler, 2016; Jansen et al., 2013; Willis, 2010). Additionally, there is a common misconception between pupils and adults that individuals are generally talented at mathematics or are not equipped to learn the subject (Boaler, 2016; Dweck, 2008).

Moreover, students' self-perceptions are related to how they perform as they need to feel victorious in learning mathematics (Jansen et al., 2013; Rumberger & Rotermund, 2012). Students' negative sentiments create a detachment between aptitudes and genuine world concepts resulting in anxiety, an unwillingness to take an interest, boredom, and numerous other side effects that lead to withdrawal from collaboration (Willis, 2010). Students who encounter math uneasiness are not only more likely to withdraw from learning but are less likely to take courses past the prerequisites (Fennema & Sherman, 1976). A three-year longitudinal study of 480 first graders who were recognized as at-risk and eager regarding being actively involved in their learning exhibited a higher level of academic achievement in the upper grades (Luo et al., 2009). Luo et al. (2009), suggest a strong correlation between behavior and academic achievement. The most common reasons pupils are not enthusiastic regarding mathematics are the abstract thought that it encompasses and the need for significance to real-world concepts (Boaler, 2016). Moreover, the classroom climate's instructional practices relate to students' demeanor and convictions throughout their lives (Stodolsky et al., 1991). Mathematics in the United States has a foundation of instructional practices being implemented as teacher-centered instruction, memorizing algorithms, and learning through repetition (Boaler, 2016; Stodolsky et al., 1991; Willis, 2010). This type of instruction creates ambiguity in students' understanding of mathematics and its pertinence to the real world.

Building Self-Confidence

An empirical study that was conducted involving middle school students, and their perspectives regarding learning mathematics (Grootenboer & Marshman, 2015). This research study included 45 New Zealand students from various communities and how learning mathematics had diminished their self-confidence (Grootenboer & Marshman, 2015). Out of 45 students who were surveyed, they all exhibited negative attitudes towards mathematics, resulting from many years of learning the subject with traditional instructional practices being implemented (Franke et al., 2015; Grootenboer & Marshman, 2015; Zan & Di Martino, 2007). According to Grootenboer and Marshman (2015), the students had progressively developed negative attitudes, which was indicative of them having low self-confidence regarding learning mathematics. Grootenboer and Marshman (2015), further contend that due to many years of students being taught with instructional practices based on lectures and rote learning; as a result, they became disinterested in learning mathematics. Although in middle school, the instructional practices were engaging the students in learning mathematics; nevertheless, they were hindered from the previous instruction (Grootenboer & Marshman, 2015).

There is room for improvement in the area of mathematics education, and there are tremendous opportunities to employ high-quality, research-based instructional strategies (U.S. Department of Education, 2008); therefore, schools are slowly building a more personalized approach that is inclusive of tailoring the instructional practices to student needs (Aslan & Reigeluth, 2015). In the past, mathematics has been taught as a relatively abstract concept fostering a lack of real-world relevance and not providing students with opportunities to realize the importance of mathematics (Cathcart et al., 2015). There are currently ample research findings that support when students view evidence of real-world application of skills, and they become more motivated to learn and become actively involved in learning mathematics (Cathcart, et al., 2015). Hence, emphasizing that integrating real-world mathematics applications are an essential aspect of instruction.

Instructional practices that concentrate on student engagement, utilizing real-world applications with students being actively engaged in the learning process, demonstrate that students become motivated to learn mathematics and promote higher academic achievement (Ing et al., 2015; Sullivan, 2007). The California Common Core State Standards for mathematics is designed to prepare students for college, which aims to develop mathematical competence so that individuals can eventually utilize math in their personal lives, at work, and as a means for comprehending and influencing the world (Harrington, 2017). These practices lend themselves to engaging students in acquiring problem-solving skills in mathematics while simultaneously fostering a deeper understanding of mathematical concepts. (Harrington, 2017). Problem-solving skills engage numerous cognitive elements, including information networking, conceptual networking, analogizing and increasing motivation, and encouraging persistence (Jonassen, 1997). Providing opportunities for students to question, explain, and re-explain their ideas, and others have been found to positively increase students' understanding of mathematics (Jonassen, 1997). Additionally, when students can justify their findings, methods, and assess the work of others, then comprehensive learning occurs, and students are genuinely actively engaged in learning (Jonassen, 1997).

When utilizing student engagement instructional practices in the classroom, education becomes more relevant and useful than traditional instructional methods that pertain to teachers' lecturing to students with minimal interaction (Jafari, 2014). Moreover, students have acquired a preconceived notion of becoming efficient in mathematics (Jafari, 2014). Utilizing various engaging instructional methods provides all students with a chance to experience success and develop interest and excitement regarding mathematics (Boaler, 2016; Dweck, 2008). Additionally, neuroscience research identified a link between enjoying and participating in learning related to committing skills to long-term memory (Willis, 2010). Thus, integrating rich experiences allows students to become enthusiastic about learning and enjoy the satisfaction of successful problem-solving opportunities mathematics presents (Willis, 2010).

Student-Centered Instruction

Holmes (2013) suggests that teacher-centered instructional strategies are often utilized in mathematics courses; 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 education and being wholly engaged in the learning process while the teacher serves as facilitator (Asoodeh, Asoodeh, & Zarepour, 2012; Hidden Curriculum, 2014; Judi & Sahari, 2013). Moreover, student-centered learning transitions students from passive acceptors of knowledge to a dynamic element in their 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. When students take an active role in learning and are motivated, they are naturally engaged in the process (International Society for Technology in Education, 2017).

One of the essential quality instructional pieces is providing students with opportunities to access and build upon prior knowledge (Goldman & Pellegrino, 2015). Hence, proposing open-ended, real-world problems to students provide options for accessing and using previous experience, applying knowledge in new and different ways, and developing critical 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, 21st century learners need to become adaptable problem solvers and comprehend complex ideas (Goldman & Pellegrino, 2015; Martinez, 2010). Hence, students must develop the skills and knowledge essential to performing complex tasks, but they must also combine and apply them to build fluency and automaticity (Ambrose et al., 2010; Goldman & Pellegrino, 2015). Additionally, providing time for metacognition, rich discussion, hands-on learning, and applying skills in real-world situations is vital in developing future thinkers

(Boaler, 2016; Martinez, 2010). The strategies above put students in cases where they are afforded opportunities to apply prior knowledge, be exposed to different ideas, and are encouraged to create their path to problem-solving involving critical life-long skills (Boaler, 2016; Martinez, 2010).

Providing gradual guidance to students as needed, referred to as scaffolding, is another technique employed by teachers who increase engagement (Marshman & Brown, 2014). Marshman and Brown (2014) conducted a case study to aid the classroom teacher who involved 27 students, ages 13-14 in year 9, identified as disengaged in mathematics. This action research project utilized a scaffolding technique that was specified as collective argumentation to see if the engagement was improved. Collective argumentation involves using language through problem-solving with peers and teachers 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 engage in mathematics being taught effectively (Marshman & Brown, 2014).

Marshman and Brown (2014) indicate that collective argumentation positively affected engagement by providing opportunities for sharing ideas and discussing problem-solving methods in which 32 fostered comprehension. Students reflected in journal entries regarding their feelings about mathematics at the end of the study, and 81% responded positively. These entries revealed that students felt more empowered and valued than before, because they preferred the collective argumentation method to previous instructional methods. Since scaffolding is the basis of collective argumentation, this study provides teachers' perceptions of framing as an engagement strategy in mathematics (Marshman & Brown, 2014).

Theoretical Framework

The theoretical framework that the researcher utilizes stems from the constructivist point of view, which encompasses a profound influence in learning and development (Schunk, 2012). Constructivism is a learning hypothesis that holds information that is best acquired through reflection and dynamic growth within the intellect (Schunk, 2012). The examiner's two theories that are focused on this research study are immersed in the foundation of Lev Vygotsky, a seminal Russian psychologist, and John Dewey, an American logician, analyst, and instructive reformer (Schunk, 2012). Goldman and Pellegrino (2015) suggest that engagement includes students actively participating in learning, which encompasses social understanding and experiences that construct knowledge; therefore, establishing a connection between the constructivism theory and student engagement.

Subsequently, the researcher believes in the importance of the theories as mentioned above relating to learning through social groups, peer collaboration, and experience as a direct result of the examiner's own experiences (Schunk, 2012). As an elementary school upper grade teacher, the examiner observed students' power engaging in learning through in-depth, rigorous academic discussions concentrating on productive problem-solving techniques and technology usage. Furthermore, placing students in unfamiliar situations where they are required to apply prior knowledge, which consists of Vygotsky's Zone of Proximal Development, allows them to adjust what they assumed they knew, and is advantageous to student learning (Schunk, 2012). Additionally, these experiences allow students to transfer skills to other situations and subject areas where applicable (Schunk, 2012).

Student engagement is challenging to define due to the many moving parts and variables that can influence engagement (Fredricks et al., 2004). Several researchers have developed their definitions, but three main components that appear throughout the literature review are behavioral engagement, cognitive engagement, and emotional/psychological engagement (Fredricks et al., 2004; Lee, 2014; Mahatmya et al., 2012). These elements are combined to develop student engagement's fundamental aspect where students actively take part in their learning, work through tasks, and emotionally invest (Fredricks et al., 2004; Lee, 2014; Mahatmya et al., 2012). Moreover, it is acknowledged in the literature that student engagement is not a fixed characteristic of a student and can consist of change depending on the context (Appleton et al., 2008; Reschly & Christenson, 2006a, 2006b; Wylie & Hodgen, 2012). Behavioral engagement includes physical participation, attendance, and effort (Fredricks et al., 2004; Lee, 2014; Mahatmya et al., 2012; Wentzel, 2003).

According to Vygotsky's analysis of student engagement, which he considered as sociocultural theory, he emphasized the importance of social interaction, which plays a critical role in learning acquisition of students, and is comprised of holistic learning (Ormrod et al., 2017; Schunk, 2012). Vygotsky stressed the integral role of social interaction being meaningful and enhancing one's cognitive growth and development (Ormrod et al., 2017; Schunk, 2012). Furthermore, the cultural-historical aspects of Vygotsky's theory of learning and development are interrelated with one another, which indicates that the capacity of how learners interact within their environment transforms their thinking ability (Ormrod et al., 2017). Contrary to Piaget's idea that children's advancement precedes their learning, Vygotsky unequivocally accepted that social learning precedes their advancement (Schunk, 2012).

Vygotsky believed that students' social environment influences cognition through its tools, which comprises learning through language and social institutions, such as the schools (Ormrod et al., 2017). One of the critical factors in Vygotsky's learning theory is social interaction, which is crucial for obtaining knowledge between two or more people. Secondly, self-regulation is critical since it creates an internal representation of activities and mental operations in social discussions (Schunk, 2012). An example of self-regulation is one engaging in monitoring and reflecting upon the learning process (Schunk, 2012). Thirdly, human or cognitive development occurs through oral language development, which is imperative to students learning (Ormrod et al., 2017). Fourthly, Vygotsky states that language, which is the most critical tool, is developed from social interaction and private speech that serves as an intellectual function and is directed to oneself (Ormrod et al., 2017). Lastly, Vygotsky believed in the importance of the Zone of Proximal Development, which is comprised of the difference between what children can achieve independently and what they can achieve with others (Ormrod et al., 2017).

Vygotsky's theory of Zone of Proximal Development is defined as the range between the actual developmental level, which is characterized through individual problem-solving (Ormrod et al., 2017). The level of potential advancement is indicated through problem-solving under adult guidance or social interaction with peers (Ormrod et al., 2017). For instance, a student is unable to solve a mathematical equation independently. Still, once interaction occurs with an adult or peer, the student can solve it and develop competence at problem-solving skills over time. The Zone of Proximal Development represents the amount of learning possible that students acquire, given the appropriate instructional practices that are implemented within the classroom climate (Ormrod et al., 2017).

Ormrod et al. (2017) suggest that cognitive change occurs in the Zone of Proximal Development as the teacher and student engage in the learning process through collaboration, internalized within the student. Furthermore, in the Zone of Proximal Development process, students acquire knowledge through their understandings, integrating it with social interaction, and constructing meanings in correlation with their experiences within the context (Ormrod et al., 2017). For example, a teacher is assisting a student with a multi-digit multiplication equation. The student has understood identifying equations, the place value position of numbers, and where to begin the multiplication process. The teacher brings the same understanding and additional knowledge of how to perform the multi-digit operation of multiplication necessary to work on various equations. Vygotsky viewed the Zone of Proximal Development as the most sensitive area where instruction and guidance are given that allow students to develop the necessary skills they can utilize independently, which will enable them to develop higher cognitive functions (Schunk, 2012).

Moreover, Vygotsky had many educational application ideas by obtaining knowledge (Ormrod et al., 2017). Namely, self-regulation pertains to the self-directive process through students having the ability to control their learning through the metacognition process (Schunk, 2012). This comprises of students organizing their thoughts and transforming them into skills utilized for learning (Schunk, 2012). Helping students acquire learning metacognitively through social interaction and collaboration can be accomplished in several capacities (Schunk, 2012). When students engage in self-regulation in the learning process, this concept is considered private speech since it has an internal characteristic that is developed within the learner, which leads to cognitive growth (Schunk, 2012). For example, a typical application that has been utilized in the educational process is scaffolding, which is composed of accessing students' prior knowledge to improve the cognitive development of learners so that they can carry out a task or achieve their educational goal independently without assistance (Schunk, 2012).

Additionally, Vygotsky's theory of self-regulation encompasses the gradual internalization of language and concepts that students utilize in learning acquisition, which emerges at age three. (Ormrod et al., 2017). Vygotsky believed that language is a potent tool of intellectual adaptation, directed to the internal self through of private speech, and is the modification point between social and inner speech (Schunk, 2012). This is the point in advancement that language and cognitive development unite to establish verbal thinking, and is the earliest manifestation of inner speech than social speech (Schunk, 2012).

According to Schunk (2012), Vygotsky focused on the concept of reciprocal teaching, which is utilized to improve a student's ability to learn through clarifying, summarizing, questioning, and predicting with students interacting using language development in the learning process. Schunk (2012) further contends that for students to engage and interact within the classroom atmosphere, the physical structure had to project small group instruction and collaboration with student desks being arranged in clusters or close together. This would promote a productive learning environment for students to engage in learning (Schunk, 2012) actively. Hence, Vygotsky believed that active participants in large amounts of internal speech are more socially adequate than children who do not utilize it extensively (Schunk, 2012).

Ormrod et al. (2017) emphasize that John Dewey was one of the most influential thinkers in the history of modern educational theory. Similar to Vygotsky's theory of learning, Dewey believed that teachers and students should socially interact together so that learning acquisition is occurring (Ormrod et al., 2017). Williams (2017) suggests that Dewey's progressive education theory of learners being actively engaged in learning acquisition is comprised of them interacting utilizing real-life situations through social interactions with one another.

Williams (2017) further specify that is contrary to a traditional classroom, Dewey believed that students should participate in learning activities interchangeably and flexibly in various social environments; therefore, students would be observed actively participating in class. This behavior indicates asking questions, making eye contact with the teacher, or working through an activity, which is congruent to Vygotsky's theory of learning (Schunk, 2012; Williams, 2017). Cognitive engagement consists of actively thinking about the task or problem at hand and students' investment and willingness to participate (Fredricks et al., 2004; Mahatmya et al., 2012; Metallidou & Vlachou, 2007). Similar to Vygotsky's learning theory, Dewey believed in holistic learning, which consists of engaging all aspects of the learner through connections with the real world (Ormrod et al., 2017).

Additionally, Dewey's theory of learning encompasses the hands-on approach to learning that concentrates on students experiencing the learning process, which differed from Vygotsky's theory of learning (Radu, 2011). Dewey's philosophy emphasizes students' need to experience learning to enhance their motivation and educational growth (Ormrod et al., 2017; Radu, 2011). Dewey figured that students should explore their environment and pursue their interests in correlation with constructing their paths to acquire and apply their knowledge, congruent to Vygotsky's theory of learning (Ormrod et al., 2017; Radu, 2011).

Moreover, Dewey believed that students should feel connected to the classroom material to obtain information and adapt to it for personal use (Ormrod et al., 2017; Radu, 2011). He was an advocate of enhancing student motivation by highlighting the ways students can use subject matter in the real world (Ormrod et al., 2017; Radu, 2011). Ormrod et al., (2017) and Radu (2011) state that Dewey's hands-on learning approach is similar to the Italian physician and educator Maria Montessori's alternative approach to education, emphasizing the importance of having a child-centered learning environment critical in children acquiring knowledge.

The social interaction of students relates to the importance of teachers providing instructional strategies that allow students to engage in collaborative and rigorous discussions regarding mathematics (Schunk, 2012). Additionally, when teachers are providing instructional strategies with students engaging in rigorous discussions, they are experiencing learning, which increases students' motivation and stimulates their cognitive development (Farooq et al., 2008; Goldman & Pellegrino, 2015; Schunk, 2012). Figure 1 indicates the alignment of Vygotsky and Dewey's learning theories with the research question.

Figure 1

Vygotsky and Dewey's Learning Theories

<table>
<tr><th>Lev Vygotsky
Russian Psychologist</th><th>John Dewey
American Logician and Instructive Reformer</th></tr>
<tr><td colspan="2">Both believed in the importance of teachers engaging students in rigorous small collaborative group discussions
Both believed in these discussions increasing student motivation, and stimulating their cognitive development, which lead to students learning
Both believed that these social conversations are based on prior or current knowledge
Both believed in progressive constructivism, which concentrates on teachers enabling students to learn utilizing higher-order thinking</td></tr>
<tr><td>Vygotsky believed that learning is primarily stemmed from social conversations</td><td>Dewey believed that experience comes first, which stimulates social interaction</td></tr>
</table>

The examiner created the pictorial representation above in figure 1 that explains the interconnection between Vygotsky and Dewey's learning theories, and how they relate to the participants' experiences as described in the previous paragraph.

Instructional Strategies

The literature review provides readers with a background on instructional practices that pertain to the advantages of students being actively engaged in learning mathematics. The literature review includes research from significant contributors in the educational field who emphasize the importance of instructional methods that stimulate students' cognitive development. Consequently, students become motivated to learn mathematics and actively engaged in the learning process. The literature review indicates that once students are encouraged to learn mathematics, it increases their academic achievement. The researcher has identified seven instructional strategies that promote student engagement in mathematics. Additionally, the literature's researchers were identified through their work being referenced multiple times in several sources. Hence, these references were recognized as influential in their field.

Student Collaboration

Stephani (2008) argues that pupil collaboration's optimal learning environment includes diversity amongst the student population, consisting of international understudies experiencing the learning process through language development and appreciating other cultures. Stephani (2008) further contends that students must have a meaningful experience, actively engage in the learning process through time, energy, and utilizing classroom resources, creating an authentic learning experience. Stephani further indicates that teachers should provide opportunities for students to work in heterogeneous groups. This would allow students to collaborate academically, which would foster an environment of stimulating discussions, so students will have a chance to excel academically (Stephani, 2008).

Teachers can incorporate student collaboration in their instructional practices and utilize it during the school day in correlation with planning activities that allow students to work collaboratively by discussing, analyzing, and evaluating information (Schunk, 2012; Stephani, 2008). This instructional method will enable students to learn and grow from one another

(Schunk, 2012; Stephani, 2008). Furthermore, collaborative learning has been shown to develop higher-level thinking skills in students and enhance their self-confidence and self-esteem (Stephani, 2008).

Stephani further emphasizes that students working collaboratively on group projects can maximize their educational experience by improving their social and interpersonal skills. Through peer interaction, pupils learn how to work with various learners and create their independent skills, which will prepare them for the real world (Schunk, 2012; Stephani, 2008). Additionally, when teachers work cohesively and share instructional practices that concentrate on students being actively engaged in the learning process, they create a positive learning experience (Stephani, 2008). Teacher collaboration positively impacts student achievement and allows educators to explore new territory in which students can become motivated to learn and excel academically (Ormrod et al., 2017; Stephani, 2008).

When teachers implement a collaborative learning atmosphere, the students are divided into small groups working on providing solutions and various projects they learn from each other (Ormrod et al., 2017; Schunk, 2012; Walshaw & Anthony, 2008). Student collaboration is not a new concept, and has been around since the 1980s and 1990s, which was known as cooperative learning (Singh & Agrawal, 2011). Most teachers favored the traditional form of instruction, which encompassed teacher lectures, and individual student work; however, through the growth of technology and the increasing value that society places on the ability for people to work in teams, collaborative learning has been on the rise (Singh & Agrawal, 2011). This instructional method has become one of the most vital core philosophies operating in classrooms today (Singh & Agrawal, 2011; Walshaw & Anthony, 2008). Some essential strategies that attribute to the success of collaborative learning. For example, teachers should create discussion groups that reflect various abilities, social capabilities, and diversity, including heterogeneous groups (Cauley & Pannozzo, 2014; Singh & Agrawal, 2011). If students originated their groups, they most likely would sort themselves into groups of friends who share common bonds (Cauley & Pannozzo, 2014; Singh & Agrawal, 2011).

Furthermore, teachers need to ensure that the groups are appropriate for maximum effectiveness (Cauley & Pannozzo, 2014; Singh & Agrawal, 2011). For instance, if the groups are too small, then the ideas and discussions may not reflect the diversity of energy required for maximum effectiveness (Cauley & Pannozzo, 2014; Singh & Agrawal, 2011). On the contrary, if the groups are too large, students will become hesitant regarding their involvement in the learning process; therefore, the optimum group size comprises four to five groups (Cauley & Pannozzo, 2014; Singh & Agrawal, 2011).

Differentiated Instruction

Marsh (2014) argues that differentiated instruction in mathematics provides additional opportunities for students to interact with one another through language development in small groups utilizing various mathematical concepts. Additionally, differentiated instruction creates an exciting atmosphere for students to learn mathematics and provides them with an enriched learning experience (Marsh, 2014). Differentiating instruction may encompass teaching the same material to all students utilizing a variety of instructional strategies (Ormrod et al, 2017). It may require the teacher to deliver lessons at varying levels of difficulty based on each student (Subban, 2006; Tomlinson, 2001). The four different areas to differentiate are content, process, product, and learning environment (Subban, 2006; Tomlinson, 2001).

When teachers differentiate instruction focusing on content, they can design lessons that correlate with the six levels of Bloom's Taxonomy of cognitive learning, which is a classification of intellectual behavior levels ranging from lower-order thinking skills to higher-order thinking skills (Adams, 2015; Ormrod et al., 2017). The six levels of Bloom's Taxonomy of cognitive learning are inclusive of remembering, understanding, applying, analyzing, evaluating, and creating (Adams, 2015; Ormrod et al., 2017). Students who are unfamiliar with a lesson must complete the lower levels, which are remembering and understanding (Adams, 2015; Ormrod, et al., 2017). Students who have high levels of mastery are required to complete tasks in evaluating and creating (Adams, 2015; Ormrod, et al., 2017).

Additionally, content-based instruction enables students with some mastery to apply and analyze information (Adams, 2015; Ormrod et al., 2017). The second area of differentiated instruction is the process-related method and is comprised of the various learning styles of students, which concentrates on visual, auditory, and kinesthetic approaches to learning (Adams, 2015; Ormrod et al., 2017). Moreover, the instructional process method focuses on small group learning with students collaborating through discussing, analyzing, and evaluating information (Adams, 2015; Ormrod et al., 2017). The third instructional method is composed of product-based learning, which concentrates on what the student creates at the end of the lesson to demonstrate mastery of the content (Adams, 2015; Ormrod et al., 2017). For example, the method above is comprised of students working on group projects, assessments, reports, or other activities (Adams, 2015; Ormrod et al., 2017). The teacher could assign students to activities that exhibit mastery of an educational concept that the students prefer, based on their learning style (Adams, 2015; Ormrod et al., 2017).

The fourth area of differentiated instruction consists of the learning environment (Adams, 2015; Ormrod et al., 2017). The conditions for an optimal learning atmosphere for students to become actively engaged are inclusive of physical and psychological elements (Adams, 2015;

Ormrod et al., 2017). For example, having a flexible classroom layout incorporating various furniture and arrangement to support small group instruction is critical for actively participating in the learning process (Adams, 2015; Ormrod et al., 2017). Research has indicated that differentiated instruction is highly successful in students becoming active learners (Adams, 2015; Ormrod et al., 2017). There are fewer disciplinary challenges in the classrooms that implement this learning style (Adams, 2015; Ormrod et al., 2017).

Cognitive Development

Students who have authentic mathematical instruction in the classroom climate, which is indicative of students being actively involved in the learning process, will experience engaging with one another in a positive learning environment, which will increase their cognitive development skills (Farooq et al., 2008). Cognitive development pertains to the mental processes that an individual's brain utilizes to comprehend, organize, store, retrieve, and uses information (Ormrod et al., 2017; Schunk, 2012). Cognitive skills are essential across the curriculum and are necessary for learning acquisition (Newcombe & Huttenlocher, 2007). For students to acquire high-cognitive level learning in mathematics, spatial cognition is crucial since it focuses on the acquisition, organization, utilization, and revision of knowledge regarding spatial environments that pertain to the real world and students being actively engaged in learning (Newcombe & Huttenlocher, 2007).

Cognitive engagement in the classroom atmosphere is related to problem-based learning, which encompasses small group learning with students actively collaborating (Rotgans & Schmidt, 2011). This type of education is indicative of students being autonomous, with them establishing which learning goal they will pursue (Rotgans & Schmidt, 2011.). After a self-directed learning period, students will discuss what they have learned with their group and assess whether their new understanding of the problem is currently more accurate and elaborate than before (Rotgans & Schmidt, 2011). Once students are satisfied with their knowledge of a particular concept, the cycle commences again (Hmelo-Silver, 2004; Rotgans & Schmidt, 2011). Rotgans and Schmidt (2011) indicate that this is a form of cognitive-constructivist learning based on three assumptions. Rotgans and Schmidt (2011) further contend that the first assumption comprises students engaging in theory construction with their peers, which encompasses students deepening their understanding of their problem.

The second assumption is that the authentic problems encourage students to become interested in the topic at hand, enabling them to understand the processes that underly the question while collaborating (Rotgans & Schmidt, 2011). For instance, when teachers are engaging students in learning mathematics, the problems should correlate with the real world and formulate a connection, providing them with a meaningful and enriching experience (Farooq et al., 2008).

The third assumption is comprised of identifying one's learning goals in collaboration with peers, which gives an atmosphere of autonomy, and empowerment (Rotgans & Schmidt, 2011). Being autonomous and working collaboratively increases cognitive development and promotes a more in-depth understanding of students (Rotgans & Schmidt, 2011). When students choose learning acquisition within a classroom climate, this encourages student interest and engagement, enhancing students' cognitive development (Appleton et al., 2008). Cognitive development is increased more when students are actively engaged in discussion groups, or searching for information on the internet than students listening to a lecture, which has the least cognitive growth (Appleton et al., 2008).

Student Motivation

Pantziara and Philippou (2015) contend that students become motivated to learn mathematics when the curriculum correlates to their interests. Increasing student motivation to learn mathematics is a crucial element in the classroom environment. Pantziara and Philippou (2015) further argue that there is a connection between student motivation and student comprehension in mathematics with increased academic performance. Moreover, there is a relationship between students being motivated to learn mathematics intrinsically and extrinsically, which concentrates on students being motivated since they are excited about learning mathematics, which is intrinsic (Pantziara & Philippou, 2015).

Students learning mathematics by receiving good grades or praise pertains to extrinsic motivation (Pantziara & Philippou, 2015). Mata et al. (2012) state that students are motivated to learn mathematics through positive social interaction, which plays a crucial role in organizing their thoughts and reflecting on their understanding. Mata et al. further contends that students utilize their language skills to interact socially with one another, and analyze mathematical equations, increase their intrinsic motivation in learning mathematics.

Motivating students to become enthusiastic regarding learning mathematics has been one of the most productive instructional techniques (Mata et al., 2012). Engaging students in classroom instruction is crucial in motivating them to learn mathematics, which encompasses identifying potential learning gaps (Mata et al., 2012). When teachers focus on the lack of understanding that students have accumulated in mathematics, they can capitalize on their desire to learn more, which increases their interest level in learning mathematics (Hannula, 2006). One of the most common issues teachers face is that the students are not motivated to do well in mathematics, which can become particularly challenging for teachers (Hannula, 2006).

Teachers can create a productive instructional environment for students to become motivated to learn mathematics by allowing them to have flexibility within the classroom (Ormrod et al., 2017). Creating an optimal learning atmosphere with students to make choices regarding the specific types of math problems that they can explore, and teachers accessing their prior knowledge, produces a positive learning environment for students (Ormrod et al., 2017). Furthermore, when teachers provide pupils with circumstances to actively become engaged in learning through collaboration with other pupils in the classroom, this increases student motivation, encouraging them to learn (Ormrod et al., 2017).

Another way that teachers can create a productive learning environment for students to become motivated to learn is to increase their self-worth and sense of competence (Ormrod et al., 2017). For instance, teachers can help students by ensuring that they understand the mathematical concepts (Ormrod et al., 2017). This will enable students to have higher self-esteem and to feel adequate in learning mathematics, which will promote a positive learning climate (Ormrod et al., 2017).

Building Self-Confidence

Farooq et al. (2008) suggest that attitudes play an essential role in building students' self-confidence in learning mathematics. Farooq et al. further state that if students support the family and a method of authentic instruction in the classroom climate, their attitude and self-confidence will increase in mathematics. Students who acquire interest and enjoyment in learning mathematics will build their self-confidence level. Still, their anxiety level surrounding mathematics will decrease, which will enable students to find value in understanding the subject (Farooq et al., 2008). Students must make sense of mathematics and believe that they can understand and learn mathematical concepts. This will help build students' self-confidence and decrease frustration regarding their ability to learn mathematics (Farooq et al., 2008).

As teachers, we need to develop a mindset to reinforce students' growth to learn mathematics, expand their knowledge, and build mathematical confidence (Farooq et al., 2008). Suppose teachers concentrate on the aforementioned math instructional practices. In that case, students will develop a positive attitude towards mathematics, even when making errors, which will create a willingness for students to persevere, which will enable them to take risks and become self-reliant (Myers, 2013; Zan & Di Martino, 2007).

Students' confidence in learning mathematics affects their approach to challenges and errors. For example, students with low self-confidence may make a mistake while learning mathematics, and define themselves through that error, believing that they are not smart, which affects their self-efficacy (Myers, 2013). When students have established fear of making errors, it halts their problem-solving skills (Boaler, 2016; Jansen et al., 2013; Willis, 2010). Students become fearful of implementing strategies to figure out the correct solution because they are unsure regarding the possibility of being incorrect (Boaler, 2016; Jansen et al., 2013; Willis, 2010). On the contrary, students who have acquired strong mathematical confidence are unfearful of errors and realize that they are merely stepping stones that will enable them to learn (Boaler, 2016; Jansen et al., 2013; Willis, 2010).

For students to become successful at learning mathematics, they need to feel confident and believe in themselves enough to take mathematical risks (Boaler, 2016). If one math strategy is not applicable, students can always think of another and apply it accordingly (Boaler, 2016). When teachers enable students to establish confidence in learning mathematics, it will allow them to take the necessary risks to understand the mathematical concepts (Boaler, 2016).

When students understand mathematics, their confidence will increase, and they will feel brave as mathematicians (Boaler, 2016). Moreover, students will become self-reliant and not depend on the teacher to explain how to solve the math problem (Boaler, 2016). They become independent thinkers, evaluating their work and justifying their findings (Boaler, 2016; Little, 2015). Therefore, it is the teachers' responsibility to create a learning environment that allows students to believe in their mathematical abilities. They continue to persevere and take risks by implementing new and innovative ideas (Boaler, 2016; Little, 2015).

Integrating Technology

Raines and Clark (2011) suggest the importance of incorporating technology in the student engagement process to be on the cutting edge of 21st century learning in mathematics. Raines and Clark further argue that technology increases student collaboration and motivation to improve students' critical thinking and analytical skills. Additionally, integrating technology in the mathematical instructional process increases student academic achievement, producing higher mathematics (Raines & Clark, 2011). Utilizing technology in mathematics instruction allows students to visually view and interact with mathematical concepts through explorations and discoveries, which increases their problem-solving skills (Raines & Clark, 2011).

Technology provides additional opportunities for learners to visualize and interact with mathematical concepts (Apkon, 2013). For example, technology enables students to explore and make discoveries with games, simulations, and digital tools, which prepares students for 21st century learning (Apkon, 2013). The advantages of integrating technology in the classroom during mathematics instruction are that it enables teachers to craft powerful collaborative learning experiences for students and supports problem-solving and flexible thinking (Apkon, 2013). Teachers and students can construct their learning simultaneously in various capacities authentically, promoting cognitive development in students learning mathematics (Raines & Clark, 2011).

Technology can positively impact student learning when integrated during mathematics instruction (Raines & Clark, 2011). Students need the opportunity to utilize technology through rigorous discussions, creating and connecting visuals, analyzing models, discovering patterns for them to learn mathematics in a healthy and productive capacity (Raines & Clark, 2011). Framing mathematics within the realm of technology will encourage students to engage and become persistent in learning mathematics, which will increase their level of motivation (Apkon, 2013). When students become interested in learning mathematics in correlation with technology, they develop a sense of ownership and become actively engaged in the learning process (Raines & Clark, 2011).

Experiencing Mathematics

Haywood et al. (2008) suggest that students can have a meaningful experience in learning mathematics through extrinsic and intrinsic rewards, affecting a student's sense of self-efficacy. In contrast, students can control the degree of believing in individuals their academic abilities. Moreover, external rewards promote student motivation and learning, which consist of teachers issuing certificates, a note of praise, or thumbs up when students are actively engaging in the learning process, and intrinsic rewards concentrate on students learning math due to their interest and enjoyment of it (Haywood et al., 2008). Furthermore, inherent motivation consists of an inner force that motivates students to engage in academic activities, which is considered the actual drive in human beings that challenges individuals to search for new and innovative learning (Haywood et al., 2008).

When students experience mathematics by actively engaging in the learning process because they are genuinely enjoying it, students are intrinsically motivated (Silver et al., 2000). Students receive a holistic mathematical experience since their total being is developed intellectually, emotionally, and socially (Silver et al., 2000). Additionally, when students experience learning mathematics extrinsically, they receive a tangible reward, which makes mathematics meaningful for them in this capacity (Silver et al., 2000).

Moreover, students who seek to learn mathematics extrinsically do not acquire a sense of ownership because their focal point is primarily on praise from teachers, parents, and peers (Silver et al., 2000). When students are engaged and interested in learning mathematics, they are more persistent, utilize more diverse problem-solving strategies, and become more creative and innovative when analyzing math problems (Silver et al., 2000). Whether students experience mathematics intrinsically or extrinsically, they must acquire a conceptual understanding to become successful and have a positive learning experience (Karsaint & Chappell, 2001).

Similar Research Studies

In a recent research study conducted at Odyssey Charter School, there were ten teachers who were interviewed regarding their perceptions of student engagement instruction (Yarram, 2020). Out of one hundred teachers at the school site, there were ten teachers invited to the interview during the academic school year of 2018-2019. Five of the participants were from grades K-5, and five were from grades 6-12. All participants indicated that concentrating their instructional strategies on student engagement in mathematics is crucial in students' learning acquisition (Yarram, 2020).

Yarram (2020) suggests that participants highlighted the importance of utilizing instructional strategies, such as scaffolding, formulating rigorous inquiries, and utilizing small group collaboration during mathematics instruction. Yarram further contends that on a proficiency exam that the students were given from grades K-12, indicated that they were actively engaged in the learning process. From 2015 until 2019, 55% to 70% of the students met or exceeded the proficiency level in mathematics (Yarram, 2020).

Axelson and Flick (2011) infer that student engagement has been a term that is utilized constantly in the educational field, which pertains to how motivated and interconnected students are in their classes. The convergence between what strategies teachers utilize, and how students perform, make teachers a pivotal component for determining success (Harbour et al., 2014). When teachers have the mentality of an evaluator, they can utilize reliable evidence of the effect of their instructional strategies on students' learning (Hattie, 2009). Additionally, teachers can collaborative with their colleagues and students, making their teaching outcomes more relevant and productive (Hattie, 2009). According to Hattie (2009), learning acquisition is promoted when students are actively engaged.

Schools are held responsible for students' scholarly accomplishment and thus, teachers must comprehend how students learn, and identify instructional approaches that provide students opportunities to become victorious in their learning (Parsons, Nuland, & Parsons, 2014). Teachers should vigorously strive to create engaging activities since it correlates with achievement (Parsons et al., 2014). Axelson and Flick (2011) emphasize that students and learning institutions have obligations for the quality of student learning. Axelson and Flick further contend that students need to put forth the effort required to advance their knowledge and skills. Furthermore, learning institutions are obligated to provide the appropriate climate to facilitate student learning (Axelson & Flick, 2011). In order for students to become actively engaged in learning, educational institutions should value executing effective pedagogies in a culture that values education (Axelson & Flick, 2011).

One critical ingredient of student engagement is that students are actively engaged in the learning process (Chickering & Gamson, 1987). Active learning encompasses an instructional strategy that engages students in the learning process (Prince, 2013). Active learning is immersed in the constructivist theory that people construct knowledge based on prior experiences and beliefs (Prince, 2013). They are considered active recipients of knowledge (Prince, 2013). When students actively learn and engage in their learning, they intentionally engage within their environment, specifically observing what the instructor is teaching, and critically reflect on the significance of the information and experiences (Prince, 2013).

Gap in Literature

There is a gap in the research pertaining to upper grade elementary teachers utilizing student engagement strategies in mathematics instruction. According to Harrington (2017), upper grade teachers have taught in a whole group formation, which consists of them lecturing to students with limited engagement. Since students have scored low academically in mathematics, it has created a gap between what they were expected to learn, and the knowledge they had acquired (Freedberg, 2015). The fact that many teachers have been providing instruction in a traditional format, which entails them lecturing to students with minimal engagement from them, has resulted in students performing low academically on math assessments (Abramovich et al., 2019). Additionally, students have not been motivated to learn mathematics, and have become frustrated and bored with learning mathematical concepts (Attard, 2012; Bodovski & Farkas, 2007). Consequently, the gap in research has led to the following research question: How do upper elementary teachers in school districts within Southern California explain their experiences, and perceptions for engaging students in mathematics instruction?

Summary

The literature review tends to concentrate on the constructivism phenomenon, which pertains to Vygotsky and Dewey's theory of learning. Their theory of learning supports teachers engaging students in mathematics through social conversations, which enable students to experience learning (Goldman & Pellegrino, 2015). Additionally, Vygotsky and Dewey's learning theory supports differentiated learning with higher-order thinking, which enhance students' cognitive development (Adams, 2015; Ormrod et al., 2017). Harrington (2017) suggests that most teachers are teaching mathematics traditionally, which encompasses lecturing to students in a whole group formation with minimal participation. Hence, there is a need for the investigator to conduct a research study to bridge the gap, concentrating on upper grade elementary teachers' current instructional practices for engaging students in mathematics. Chapter 3 is comprised of describing the research design, restating the purpose of the study in correlation with repeating the research question. Moreover, it entails the overview of content and organization regarding the research study.

Chapter 3: Methodology

Chapter Content and Organization

Chapter 3 concentrates on the methodology of the research study. This chapter describes the approach and data collection strategies that the researcher utilized, and its rationale. Additionally, this section delineates the study's credibility to ensure the research project validity and meaningfulness in its entirety. Moreover, chapter 3 provides the setting, circumstances, research study context, and population studied. The researcher discusses the sampling procedures, how subjects were protected from potential risks, and how participants had access to review data, and the findings, if desired.

Furthermore, the examiner discusses the Institutional Review Board (IRB) application applicable to the research study content, and the data collection tools and procedures used to establish the research project's validity. Additionally, this chapter consists of the data management procedures that the examiner utilized, which are who will have access to the data, and how and when the data are demolished. Moreover, the researcher describes the data analysis that emphasizes the specific steps that were used to analyze the research findings. The positionality is the last section in chapter 3, which describes the researcher's relationship to the study, and how potential biases were addressed.

Restatement of Study Purpose

The purpose of this qualitative phenomenological research study is to explore how teachers of upper elementary students in school districts within Southern California explain their experiences, and perceptions in using their chosen strategies for engaging students in mathematics instruction.

Restatement of Research Question

How do upper elementary teachers in school districts within Southern California explain their experiences, and perceptions for engaging students in mathematics instruction?

Research Design and Rationale

Kauchak and Eggen (2012); Kőrös-Mikis (2001) define innovative teaching as integrating new and various ways of providing instruction that is not a common practice; therefore, teachers must become flexible in their teaching methods, and adjust to students' needs to increase engagement, which is a key component to learning. Furthermore, learning is something students do as a result of their experiences (Ambrose et al., 2010). What may commence as participation or students enjoying learning regarding 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 study's methodology involves phenomenological research with semi-structured interviews, which concentrates on identifying the essence of experiences and perceptions with participants who implement student engagement in their instructional strategies (Creswell & Creswell, 2018; Putman & Rock, 2018; Salmons, 2015). Phenomenological qualitative research is defined as research that is used to investigate the lived experiences of a particular group (Cilesiz, 2011; Giorgi, 2009; Groenewald, 2004). Groenewald (2004) and Neubauer et al. (2019), explain that qualitative phenomenological research focuses on gaining insights and familiarity for later investigation, when research problems are in a preliminary stage of investigation, since it concentrates on the views of the participants.

A phenomenological qualitative research study concentrates on understanding peoples' perceptions of an experience and acquiring its essence, which is the rationale for this research study (Salmons, 2015). Employing qualitative phenomenological methods provides a holistic view and validity in truth related to the situation, values subjectivity, and gives participants a voice (Grbich, 2013). Aligning with these beliefs, the researcher investigated phenomena that influence upper elementary teachers' implementation of engaging students in mathematics instruction.

Semi-structured interviews provided the researcher with participants' insights and experiences, presenting an opportunity to explore the various perspectives. Qualitative research aims to acquire an understanding through experience, truthful reporting, and quotations of actual conversations, which is congruent to Vygotsky and Dewey's student collaboration theories (Cilesiz, 2011; Creswell & Creswell, 2018; Putman & Rock, 2018; Schunk, 2012). Interviews are supported as an effective method for gathering qualitative data (Denzin & Lincoln, 2005). Accordingly, using interviews allow participants to elaborate on their responses and provide more in-depth information (Denzin & Lincoln, 2005).

Kvale and Brinkmann (2015) state that the qualitative research inquiry rationale is to gain an interpretation of themes regarding daily world experiences from the subjects' points of view. Thus, the research process involved in qualitative inquiry is ever-flowing as processes may change as data is collected, allowing for participants' perceptions that are discovered concerning the issue being explored (Creswell & Creswell, 2018). Due to the Covid-19 previous state-mandated restrictions, the researcher conducted interviews in a Zoom virtual environment. Consequently, the subjects appeared to adapt quite well to the virtual climate.

Design Validity

Validity in a phenomenological qualitative research study occurs when themes align, and findings are based on rationality (Giorgi, 2002; Salmons, 2015). The examiner utilized member checking to provide validity in the research study. The validity was established by reviewing the themes individually with the subjects. The researcher reviewed the questions and acknowledgments with the participants, and they responded verbally to the accuracy of the findings to establish the study's accuracy, credibility, and internal validity (Creswell & Creswell, 2018). Moreover, the researcher issued the participants copies of the transcriptions electronically to determine the validity and accuracy of the qualitative analysis, giving them the opportunity to provide comments.

Since this research study is phenomenological, and seek to understand the essence of upper elementary teachers' lived experiences and perceptions, and the factors that influence their practices; the validity lies in the knowledge that the researcher acquired from the qualitative research environment (Giorgi, 2002; Salmons, 2015). Whereas there is no capability to acquire an exact representation of a participant's experience, strategically wording interview questions in an open-ended capacity can allow for the structure of a phenomenon to be revealed (Agree, 2009; Giorgi, 2009). Furthermore, interviews are accepted as a legitimate research tool and widely used in qualitative inquiry (Creswell & Creswell, 2018). Thus, the examiner recorded and transcribed the subjects' responses to have a written version to facilitate data analysis (Mallette, 2017). The investigator provided the interview transcriptions to the participants for their review, ensuring that their comments were recorded correctly. Additionally, the process mentioned above provided participants with an opportunity to correct any miscommunication, and identify any needed edits.

Afterward, the examiner read through the participants' responses to the interview questions before the data analysis (Giorgi, 2009). This allowed the researcher to explore the essence of the responses before identifying themes and meaning units that pertain to the participants' instructional strategies and experiences in student engagement instruction (Giorgi &

Giorgi, 2003). Moreover, the researcher clarified potential biases through reflexivity, which pertains to examining one's preconceptions and assumptions (Creswell & Creswell, 2018; Putman & Rock, 2018; Salmons, 2015). For example, the researcher mentioned teaching upper grade mathematics using student engagement as an instructional strategy to demonstrate transparency. The investigator employed bracketing throughout the entire research process, which calls for researchers to set aside their own experiences to establish a real picture of a phenomenon's development (Giorgi, 2009; Grbich, 2013). Validity in a phenomenological study occurs when themes align, and findings are based on rationality (Giorgi & Giorgi, 2003; Salmons, 2015).

Setting

The interviews setting took place in a virtual Zoom atmosphere due to the Covid-19 previous state-mandated restrictions, which prevented the examiner from meeting with the subjects in person. The researcher interviewed each participant in a natural environment that is most comfortable for them (Creswell & Creswell, 2018; Putman & Rock, 2018). The researcher interviewed each participant for one hour using ten open-ended interview questions that the examiner distributed electronically during the virtual interview. Furthermore, the examiner audio recorded and transcribed the subjects' responses to the interview questions. Recording the participants' responses minimized the researcher's biases, and created more validity for the research study since the examiner listened to the recording using an objective lens (Putman & Rock, 2017).

Nine teachers participated in the study who teach upper grade mathematics in school districts within Southern California. The researcher interviewed one to two participants a day, which totaled five days for the inquisition. The investigator interviewed the subjects for one hour each individually, which totaled 9 hours. During the interviews, the researcher met with the participants for one hour each to discuss, clarify, and verify the research findings (Creswell & Creswell, 2018; Putman & Rock, 2018). The advantage of interviewing the participants individually is that it creates a climate for them to explore mathematical instructional practices, which provides a more in-depth understanding of personal attitudes regarding current mathematical instructional practices (Creswell & Creswell, 2018; Putman & Rock, 2018).

Population, Sample, and Sampling Procedures

Recruitment

This study's participants had nine teachers who had a minimal of five years of experience teaching mathematics in a third, fourth, or fifth grade classroom using small group discussions in school districts within Southern California. Moreover, the subjects possessed a Clear Multiple Subject Credential, and utilized the six levels of Bloom's Taxonomy of cognitive learning while teaching mathematics. Subjects possessing a multiple subject credential signifies that they are authorized to teach multiple subjects in a self-contained classroom (California Commission on Teaching Credentialing, 2020). A self-contained classroom is an environment that consists of the teacher teaching all subjects to a group of students in grades preschool, K-12 classroom in most elementary schools, or classes organized for primarily adults (California Commission on Teaching Credentialing, 2020). All subjects worked in Title I, low socioeconomic, public schools. The researcher selected participants from schools of similar student demographics to control the factors that may impact student engagement by researching the participants' schools online.

The researcher recruited participants by creating a database of upper grade elementary teachers who utilize student engagement strategies in mathematics instruction. The examiner created a database with teachers using the established criteria, and who are engaging students in mathematics instruction. The examiner sent the teachers an electronic recruitment letter via email requesting them to participate in the research study with the criteria indicated (see Appendix A). Since the examiner created an electronic database comprised of upper grade elementary teachers who utilize student engagement instruction, and contacted them via email, is considered convenience sampling (Etikan et al., 2016; Lavrakas, 2008).

Convenience sampling consists of non- probability sampling which includes a population that is close to hand, and available to participate (Etikan et al., 2016; Lavrakas, 2008). The researcher posted the recruitment letter electronically on social media, which included the Facebook and LinkedIn pages with criteria to recruit participants for the research study. Additionally, the examiner utilized snowball sampling to recruit subjects for the research project (Pajo, 2018; Salmons, 2015). Pajo (2018) and Salmons (2015) emphasize that snowball sampling is a non-probability technique used to identify potential participants for the research study. This technique encompasses existing subjects whom the researcher has recruited to utilize their social networks to provide referrals in recruiting participants for the research study (Pajo, 2018; Salmons, 2015). When the existing subjects provided their referrals, the examiner reached out to them electronically via email to send them the recruitment letter.

The investigator was successful with recruiting enough participants within a 14-day period, and therefore, it was not necessary to send a letter to recruit subjects for the research study to California Teachers Association, and United Teachers Los Angeles to advertise it in their magazine and newspaper. California Teachers Association is the policy-making body for teachers in California public schools. United Teachers Los Angeles is the teachers' labor union for Los Angeles City, and a segment of Los Angeles County.

The criteria used for identifying participants were as follows:

- Minimum of five years of teaching experience in upper grade elementary with a Multiple Subject Clear Credential in Southern California
- The subjects are to use instructional strategies that actively engage students in mathematics which refer to students being inquisitive, curious, interested, optimistic, and passionate regarding learning mathematics
- Participants will have to utilize small collaborative groups with students discussing mathematics using Bloom's Taxonomy six levels of cognitive learning. The six levels include remembering, understanding, applying, analyzing, evaluating, and creating

The researcher emailed the recruitment letter to candidates in the computer database for recruiting upper grade teachers to participate in the research study, and provided the operational definition of student engagement being employed in this study. Thereafter, the investigator requested that participants who meet the criteria and are interested in participating in the study to respond via email or phone.

Consequently, the examiner conducted semi-structured interviews using ten open-ended questions with the subjects individually (Putman & Rock, 2018). Moreover, the examiner used nonprobability purposive sampling to select participants, which is comprised of the selection of individuals based on non-random criteria according to their availability and accessibility (Creswell & Creswell, 2018; Putman & Rock, 2018). The interviews were semi-structured allowing new themes to emerge based on the participants' expressions (Creswell & Creswell, 2018; Pajo, 2018; Putman & Rock, 2018). Furthermore, semi-structured interviews are conversational, which allows the participants to respond in-depth to the interview questions that the researcher provides.

Additionally, the examiner distributed the interview questions electronically via email to the subjects which were pre-planned to explore the instructional practices that upper grade elementary teachers use to engage students in mathematics (Creswell & Creswell, 2018; Guion, Diehl, & McDonald, 2011; Pajo, 2018; Putman & Rock, 2018). Moreover, the investigator identified meaning units, which pertains to the meanings that are derived from words or phrases of the subjects (Putman & Rock, 2018). The examiner determined meaning units with conducting a thorough reading of transcriptions and insight into the phenomena that influence the participants to integrate innovative student strategies during mathematics instruction (Putman & Rock, 2018).

This qualitative phenomenological research study focuses on the generation of theory emerging from the data that the researcher collected from the participants with minimal preconceived notions regarding the study results (Creswell & Creswell, 2018; Putman & Rock, 2018). This phenomenological research study is inductive, since it involves a process of generalizations or theories based on the lived experiences of the participants, and the literature that supports using student engagement instruction (Salmons, 2015). Additionally, the generation of theory is applicable since the research is data generated and is collected by the researcher, which concentrate on the participants' lived experiences (Salmons, 2015).

The researcher had access to population names, and sampled them directly (Creswell & Creswell, 2018; Pajo, 2018; Putman & Rock, 2018). Furthermore, the research study involved purposive sampling, which involves the researcher using their expertise to select a sample that is most useful to the purposes of the research, which consists of the target population's specific characteristics (Creswell & Creswell, 2018; Putman & Rock, 2018). This research study aims to acquire the root of the participants' lived experiences, and provides insight into their perceptions that affect the integration of student engagement strategies in their mathematics classrooms (Creswell & Creswell, 2018; Putman & Rock, 2018).

Human Subject Considerations

The Institutional Review Board (IRB) in the Graduate School of Education and Psychology at Pepperdine University issued an approval letter indicating that the research project is exempt from the human subject’s regulations, category 2 (exemption 2) since the study meets the criteria. This exemption is based on the protection of the human subjects during the research study (see Appendix B). For instance, the examiner protected the participants’ identities, which was confidential and not easily ascertained (Creswell & Creswell, 2018; Mallette, 2017; Metcalf & Crawford, 2016; Putman & Rock, 2018).

Additionally, the researcher utilized pseudonyms, such as Participant A, Participant B, Participant C, etc. in order to protect the subject’s identity during the audio recordings, transcriptions, reporting results portions of this study, and blacking out identifying information on required documents to keep the participants confidential. Only the examiner has access to the data, and is keep it stored on the computer safely using a secured password to access it. The examiner utilized a USB drive to back up files, which is locked in a file cabinet at the investigator’s residence. After five years, the investigator will destroy the research data by permanently deleting the electronic and hard copy files stored on the computer. After the conclusion of the interviews, the investigator emailed the participants a copy of the transcriptions to ensure the validity and accuracy of the research study. Furthermore, any disclosure of the human subjects’ responses outside the research will not reasonably place them at risk of criminal or civil liability or damage the subjects' financial standing, employability, educational advancement, or reputation.

Moreover, the researcher submitted a copy of the research design and methodology, or draft of the research project to Pepperdine's IRB Manager for approval. The researcher conducted the process mentioned above approximately 4-6 weeks prior to the project. The researcher disclosed a summary of the findings electronically to individual participants who expressed an interest via email within 30 days after the research study was completed.

Instrumentation

The researcher conducted interviews and distributed interview questions for collecting the required data in this research study (Creswell & Creswell, 2018; Putman & Rock, 2018). The examiner developed an original instrument that consists of interview questions with ten open-ended questions, which is common in qualitative research (Agree, 2009; Putman & Rock, 2018). The purpose of the interview questions is for participants to respond to inquiries about this phenomenological qualitative research study (Agree, 2009). This study concentrates on the experiences and perceptions that upper elementary teachers have regarding implementing student engagement instructional strategies in mathematics.

The researcher emailed the open-ended interview questions to nine participants, which consisted of 10 questions about their experiences and practices for engaging upper grade students in mathematics (see Appendix C). The examiner conducted semi-structured interviews, and scheduled a one hour virtual Zoom session with each subject, recording and transcribing their responses. The interviews mentioned above occurred over five days, interviewing one to two participants per day. The research study timeline was five days, and 9 hours total for the data collection.

The instrument is valid through the knowledge gained from the interviews, which measures what it intends to measure (Creswell & Creswell, 2018; Giorgi & Giorgi, 2003; Putman & Rock, 2018). Consequently, the investigator recorded, transcribed, and analyzed the interviews to identify common themes and patterns through coding, which aligns with the qualitative research process (Creswell & Creswell, 2018; Giorgi, 2009; Putman & Rock, 2018). Coding is the process of identifying a passage in the text or other data items (photograph, image), along with searching and identifying concepts and finding common themes between them (Creswell & Creswell, 2018). The investigator coded the data by hand, and categorized the information from the interview questions to determine the themes that represent a common idea (Creswell & Creswell, 2018).

Additionally, the researcher employed bracketing, which entails the examiner setting aside personal experiences to minimize any personal biases throughout the research process to establish the study's validity and credibility (Creswell & Creswell, 2018; Giorgi, 2009; Putman & Rock, 2018). Creswell and Creswell (2018); Giorgi (2009); Putman and Rock (2018) emphasize that a descriptive analysis develops what the data will demonstrate, and the researcher will conduct no interpretation until the final stage of the research, which maintains the trustworthiness, validity, and credibility of the study. The investigator developed Table 2 to demonstrate the research question's alignment with the interview questions in this study.

Table 2

Instrument Questions, and Literature Sources

Instrument Questions	Literature Sources
1. How do you define student engagement?	1. Fredricks, Blumenfeld, & Paris (2004)
2. How does curriculum affect students being actively engaged in learning mathematics?	2. Attard (2012)
3. What instructional strategies do you utilize to engage and motivate students to learn mathematics?	3. Attard (2012)
4. Why do you think the research demonstrates that student engagement is important in increasing motivation, and promoting math proficiency?	4. Pantziara & Philippou (2015)
5. What are your experiences in incorporating technology in mathematics instruction to engage students?	5. Raines & Clark (2011)
6. If students are not actively engaged and motivated to learn mathematics, how can this process possibly increase their understanding of the subject?	6. Mata, Monteiro, & Peixoto (2012)
7. If students have a positive attitude while acquiring mathematical concepts, how can this possibly increase their cognitive development?	7. Farooq, Zia, & Shah (2008)
8. In what capacity, if any, can differentiated instruction contribute to students acquiring an understanding of mathematical concepts?	8. Marsh (2014)
9. How might teachers increase student engagement and math proficiency within an upper grade elementary classroom?	9. Martin (2006)
10. How might teachers utilize tablets, or collaboration techniques to motivate students to learn mathematics?	10. Haywood, Kuespert, Madecky, & Nor (2008)

The literature displayed in Table 2 addresses open-ended interview questions that the examiner will use in the interviews. The authors provide various instructional practices that concentrate on student engagement strategies in mathematics that teachers can use in their classroom. The literature's significant aspects focus on the relationship between pupil collaboration and student interest, which affects knowledge acquisition within the school atmosphere. Moreover, the literature exhibits evidence of children realizing that they can learn, acting as their agents, and achieving proficiency in mathematics.

Another key finding in the articles is the importance of integrating technology, which increases student motivation, and is the learning process's backbone. Additionally, intellectually stimulated students are motivated to learn, increasing students' cognitive and language development, and promoting a positive attitude. Furthermore, the authors suggest that challenging students in the classroom environment is crucial in motivating students; therefore, differentiating instruction and highly engaging students are significant factors in students acquiring math skills.

Focus Group Results

The researcher had two experts who have been in the field of education for over 20 years to view and critique the 10 interview questions. One of the experts has been a Teacher, Administrator, Educational Consultant, Educational Public Policy Analyst, Educational Facilitator, and Parent Education Instructor. The other expert has been a Teacher, Math Coach, Instructional Intervention Coach, and Peer Coach. These two individuals are experts in the educational field, since they have successfully utilized the six levels of Bloom's Taxonomy of cognitive development in their classrooms, which are congruent to the California Common Core State Standards. Over the years, their students excelled in learning mathematics, and scored very high on their math proficiency assessments.

The examiner had numerous opportunities to observe these two experts in engaging students in mathematics instruction. One of the experts was featured on television, which was an educational documentary on channel 11, highlighting students actively engaging in academic rigor utilizing small group discussions in mathematics. The other expert was visited by the area Superintendent, and the Director of Education in the classroom, videotaping the expert teaching a rigorous academic lesson in mathematics utilizing small group instruction. Both experts have affiliated with upper elementary secondary, title 1 public schools in Southern California. The two experts commended the examiner in creating the 10 interview questions for the participants in the research study, and specified how the interview questions were in alignment with the research question for the study. Additionally, the two experts strongly believe that the examiner's interview questions correlate with the six categories of Bloom's Taxonomy, which focus on cognitive skills that range from lower-order to higher-orders skills (Adams, 2015; Ormrod et al., 2017).

Adams (2015) and Ormrod et al. (2017) further contend that the six levels of Bloom's Taxonomy are remembering, understanding, applying, analyzing, evaluating, and creating. Using Bloom's Taxonomy requires deeper learning, and a greater degree of cognitive processing (Adams, 2015; Ormrod et al., 2017). The goal of an educator utilizing Bloom's Taxonomy is to encourage higher-order thinking amongst students. The first interview question concentrates on the definition of student engagement. This interview question relates to the six levels of Bloom's Taxonomy of cognitive learning, because in order to explain and implement the six levels, it is crucial for teachers to have an understanding of the definition of student engagement.

The second and third interview questions consist of how curriculum affects students being actively engaged in learning mathematics, and utilizing instructional strategies to engage and motivate students to learn mathematics. These interview questions relate to the six levels of Bloom Taxonomy's cognitive learning, since students have to remember and recall basic facts and concepts (Adams, 2015; Ormrod et al., 2017). Secondly, within the curriculum, students should accumulate an understanding through discussions, describing and explaining mathematical concepts, which will motivate and stimulate students' cognitive development (Adams, 2015; Ormrod et al., 2017). Thirdly, students should have a curriculum that is inclusive of applying and analyzing mathematical problems that execute and examine real-world concepts in order to make connections (Adams, 2015; Ormrod et al., 2017). Additionally, students should have a curriculum, which will enable them to provide evidence to critique mathematical problems as well as creating new mathematical concepts (Adams, 2015; Ormrod et al., 2017). Moreover, the instructional strategies that are implemented to engage and motivate students to learn mathematics are important in executing the six levels of Bloom's Taxonomy effectively.

The fourth and fifth interview questions focus on research, indicating the importance of student engagement increasing student motivation, and math proficiency as well as the importance of integrating technology in mathematics instruction (Adams, 2015; Ormrod et al., 2017) These concepts connect to the six levels of Bloom Taxonomy's cognitive learning, because if students are motivated to learn, then cognitively they are able to grasp the various levels of Bloom's Taxonomy when they are engaging in mathematical concepts, which could lead to academic improvement on mathematical assessments (Adams, 2015; Ormrod et al., 2017). Likewise, integrating technology in mathematics instruction will provide various ways for students to organize, and structure the knowledge that was acquired cognitively through mathematical instruction (Adams, 2015; Ormrod et al., 2017).

Interview questions six and seven concentrate on students who are not motivated to learn mathematics, and the importance of experiencing a positive attitude which increases students' cognitive development (Adams, 2015; Ormrod et al., 2017). These concepts relate to the six levels of Bloom Taxonomy's cognitive learning due to the fact that if students are not motivated to learn mathematics, then they are not able to examine, describe, and explain mathematical concepts effectively (Adams, 2015; Ormrod et al., 2017). Furthermore, the students possessing a positive attitude will stimulate their cognitive development which is crucial when implementing the various levels of Bloom's Taxonomy during mathematical instruction (Adams, 2015; Ormrod et al., 2017).

Interview questions eight, nine, and ten are comprised of the importance of differentiated instruction, increasing student engagement, math proficiency, utilizing tablets, and collaboration, which enhances student motivation in learning mathematics (Subban, 2006). Differentiated instruction provides students with reinforcement of information acquired, which allows students to accumulate a better understanding of ideas and concepts that they can examine, analyze, and evaluate, which are in alignment with Bloom's Taxonomy (Subban, 2006). Moreover, differentiated instruction addresses the individual differences of students, which increases student engagement and math proficiency scores (Subban, 2006).

Furthermore, when students are engaged in the learning process, such as, using tablets; this reinforces learning, and enable students to become more collaborative with their peers, which increases their motivation in learning mathematics (Adams, 2015; Ormrod et al., 2017). Additionally, when students become more collaborative, they become motivated to learn since they have a better understanding of concepts (Adams, 2015; Ormrod et al., 2017). Lastly, students are able to explain ideas and make new connections through examining, and comparing various mathematical concepts, which relate to the six levels of Bloom's Taxonomy (Adams, 2015; Ormrod et al., 2017).

Data Collection Procedures

Creswell and Creswell (2018); Giorgi (2009); Putman and Rock (2018) emphasize that methods used to research the essence of teacher experiences upon implementing instructional strategies involving engagement are interviews. The investigator identified nine research study participants who teach at Title I elementary schools, who use student engaging instructional strategies in their mathematics classrooms aligning with the definition of student engagement provided by the researcher. The researcher created an informed consent for the subjects to sign, which explains the research study's purpose, process, and how the participants are protected (Mallette, 2017; Putman & Rock, 2017). This established the trustworthiness and credibility of the research project (Mallette, 2017; Putman & Rock, 2017). Furthermore, establishing rapport is an integral part of the data gathering process to make the subjects feel comfortable, creating mutual respect (Giorgi, 2009).

Creswell and Creswell (2018) support data collection for qualitative studies taking place in a natural environment. The first step in recruiting recipients in the data collection process is that the researcher emailed the recruitment letter electronically to teachers throughout the Los Angeles County region using the computer database. Secondly, the investigator posted the recruitment letter on Facebook and LinkedIn requesting for subjects to participant in the project. Thirdly, the researcher utilized snowball sampling to recruit subjects for the research study (Pajo, 2018; Salmons, 2015). The examiner received responses to the advertisement within 14 days of it being published. Consequently, it was not necessary for the examiner to send the recruitment letter to United Teachers Los Angeles, and California Teachers Association to advertise for participants in their newspaper and magazine. When the candidates responded to the advertisements, the investigator vetted them to ensure that they meet the requirements to participate in the research study.

Thereafter, the researcher selected the participants utilizing nonprobability purposive sampling, which consists of the selection based on non-random criteria that pertain to the availability and accessibility of the subjects (Creswell & Creswell, 2018; Putman & Rock, 2018). Afterward, the examiner distributed the informed consent to the subjects electronically via email to provide their signed consent on their participation in the research study (see Appendix D). The researcher informed the subjects that if they needed further clarification regarding the informed consent, they could contact the researcher via telephone with the information provided to them on the informed consent. Moreover, the investigator blacked-out any identifying information to ensure confidentiality of the subjects, which was clarified to them prior to the interviews. When the researcher received the signed informed consent from the research participants, the interview questions were emailed to them.

Thereafter, the examiner set up a date and time to interview the subjects for the research study. The examiner collected qualitative data through interviews conducted individually in a virtual atmosphere via Zoom. Due to the Covid-19 previous state-mandated restrictions, the interviews did not take place face-to-face, so the examiner elected to conduct interviews in a virtual climate. The subjects appeared to have felt comfortable in the virtual environment. The examiner explained to each participant that the interview will last one hour, and each session will be recorded, and transcribed. Additionally, the investigator emphasized to the subjects that a pseudonym would be used during the interviews, which was comprised of Participant A, Participant B, Participant C, etc. to maintain the confidentiality of the participants. Prior to the interviews, the investigator clarified to the participants that their responses were being recorded.

Moreover, the researcher specified to the participants during the interview that each response will be reviewed and verified to ensure the accuracy of the research study. After concluding the interview, the examiner emailed a copy of the transcriptions to the participants to ensure the validity and accuracy of the interviews. The investigator is the only one who will have access to the data, which was stored safely on the computer with a secured password, which was explained to the participants. The investigator utilized a USB drive to back up files, which is locked in a file cabinet at the examiner’s residence. Furthermore, the examiner will destroy the research data after five years by permanently deleting the electronic and hard copy files that are stored on the computer, which the examiner clarified to the subjects. Finally, the researcher interviewed one to two subjects each day, for one hour each for five days, with nine participants.

Moreover, interviews were semi-structured, allowing participants to respond freely, which guided the researcher to ask in-depth questions as necessary, which is considered the emergent design (Creswell & Creswell, 2018). The investigator conducted semi-structured interviews, and pre-arrange them with participants which consist of predetermined open-ended questions for the examiner to concentrate on as the interview progresses (DiCicco-Bloom & Crabtree, 2006). Moreover, open-ended questions provide participants with the opportunity to explain their feelings and experiences in greater depth, and for the interviews to flow naturally (Guion, Diehl, & McDonald, 2011).

These interviews are aimed to obtain concrete, detailed descriptions of teachers' experiences and perceptions (Giorgi, 2009). While it is never quite possible to remove all researcher influence from a qualitative research study, validation procedures and reduction were utilized to reduce bias (Giorgi, 2009). This qualitative research study is attempting to uncover the essence of phenomena, which involves the most influential meaning units that are identified in influencing teachers to engage student in mathematics within the classroom environment. These engagement strategies are described in the results of the research study (Giorgi & Giorgi, 2003). The investigator developed the interview questions in the research study, which is common in qualitative data (Agree, 2009; Salmons, 2015). The questions commenced with number one through ten, and are relevant to instructional strategies that are used to engage students in mathematics instruction. Moreover, the investigator recorded, and transcribed the interviews to produce data findings.

Lastly, there are no foreseeable risks or ill effects from participating in this study. As the respondents' identities are confidential, choosing not to participate will not incur any negative consequences. Participating in this research study, provides participants with an opportunity to reflect upon their teaching practices and experiences. Hence, 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 construct meaningful professional development, and help improve teacher preparation programs in the area of mathematics education.

Data Management

The researcher is managing the data, and is the only one who has access to it. The data is safely retained, and stored on the computer using a secured password. The examiner utilized a USB drive to back up files, which are locked in a file cabinet at the researcher's residence. The investigator will vanquish the research data after five years by permanently deleting the electronic and hard copy files that are stored on the computer. The examiner kept the participants' responses and identities confidential. Additionally, the researcher utilized a pseudonym, which is a fictitious name, during the audio recordings, transcriptions, and reporting results portions of this study. The pseudonyms consisted of Participant A, Participant B, Participant C, etc. to maintain confidentiality of the subjects. Furthermore, the examiner blacked-out identifying information on the required documents to keep the participants confidential. Lastly, the examiner notified the subjects at the conclusion of the interviews that they will receive a copy of the transcriptions via email to ensure the validity and accuracy of the research study.

Data Analysis

The examiner conducted the data analysis using interviews, audio recordings, written transcriptions, and responses to the interview questions (Creswell & Creswell, 2018; Giorgi, 2009; Putman & Rock, 2018). Giorgi (2009) suggests that data analysis is employed by reading for a sense of the whole, determining common themes, and transforming participants' expressions into phenomenological expressions, which the investigator utilized. The investigator established the themes through coding, which an integral segment of phenomenological qualitative research (Creswell & Creswell, 2018; Putman & Rock, 2018). According to Creswell and Creswell (2018), qualitative researchers aim to paint a picture of a problem being studied, which involves reporting all perspectives and identifying all factors involved, which increases the validity, trustworthiness, and credibility of the research study.

Hence, the examiner reported results by describing the influential factors that participants identify, relating to engaging instructional strategies in mathematics, and establishing the common themes. Consequently, the researcher constructed a descriptive analysis that focus strictly on the data and findings, without interpretation (Creswell & Creswell, 2018; Giorgi, 2009; Putman & Rock, 2018). Additionally, the examiner identified influential factors by themes that emerge through analysis of interviews, audio recordings, and written transcriptions (Creswell & Creswell, 2018; Giorgi, 2009; Putman & Rock, 2018).

The researcher checked the findings' accuracy using multiple validity procedures (Creswell & Creswell, 2018). For instance, the examiner utilized member checking by reviewing the themes individually with the subjects. The researcher reviewed the questions and acknowledgments with the participants, and they responded to the accuracy of the findings to establish the study's accuracy, credibility, and internal validity (Creswell & Creswell, 2018). Moreover, the researcher issued the participants copies of the transcriptions electronically to determine the accuracy of the qualitative analysis, giving them the opportunity to provide comments after the interviews. The examiner utilized reflexivity, which is self-reflection regarding the educational background in student engagement instructional strategies in upper grade elementary school. Creswell and Creswell (2018); Putman and Rock (2018) emphasize that reflexivity enables the investigator to have a minimal bias, which creates an atmosphere of transparency with the research study participants.

Positionality

The researcher has experience teaching upper elementary mathematics, and providing instructional coaching for teachers of these grades in mathematics. The researcher's experience consists of most teachers being eager for professional development, and learning new instructional strategies. While others are content utilizing the same instructional methods year after year. The examiner implemented student engagement instructional strategies when teaching upper grade elementary mathematics, and utilized small-group discussions. This enabled students to collaborate, analyze, evaluate, and reflect on the math problem. The investigator's rationale for selecting student engagement instruction in upper grade elementary mathematics is the many years of being an experienced educator. During this time, the researcher has seen students develop a strong dislike for learning mathematics because of a lack of confidence and belief in their abilities to acquire the problem-solving and critical-thinking skills deemed necessary in learning mathematical concepts (Durksen et al., 2017).

The examiner will implement Vygotsky and Dewey's theory of learning while teaching mathematics. For instance, the researcher will administer rigorous social conversations, scaffolding techniques, and accessing students' learning mathematics experiences (Ormrod et al., 2017). The investigator strongly believes that incorporating student collaboration in mathematics instruction, and relating it to the real world, will increase students' motivation and enthusiasm regarding learning mathematics (Bodovski & Farkas, 2007). As a master teacher, the examiner is enthusiastic about learning new instructional strategies. Additionally, the researcher is excited about conversing with other teachers regarding what is suitable for them in applying instructional strategies that concentrate on student engagement in mathematics. Hence, the researcher is interested in exploring the experiences and perceptions of teachers who foster student engagement instructional strategies in upper grade mathematics.

Moreover, the investigator will convey their educational background to the participants to minimize biases and exhibit transparency, which is considered bracketing (Giorgi, 2009; Grbich, 2013). The examiner will exhibit transparency with participants in the research study during the interviews. Understanding the examiner's possible connection with the participants is an asset to the research study, which will develop a natural rapport due to the researcher's excellent reputation as a teacher in Southern California (Giorgi, 2009). As a result of the researcher connecting with the participants, hopefully, they will feel comfortable responding to inquiries openly and honestly.

Even though there is little information available on the specific topic of what experiences and perceptions upper elementary teachers have upon mathematics instruction that engages students, 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 phenomena occurring that pertain to the experiences and perceptions of third through fifth grade elementary mathematics teachers in utilizing 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 teaching begin with the teacher as they are the instructional decision-maker in most cases. Hence, this study focuses on upper grade elementary teachers' experiences and perceptions, they have regarding implementing student engagement instructional strategies in mathematics. The literature review has indicated that student engagement is significant in the educational experience; therefore, measures must be taken to increase engagement in the mathematics classroom. When students are engaged in mathematics, learning is fostered when student-centered instructional strategies are implemented (Holmes, 2013).

Furthermore, mathematically competent students have additional practical, real-world skills like the ability to reason, think conceptually, and apply what they know to various 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 their schooling. While the research study focused on the area of mathematics, findings may also be applicable for improving student engagement across other subject areas.

Summary

There has been evidence that exemplified if pupils are not actively collaborating in learning math, and are not intellectually stimulated, their motivation level will diminish drastically, which will affect their academic achievement (Bodovski & Farkas, 2007). It is imperative for educators to utilize efficient methods, such as pupil collaboration, so that children will become excited to learn math and improve academically (Durksen et al., 2017; Ingram, 2011; Marsh, 2014; Pantziara & Philippou, 2015). Teaching pupil collaboration strategies within the class atmosphere are crucial in enhancing children's interest in learning math (Durksen et al., 2017; Pantziara & Philippou, 2015).

Additionally, research has indicated that students are interested in learning mathematics if they are actively engaged and participating in the learning process (Pantziara & Philippou, 2015). The evidence analyzed for many years has emphasized a challenge with children not being interested in learning math in the primary school climate, which has produced low academic performance (Bodovski & Farkas, 2007). It is apparent that if children do not collaborate in learning mathematics and are not stimulated academically, their math performance will decrease tremendously (Bodovski & Farkas, 2007). The research has exemplified and supports the implementation of student-centered instruction, which encompasses students actively engaging in the learning process (Pantziara & Philippou, 2015).

Through the lens of constructivism and the theoretical framework of phenomenological research, this study seeks to understand the phenomena occurring of the experiences and perceptions of third through fifth-grade elementary mathematics teachers to utilize strategies that increase engagement. According to Ormrod et al. (2017) and Schunk (2012), the constructivist theory regarding student engagement and mathematics concentrates on students collaborating within their learning environment, which increases their cognitive development. Ormrod et al. and Schunk further contend that the theory mentioned above supports Vygotsky and Dewey's ideas. For example, Vygotsky's approach emphasizes the importance of language and stimulates cognitive growth in students (Ormrod et al., 2017; Schunk, 2012). Dewey's theory of learning primarily concentrates on students experiencing the learning process, and that educational experiences require interaction between students and their environment (Ormrod et al., 2017; Schunk, 2012).

Harrington (2017) infers that teachers have inefficiently taught in a traditional capacity for many years, and students have become extremely frustrated with the instructional strategies that have been implemented in the classroom atmosphere with limited engagement from the students. Teaching in a traditional capacity encompasses teachers lecturing to students in a whole group formation (Turner et al., 2011). Limited engagement or participation is applicable to teachers not having students actively engaged in learning mathematics (Harrington, 2017; Turner et al., 2011).

As a result, students have experienced difficulties in learning mathematical concepts (Ferguson, 2010). There is a strong need to encourage high-quality, rigorous instruction, and to reform current educational policies and practices so that teachers can implement productive instructional practices in the classroom that are geared toward upper grade elementary students (Harrington, 2017). Improvements to instruction begin with the teachers since they are the instructional decision-maker in most cases; therefore, this study is focusing on teacher experiences and perceptions, which aims to acquire the essence of the influences that affect their instructional decisions when it pertains to engaging upper grade elementary students in mathematics (Harrington, 2017). Chapter 4 presents the study's results and summary of key findings. Additionally, this section includes the data analysis within the major sections of the research study.

Chapter 4: Results

Introduction

The purpose of this qualitative phenomenological research study was to explore how teachers of upper elementary students in school districts within Southern California explain their experiences, and perceptions in using their chosen strategies for engaging students in mathematics instruction. The researcher provided further clarification of this qualitative phenomenological research study through exploring upper grade teachers lived experiences and perceptions regarding effective instructional strategies to engage students in mathematics by focusing on the following research question:

How do upper elementary teachers in school districts within Southern explain their experiences, and perceptions for engaging students in mathematics instruction?

Research Design

This qualitative study's methodology involved phenomenological research with semi-structured interviews with 10 open-ended questions, which concentrated on identifying the essence of the lived experiences and perceptions with participants who implement student engagement in their instructional strategies in upper grade elementary school in Southern California. The phenomenological qualitative research design was utilized to have a better understanding of the participants' lived experiences. The investigator conducted virtual interviews to capture the participants' responses regarding their experiences and perceptions with student engagement instruction. The investigator identified common themes and patterns through coding that was in alignment with the literature review.

Demographics

The examiner utilized convenience, purposive, and snowball sampling to select subjects who met the following criteria:

- Minimum of five years of teaching experience in upper grade elementary with a Multiple Subject Clear Credential in Southern California
- The subjects are to use instructional strategies that actively engage students in mathematics which refer to students being inquisitive, curious, interested, optimistic, and passionate regarding learning mathematics
- Participants will have to utilize small collaborative groups with students discussing mathematics using Bloom's Taxonomy six levels of cognitive learning. The six levels include remembering, understanding, applying, analyzing, evaluating, and creating

The researcher collected data from nine upper grade elementary teachers for a total of 9 hours over a five-day period. The examiner interviewed the subjects using 10 open-ended questions, which concentrated on their instructional strategies based on their best practices that foster students engaging in upper elementary mathematics. The nine participants interviewed were comprised of eight females, and one male. Of the nine subjects, there were three third grade teachers, two fourth grade teachers, and four fifth grade teachers. The nine subjects taught at Title 1 low socioeconomic public schools in Southern California, which is a federally funded national program that is comprised of pupils receiving free school lunch or at a reduced cost. The investigator created a summary of the demographic information of the participants that is exhibited in Table 3.

Table 3

Participants' Demographic Information

Participant/Pseudonym	Gender	Grade	Years of Service
Participant A	Male	5	21
Participant B	Female	5	15
Participant C	Female	5	9
Participant D	Female	5	12
Participant E	Female	4	7
Participant F	Female	4	18
Participant G	Female	3	25
Participant H	Female	3	22
Participant I	Female	3	14

There were nine subjects in the study who taught grades three through five, which is upper grade elementary, and their years of experience ranged from 7 to 25 years. There were eight ninths of the participants who were females, and one ninth was a male interviewed. The investigator referred to the subjects in the research study as Participant A, Participant B, Participant C, etc. to preserve confidentiality. Specific identifying information has been omitted to prevent identification of participants. Confidentiality was important in this research study; therefore, the participants appeared comfortable in responding openly and honestly without fear of reprisal.

Data Analysis Process

Since this research study was phenomenological in nature, and the participants' responses conveyed the essence of their lived experiences, perceptions, and feelings regarding student engagement instruction in mathematics, the examiner conducted member checking to establish validity of the research study. The investigator established validity by conducting multiple reads of the subjects' narratives to ensure the accuracy of the data, and to acquire a general familiarity of it.

Through the open coding process, the researcher classified the data into conceptual components. The themes were derived from inductive coding by examining the subjects responses to the interview questions. Thereafter, the codes were accumulated under each variable, and the emergence of seven themes were established during the qualitative analysis of the variables in the research inquiry. The following seven comprehensive themes emerged during the qualitative analysis process that correlated to the research question, and were derived from the interview questions: (a) engaging students in small group collaboration, (b) motivating students through rigorous instruction, (c) utilizing scaffolding techniques, (d) magnifying students' leadership through self-directed activities, (e) implementing high-level cognitive development activities, (f) engaging students in differentiated instruction, and (g) integrating 21st century technology

The themes provide insight on upper elementary teachers' experiences and perceptions in implementing instructional strategies for fostering student engagement in mathematics. In terms of consistency, the researcher had the nine participants to answer an identical set of 10 questions individually. Following the phenomenological form, the interview transcripts were read for a sense of the whole, and read multiple times afterwards to identify common meaning units with each participant. The research question that the investigator focuses on consists of the following: How do elementary teachers in school districts within Southern California explain their experiences, and perceptions for engaging students in mathematics instruction?

The findings from the research question are the result of a thorough analysis of data collected that were alignment with it. Interview questions one and two (IQ1-IQ2) concentrate on the definition of student engagement, and how the curriculum affects students being actively engaged in learning mathematics. Interview questions three and four (IQ3-IQ4) focus on instructional strategies that teachers utilize in the classroom, and the research that demonstrates the importance of student engagement, motivation, and math proficiency. Interview questions five and six (IQ5-IQ6) concentrate on the experiences that students have with integrating technology while learning mathematics, and how students are affected when they are not engaged and motivated to learn mathematics. Interview questions seven and eight (IQ7-IQ8) focus on the importance of students maintaining a positive attitude cognitively while engaging in mathematics, and how differentiated instruction contributes to students understanding mathematical concepts. Interview questions nine and ten (IQ9-IQ10) are comprised of how teachers will increase student engagement, and math proficiency in correlation with utilizing tablets or collaboration techniques to motivate students to learn mathematics. This segment of the research study outlines the details of the findings for each phase of the interview.

There were 10 interview questions that the examiner posed to the subjects, which are indicated below:

1. How do you define student engagement?
2. How does curriculum affect students being actively engaged in learning mathematics?
3. What instructional strategies do you utilize to engage and motivate students to learn

mathematics?

4. Why do you think the research demonstrates that student engagement is important in increasing motivation, and promoting math proficiency?
5. What are your experiences in incorporating technology in mathematics instruction to engage students?
6. If students are not actively engaged and motivated to learn mathematics, how can this process possibly increase their understanding of the subject?
7. If students have a positive attitude while acquiring mathematical concepts, how can this possibly increase their cognitive development?
8. In what capacity, if any, can differentiated instruction contribute to students acquiring an understanding of mathematical concepts?
9. How might teachers increase student engagement and math proficiency within an upper grade elementary classroom?
10. How might teachers utilize tablets, or collaboration techniques to motivate students to learn mathematics?

Question 1: How do you define student engagement?

When this question was posed, all participants alluded to students being actively participating in the learning process. Participant A stated, “Student engagement means that all students are motivated, and are actively participating, listening and learning.” Participant A further contended, “I enjoy hearing students dialoguing in small groups.” Adding to this sentiment, Participants B and I mentioned, “Student engagement means to examine students interacting and engaging with one another, focusing on the learning goal, having conversations about their learning, and utilizing problem-solving strategies in small groups.” Participants C and

G stated, “Student engagement means that students are interacting in small collaborative groups, and discussing real world concepts.” Participant D indicated, “Student engagement requires that the instructor introduces concepts, vocabulary, directed inquiries and simulations as a part of all lessons, and have students working in small discussion groups.” Participant D further stated, “I always introduce vocabulary to my students, so that if they have any inquiries, I can address them.” Participant E stated, “Student engagement means empowering students with knowledge and activities which allow them to demonstrate competencies that are measured according to specific criteria, which are specified before the lesson begins.” Participants F and H specified, “Student engagement pertains to students who work cohesively in small collaborative groups, analyzing and evaluating information.”

Question 2: How does curriculum affect students being actively engaged in learning mathematics?

When this question was stated, all subjects felt that the math curriculum had to be interesting and intellectually challenging for students to become engaged in learning. Participants A and I stated, “If teachers would have a student-centered curriculum whereas students are engaged in rigorous discussions, this would motivate students to learn mathematics, and excel in the subject.” Participant C specified, “It is vitally important for teachers to have a math curriculum that will stimulate students’ cognitive development, and challenge the way students think, using academic rigor which will keep them actively engaged in learning mathematics.” Participant C further emphasized, “In my classroom, I introduce challenging math problems to the students, so that they can actively think and evaluate.” Participants D and E stated, “I believe that students should have a curriculum that includes a certain amount of autonomy when learning mathematics, which allows them to take control of their learning, and keeping them actively engaged." Participants B and H specified, "It is important to have a curriculum that incorporates 21st century technology in order for students to become actively engaged in learning mathematics." Participants F and G emphasized, "I am of the belief that the math curriculum should reflect real world concepts in order for students to become motivated and actively engaged in the learning process."

Question 3: What instructional strategies do you utilize to engage and motivate students to learn mathematics?

When this question was presented, all participants strongly believed that instructional strategies should be student-centered so that students can become engaged in learning mathematics. Participants A and I stated, "I utilize scaffolding techniques in order for students to intellectually comprehend and apply mathematics to their daily lives." Participant A further stated, "When I utilize scaffolding strategies in my classroom, the lightbulb comes on, and students accumulate a high cognitive understanding of mathematical concepts, and are motivated to learn." Participants B and E specified, "The strategy I utilized to motivate students to learn mathematics is small discussion groups along with scaffolding the information, which allows students to develop a stronger understanding of mathematical concepts, which highly increases their cognitive development." Participants C stated, "I use intrinsic and extrinsic rewards to motivate students to learn mathematics." Participant C further emphasized, "When I utilize intrinsic rewards in my classroom by praising my students for a job well done, their self-esteem increases, and their motivational level and cognitive development are enhanced." Participants D and G emphasized, "I incorporate technology as a strategy to increase students' cognitive development and motivation to learn mathematics." Participant G further stated, "When my students use their laptops and tablets while doing mathematics, they seem to enjoy it immensely." Participants F and H suggested, "The instructional strategies that I utilize are heterogeneous grouping, and technology to motivate students to learn mathematics, which highly stimulates them intellectually."

Question 4: Why do you think the research demonstrates that student engagement is important in increasing motivation, and promoting math proficiency?

When posing this inquiry, the subjects unanimously agreed that students being actively engaged in mathematics increases math proficiency. Participants A and C stipulated, "Students who are highly motivated to learn mathematics make a greater effort to engage in rigorous discussions, which leads to math proficiency." Participant A further stated, "I personally witnessed my students' math scores gradually improving from them being actively in learning mathematics through intellectual discussions, and analyzing mathematical equations." Participants B and G stated, "Students become self-directed leaders, and take initiative when they are engaged and motivated to learn mathematics, which increases math proficiency." Participant G further emphasized, "My students have become completely autonomous while working cohesively with their peers on mathematical equations, which has enabled them to effectively evaluate and reflect on their mathematical solutions, and has stimulated their cognitive learning." Participant G continued to state, "This has increased their interest in learning mathematics, and increased their math assessment scores." Participants D and F emphasized, "Students who are engaged and motivated to learn mathematics, produce higher quality work, learn more deeply, and perform better on standardized assessments." Participants E and H stated, "When students are actively engaged and motivated to learn mathematics, they develop a sense of empowerment which increases their self-esteem, and mathematical proficiency." Participant H further emphasized, "When my students are actively engaged in learning mathematics, they feel so empowered motivated that they begin to believe that they can conquer the world." Participant I stipulated, "When students are engaged and motivated to learn mathematics, they develop an internal locus of control, which indicates they have control over the outcome of their lives, opposed to being influenced by external forces, which sharpens their leadership skills." Participant I further stated, "This increases students' motivation to learn mathematics, which eventually increase their math proficiency scores."

Question 5: What are your experiences in incorporating technology in mathematics instruction to engage students?

When the investigator stated this question, all subjects agreed that incorporating 21st century technology is pertinent to engaging students in mathematics instruction. Participant A stated, "Integrating technology in mathematics instruction within my classroom increases students' critical-thinking and problem-solving skills." Participants B and E specified, "Integrating 21st century technology provides a differentiated learning environment in my classroom, which increases student motivation, engagement, and math proficiency scores." Participants C and F stated, "My experiences with integrating technology in mathematics instruction has created meaningful learning for all students, and has generated a student-centered learning environment." Participant G emphasized, "My experiences in incorporating 21st century technology in math instruction has provided students with kinesthetic learning, which increases students' cognitive development." Participant G further specified, "Several of my students stated that they used to dislike math, but utilizing technology has created an environment for them to become motivated and interested in learning mathematics." Participants D and H stated, "Incorporating technology in my classroom provides students with an intellectually deeper, more personalized learning experience." Participant I specified, "Including technology in my classroom provides students the opportunity to gain mastery in certain areas of mathematics where they are experiencing challenges, which increase their cognitive thinking, and math proficiency scores."

Question 6: If students are not actively engaged and motivated to learn mathematics, how can this process possibly increase their understanding of the subject?

When the examiner asked this question, all subjects believed that students not being engaged and motivated to learn mathematics would have a negative effect on them. Participant A stated, "If students are not engaged and motivated to learn mathematics, they will mostly likely become frustrated." Participant A further stated, "Students need to become challenged intellectually to understand mathematical concepts in order for them to become motivated to learn." Similarly, Participants B and H emphasized, "Students tend to become frustrated, if they are not actively engaged and intellectually stimulated while learning mathematics." Participants B and H further contended, "Students need work that is academically challenging, which will create enthusiasm regarding learning mathematics." Participants C and F stipulated, "Students need mathematics that will increase their critical-thinking skills to become actively engaged and motivated to learn mathematics." Participants D and I stated, "Students will lose their enthusiasm, and become disinterested in learning mathematics, so they need activities that are student-centered." Participant E stated, "If students are not engaged and motivated to learn mathematics, they will not have the opportunity to become intellectually challenged in order for them to understand the subject." Participant E further stated, "Students need work that is intellectually appealing to them." Similarly, Participant G stated, "Students' critical-thinking and problem-solving skills will decrease if students are not actively engaged and motivated to learn mathematics." Participant G further stated, "Students need math that encourages them to think, analyze, and evaluate, which will create understanding of the subject."

Question 7: If students have a positive attitude while acquiring mathematical concepts, how can this possibly increase their cognitive development?

When the researcher asked the subjects this question, all of them agreed that students having a positive attitude while learning mathematical ideas stimulates their cognitive development. Participants A and I stated, "When students have a positive attitude while learning mathematics, they are able to focus and absorb information, which promotes cognitive development." Participants B and C specified, "When students develop a positive attitude regarding learning mathematics, their self-confidence increases, and cognitively they are ready to take on new mathematical challenges." Similarly, Participant D stated, "When students have a positive attitude about learning mathematics, they become motivated to learn, which stimulates them intellectually." Participant E stipulated, "Students who have a positive attitude in learning mathematical concepts are able to solve open-ended math problems in different capacities, which increases their cognitive development. Participant E further emphasized, "Students are able to solve problems such as, "How many different ways of grouping 12 items are there?" Participants F and H stated, "When students are able to develop real-life applications of a math problem, this concept creates a positive attitude, which increases student motivation and cognitive development." Participant G specified, when students collaborate in discussion groups, analyzing and evaluation information, they develop a positive attitude regarding learning mathematics, which produces cognitive development."

Question 8: In what capacity, if any, can differentiated instruction contribute to students acquiring an understanding of mathematical concepts?

When this question was stated, all participants were of the belief that differentiated instruction is crucial in students developing a holistic understanding of mathematics. “Participants A and D emphasized, “Differentiated instruction is important in students learning and understanding mathematics because it addresses students’ various learning styles, and gives each student a meaningful learning experience.” Participant A further specified, “When I utilize differentiated instruction in my classroom, my students are highly motivated, and enjoy learning from their peers while constructing math problems.” Participant B stated, “Differentiated instruction enables students to have a better understanding of content, and increases their motivation to learn.” Participant B further contended that students learning in heterogeneous groups is a form of differentiated instruction that is motivating to students, since they have the opportunity to learn from their peers.” Similarly, Participants C and H stated, “I believe that students who learn from their peers is the best form of differentiated instruction, since students are able to develop higher critical-thinking skills.” Participants E and F specified that differentiated instruction enables students to have solve various types of real-world problems, which increases their conceptual understanding.” Participants G and I stated, “Differentiated instruction allows students to learn and understand from different perspectives.”

Question 9: How might teachers increase student engagement and math proficiency within an upper grade elementary classroom?

When the investigator posed this question, all subjects agreed that student engagement is crucial for students to become proficient in mathematics. “Participants A and C stated, “In order for students to become engaged and proficient in mathematics, teachers must provide math instruction that connects to the real world using differentiated groups.” “Participant B emphasized, “Teachers can increase student engagement and math proficiency within an upper grade classroom utilizing small heterogeneous groups, which will enable students to build on their experiences in sharing information and risk taking." Participants D and F stated, "If teachers encourage students to ask questions, which allows students to engage in the learning process, their math proficiency will gradually increase, and they can become autonomous learners." Participant D further emphasized, "I always encourage my students to ask questions, so that I can see who has an understanding of the mathematical concepts." Participants E and G stated, "Integrating technology with mathematics will keep students engaged in learning, and will improve math proficiency within a upper grade elementary classroom." Participant G further specified that the students use technology while learning mathematics, and as a result, they have a greater understanding of it, and students will become independent thinkers." Participants H and I emphasized, "Sharing positive attitudes regarding mathematics will build students' self-confidence, which will keep them actively engaged and proficient in mathematics." Participant I further stated, "When students acquire a positive attitude and have strong self-confidence in mathematics, this enables them to become 21st century leaders."

Question 10: How might teachers utilize tablets, or collaboration techniques to motivate students to learn mathematics?

When the examiner made this inquiry, all participants agreed that technology and collaboration are integral segments in motivating students to learn mathematics in order for them to become competitive in the 21st century. Participants A and B stated, "Students can use tablets to explain their mathematical concepts, which will improve their computer literacy and math skills, and encourages them to think independently, which increases their motivation to learn mathematics." Participants C and F emphasized, "Students can analyze information by expressing their mathematical ideas with utilizing tablets in small collaborative groups, which will enhance their motivational level." Participant F further contended, "It is so exciting to see my students utilize technology in their small discussion groups." Similarly, Participants D and E, stipulated, "Teachers can use tablets for students to play math games in small collaborative groups as reinforcement of what they have previously learned, which increases their motivation to learn mathematics." Participants G and I stated, "Teachers can have students to utilize tablets to conduct research regarding various mathematical concepts in small collaborative groups, which stimulates their motivational level." Similarly, Participant H emphasized, "Students can utilize tablets to create math problems in small collaborative groups, which will increase their motivation to learn mathematics, and take math assessments." "Participant H further contended, "Furthermore, students can utilize tablets to search, calculate, collate, synthesize and import information into projects and assignments." Table 4 provides a summary of codes present in the participants' responses, and frequency of the code pertaining to the interview questions.

Table 4

Summary of Codes in Participants' Responses

Interview Questions	**Codes**	**Frequency**
1. How do you define student engagement?	Engaging students in small group collaboration	8
	Empowering students with knowledge	1

Interview Questions	**Codes**	**Frequency**
2. How does curriculum affect students being actively engaged in learning mathematics?	Motivating students through rigorous instruction	3
	Creates autonomous learners	2
	Integrating 21st century technology	2
	Incorporating real-world concepts	2
3. What instructional strategies do you utilize to engage and motivate students to learn mathematics?	Utilizing scaffolding techniques	4
	Integrating 21st century technology	2
	Engaging students in differentiated instruction	2
	Utilizing Intrinsic and Extrinsic Rewards	1
4. Why do you think the research demonstrates that student engagement is important in increasing motivation, and math proficiency?	Enables students to become leaders through self-directed activities	5
	Allows students to engage in rigorous discussions	4
5. What are your experiences in incorporating technology in mathematics instruction to engage students?	Implementing high-level cognitive development activities	5
	Engaging students in differentiated instruction	4

Interview Questions	Codes	Frequency
6. If students are not actively engaged and motivated to learn mathematics, how can this process possibly increase their understanding of the subject?	Implementing high-level cognitive development activities Incorporating Student-Centered Activities	7 2
7. If students have a positive attitude while acquiring mathematical concepts, how can this possibly increase their cognitive development?	Implementing high-level cognitive development activities	9
8. In what capacity, if any, can differentiated instruction contribute to students acquiring an understanding of mathematical concepts?	Increases students' cognitive development	9
9. How might teachers increase student engagement and math proficiency within an upper grade elementary classroom?	Engaging students in differentiated instruction Through autonomous learning activities	5 4
10. How might teachers utilize tablets, or collaboration techniques to motivate students to learn mathematics?	Integrating 21st century technology	9

Emergence of Seven Comprehensive Themes

The researcher concentrates on seven themes, which are the dominant themes that emerged from the findings of the study. The above themes are congruent to the literature review, and the theoretical framework of Russian Psychologist, Lev Vygotsky who studied social conversations with learners, and American Philosopher, John Dewey, who was an educational and social reformer (Vygotsky, 1978; Williams, 2017). Although the minor themes are reflected within the major themes, the researcher highlights the dominant themes from the participants' responses in the research study to increase the credibility, validity, and reliability of the research project in its entirety.

Engaging Students in Small Group Collaboration

When the examiner asked the subjects the first question, which pertained to them defining student engagement instruction, eight out of nine subjects mentioned some form of motivating students through small group collaboration. Attard (2012) emphasizes this theme in the research study, which is congruent with the literature, and focuses on the importance of creating a curriculum that motivates students to become engaged in learning mathematics through collaborative discussions.

Motivating Students Through Rigorous Collaboration

When the investigator asked the participants the second question, which consisted of the curriculum affecting how students are engaged in learning mathematics, three out of nine subjects referenced the importance of rigorous instruction. Fredricks et al. (2004) highlight the above theme in their research study and is consistent with the literature regarding` the importance of student engagement instruction, and the outcomes.

Utilizing Scaffolding Techniques

When the investigator inquired about the third question, which was comprised of instructional strategies that are utilized to engage and motivate students to learn mathematics, four out of nine participants emphasized the prevalence of implementing scaffolding techniques in order for students to become motivated to learn mathematics. Attard (2012); Goldman and Pellegrino (2015) specify the above theme in the research study, which is congruent to the literature review.

Magnifying Students' Leadership Through Self-Directed Activities

When the examiner posed question four, which consisted of why research demonstrates that student engagement is important in increasing motivation, and promoting math proficiency, five out of nine subjects emphasized the importance of magnifying students' leadership through self-directed activities. Pantziara & Philippou (2015) emphasize the importance of students having self-efficacy in order to achieve their goals and become motivated to learn mathematics, which promotes math proficiency. The above theme is in alignment to the literature review regarding the importance of student engagement, and students being motivated to learn mathematics, which promotes math proficiency.

Implementing High-Level Cognitive Development Activities

When the researcher asked the fifth question which consisted of the experiences of integrating technology in mathematics instruction to engage students, five out of nine subjects emphasized that integrating 21st century technology in mathematics instruction increases students' cognitive development. Ormrod et. al. (2017) and Raines and Clark (2011) suggest that technology promotes students to intellectualize, collaborate, and become engaged and motivated to learn mathematics. Integrating 21st century technology, which increases cognitive development correlates with the literature review.

Implementing High-Level Cognitive Development Activities

The sixth inquiry that the investigator posed is inclusive of how students have an understanding of mathematics if they are not actively engaged and motivated to learn. Seven out of nine subjects indicated the importance of implementing cognitive development activities in order for students to comprehend mathematical concepts, and how their thinking capacity would decrease, if they are not actively engaged, and motivated to learn.

Mata et al. (2012) suggest the importance of cognitive development increasing, when students are actively engaged and motivated to learn mathematics. Jansen et al. (2013) and Mata et al. (2012) further emphasize that if students are not intellectually challenged while learning mathematics, they will become frustrated and not comprehend mathematical concepts which will decrease their motivational level. The theme of implementing high level cognitive development activities is congruent to the literature review.

Implementing High-Level Cognitive Development Activities

When the examiner asked the seventh inquiry, which was composed of how students who have a positive attitude while learning mathematical concepts, will increase their cognitive development, all nine subjects agreed that students who acquire a positive attitude while being actively engaged in learning mathematics, will increase students' cognitive development. According to Farooq et al. (2008) students having a positive towards learning mathematics increase their thought processes, and interest in learning the subject. Cognitive development is the theme that correlates with the literature review.

Implementing High-Level Cognitive Development Activities

The eight inquiry was comprised of how differentiation might contribute to students acquiring an understanding of mathematical concepts. When the examiner posed this question, all nine subjects emphasized the importance of motivating students through rigorous instruction to promote cognitive thinking. Marsh (2014) highlights the above theme in the article, emphasizing that students will become encourage to think and enjoy learning mathematics. Motivating students through instruction that promotes cognitive thinking is congruent to the literature review.

Engaging Students in Differentiated Instruction

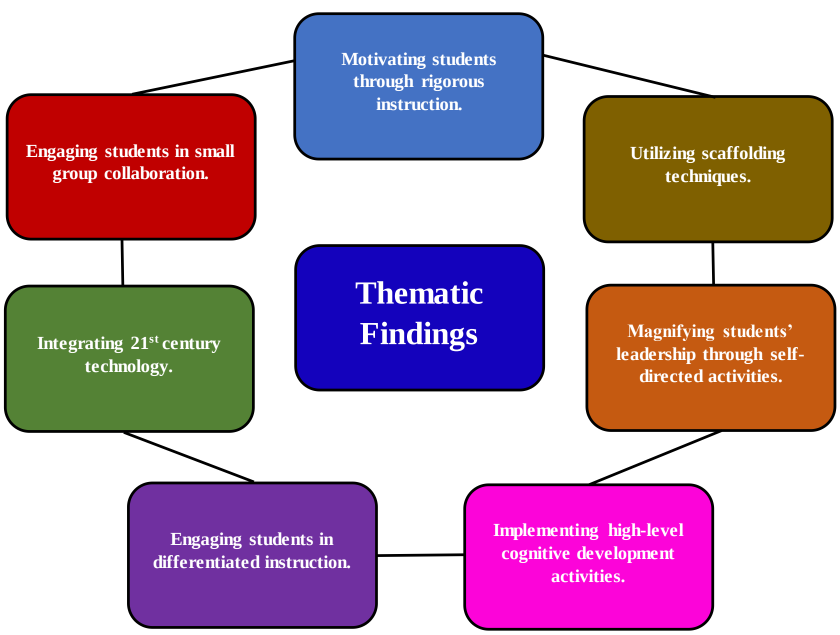
When the investigator asked question nine, it was composed of how teachers might increase student engagement, and math proficiency within an upper elementary classroom. Five out of nine participants specified the importance of having heterogeneous grouping while providing instruction that builds on experiences, and that connects to the real world. The above theme is congruent with the literature review.

Integrating 21st Century Technology

When the researcher posed the inquiry for question ten, which was comprised of how teachers would utilize tablets or collaboration techniques to motivate students to learn mathematics. All nine subjects believed that engaging students in critical-thinking skills using small group collaboration is essential for students utilizing their tablets while learning mathematics. Haywood et al. (2008); Raines and Clark (2011) suggest that students working collaboratively, using technology are motivated to learn mathematics. The theme that focuses on integrating 21st century technology in learning mathematics correlates with the literature review.

Figure 2

Thematic Findings



The examiner produced the pictorial representation above in figure 2, which describes the thematic findings of the participants experiences and perceptions in implementing instructional strategies for fostering student engagement in upper elementary mathematics. The investigator was able to establish the seven themes through the coding process, which were based on the subjects' responses to the ten interview questions. The seven themes are congruent to the literature review, and the theoretical framework.

Summary of Key Findings

The purpose of this qualitative phenomenological research study was to investigate the factors that influence mathematical instruction of upper elementary teachers in school districts within Southern California. More specifically, this research project examined teaching strategies of upper grade elementary teachers' experiences and perceptions regarding implementing student engagement in mathematics. The years of service ranged from 7 to 25 years, and there were eight females, and one male who were interviewed. Eight females taught grades three through five, and one male taught fifth grade. Through the Zoom virtual semi-structured interviews, there were ten open-ended interview questions that were asked to ascertain descriptions of the participants' lived experiences and perceptions of their best instructional practices that foster students engaging in upper elementary mathematics.

The interview questions were linked to the following research question: How do upper elementary teachers in school districts within Southern California explain their experiences, and perceptions for engaging students in mathematics instruction? There were seven comprehensive themes that emerged from the coding of the analysis of each variable that related to the research question: (a) engaging students in small group collaboration, (b) motivating students through rigorous instruction, (c) utilizing scaffolding techniques, (d) magnifying students' leadership through self-directed activities, (e) implementing high-level cognitive development activities, (f) engaging students in differentiated instruction, and (g) integrating 21^{st} century technology.

In questions one in defining student engagement, eight out of nine subjects focused on the importance of small group collaboration, and in question two, three out of nine participants concentrated on motivating students through academic rigor in order to engage students in learning mathematics. In questions three, four out of nine participants emphasized scaffolding techniques to motivate students to learn mathematics, and question four, there were five out of nine participants who believed that students who are engaged in learning mathematics, magnify their leadership skills through self-directed activities. In questions five, six, and seven, five out of nine subjects emphasized the importance of implementing high-level cognitive development activities while students are learning mathematics using technology. In question six, seven out of nine subjects specified the prevalence of students having cognitive development activities in order for them to become actively engaged and motivated to learn mathematics, otherwise students will become frustrated and disinterested in learning the subject. In question seven, all nine participants stated the importance of students having a positive attitude and being cognitively stimulated while engaging in mathematics.

In question eight, all nine subjects focused on the importance of heterogeneous grouping and differentiated learning to increase students' cognitive development in order for them to acquire an understanding of mathematical concepts. In question nine, five out of nine participants emphasized the importance of having students share information in differentiated groups during mathematics instruction, which increases their math proficiency. In question ten, the participants concentrated on the importance of teachers integrating 21^{st} century technology while students are in small collaborative groups in order to reinforce what they have learned. All nine subjects specified the importance of including 21st century technology in mathematical instruction to engage and motivate students to think cognitively, and learn various concepts. In Chapter 5, the examiner provides a summary of the entire research study, a discussion of findings, conclusions, and recommendations. This segment of the research study is aligned with the proceeding chapters, and a summary of the entire dissertation.

Chapter 5: Discussion of Findings, Conclusions, and Recommendations

Introduction and Overview

This chapter presents a discussion of findings in this qualitative phenomenological research study regarding teacher experiences and perceptions in implementing instructional strategies for fostering student engagement in upper elementary mathematics. It will begin by providing a restatement of the study's problem, purpose, research question, and design overview. This will be followed by a deeper examination of the thematic key findings, and the conclusions that were drawn from them. Finally, this chapter will concentrate on the study's implications for practice and policy, and provide recommendations for future investigations.

Restatement of Problem

The problem is that for many years, teachers have been teaching mathematics in a traditional capacity, which includes teachers lecturing to students in a whole group formation with very limited student engagement instruction and participation (Harrington, 2017; Scheidler, 2012). Consequently, students have become extremely bored with learning mathematics, and have scored low academically on math assessments (Freedberg, 2015). The fact that students have scored low academically has created a learning gap, which consists of the difference between what students are expected to know compared to what they have actually learned (Freedberg, 2015).

Due to the lack of teachers using student engagement instruction in the classroom climate, there have been an increasing number of upper elementary students who lack motivation and interest in learning mathematics (Cox, 2018; Crean, 2016; Marsh, 2014; Pantziara & Philippou, 2015). Harrington (2017) proposes that teachers providing instruction with pupils acquiring knowledge in mathematics is the most challenging task that is encountered. Hence, a need exists to collect data from upper grade elementary teachers regarding the factors that influence student engagement instruction in mathematics. The researcher has a need to investigate the current practices of mathematics instruction, and how, if at all, to maximize pupil collaboration utilizing various teaching strategies.

Restatement of Study Purpose

The purpose of this qualitative phenomenological research study is to explore how teachers of upper elementary students in school districts within Southern California explain their experiences, and perceptions in using their chosen strategies for engaging students in mathematics instruction.

Restatement of Research Question

How do upper elementary teachers in school districts within Southern California explain their experiences, and perceptions for engaging students in mathematics instruction?

The findings of the research question mentioned above consist of the manifestation of seven themes. The upper elementary teachers believed that teachers engage students in mathematics instruction utilizing the following strategies: (a) engaging students in small group collaboration, (b) motivating students through rigorous instruction, (c) utilizing scaffolding techniques, (d) magnifying students' leadership through self-directed activities, (e) implementing high-level cognitive development activities, (f) engaging students in differentiated instruction, and (g) integrating of 21st century technology

Restatement of Research Design and Rationale

Kauchak and Eggen (2012); Kőrös-Mikis (2001) define innovative teaching as integrating new and various ways of providing instruction that is not a common practice; therefore, teachers must become flexible in their teaching methods, and adjust to students' needs to increase engagement, which is a key component to learning. Furthermore, learning is something students do as a result of their experiences (Ambrose et al., 2010). What may commence as participation or students enjoying learning regarding 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 study's methodology involves phenomenological research with semi-structured interviews, which concentrates on identifying the essence of experiences and perceptions with participants who implement student engagement in their instructional strategies (Creswell & Creswell, 2018; Putman & Rock, 2018; Salmons, 2015). Phenomenological qualitative research is defined as research that is used to investigate the lived experiences of a particular group (Cilesiz, 2011; Giorgi, 2009; Groenewald, 2004). Groenewald (2004) and Neubauer et al. (2019), explain that qualitative phenomenological research focuses on gaining insights and familiarity for later investigation, when research problems are in a preliminary stage of investigation, since it concentrates on the views of the participants.

A phenomenological qualitative research study concentrates on understanding peoples' perceptions of an experience and acquiring its essence, which is the rationale for this research study (Salmons, 2015). Employing qualitative phenomenological methods provides a holistic view and validity in truth related to the situation, values subjectivity, and gives participants a voice (Grbich, 2013). Aligning with these beliefs, the researcher investigated phenomena that influence upper elementary teachers' implementation of engaging students in mathematics instruction.

Semi-structured interviews provided the researcher with participants' insights and experiences, presenting an opportunity to explore the various perspectives. Qualitative research aims to acquire an understanding through experience, truthful reporting, and quotations of actual conversations, which is congruent to Vygotsky and Dewey's student collaboration theories (Cilesiz, 2011; Creswell & Creswell, 2018; Putman & Rock, 2018; Schunk, 2012). Interviews are supported as an effective method for gathering qualitative data (Denzin & Lincoln, 2005). Accordingly, using interviews allow participants to elaborate on their responses and provide more in-depth information (Denzin & Lincoln, 2005).

Kvale and Brinkmann (2015) state that the qualitative research inquiry rationale is to gain an interpretation of themes regarding daily world experiences from the subjects' points of view. Thus, the research process involved in qualitative inquiry is ever-flowing as processes may change as data is collected, allowing for participants' perceptions that are discovered concerning the issue being explored (Creswell & Creswell, 2018). Due to the Covid-19 previous state-mandated restrictions, the researcher conducted interviews in a Zoom virtual environment. Consequently, the subjects appeared to adapt quite well to the virtual climate.

Restatement of Design Validity

Validity in a phenomenological qualitative research study occurs when themes align, and findings are based on rationality (Giorgi, 2002; Salmons, 2015). The examiner utilized member checking to provide validity in the research study. The validity was established by reviewing the themes individually with the subjects. The researcher reviewed the questions and acknowledgments with the participants, and they responded verbally to the accuracy of the findings to establish the study's accuracy, credibility, and internal validity (Creswell & Creswell, 2018). Moreover, the researcher issued the participants copies of the transcriptions electronically to determine the validity and accuracy of the qualitative analysis, giving them the opportunity to provide comments.

Since this research study is phenomenological, and seek to understand the essence of upper elementary teachers' lived experiences and perceptions, and the factors that influence their practices; the validity lies in the knowledge that the researcher acquired from the qualitative research environment (Giorgi, 2002; Salmons, 2015). Whereas there is no capability to acquire an exact representation of a participant's experience, strategically wording interview questions in an open-ended capacity can allow for the structure of a phenomenon to be revealed (Agree, 2009; Giorgi, 2009). Furthermore, interviews are accepted as a legitimate research tool and widely used in qualitative inquiry (Creswell & Creswell, 2018). Thus, the examiner recorded and transcribed the subjects' responses to have a written version to facilitate data analysis. The investigator provided the interview transcriptions to the participants for their review, ensuring that their comments were recorded correctly. Additionally, the process mentioned above provided participants with an opportunity to correct any miscommunication, and identify any needed edits.

Afterward, the examiner read through the participants' responses to the interview questions before the data analysis (Giorgi, 2009). This allowed the researcher to explore the essence of the responses before identifying themes and meaning units that pertain to the participants' instructional strategies and experiences in student engagement instruction (Giorgi & Giorgi, 2003). Moreover, the researcher clarified potential biases through reflexivity, which pertains to examining one's preconceptions and assumptions (Creswell & Creswell, 2018; Putman & Rock, 2018; Salmons, 2015). For example, the researcher mentioned teaching upper grade mathematics using student engagement as an instructional strategy to demonstrate transparency. The investigator employed bracketing throughout the entire research process, which calls for researchers to set aside their own experiences to establish a real picture of a phenomenon's development (Giorgi, 2009; Grbich, 2013). Validity in a phenomenological study occurs when themes align, and findings are based on rationality (Giorgi & Giorgi, 2003; Salmons, 2015).

Discussion of Key Findings

Analysis of the data collected from nine upper grade elementary teachers' semi-structured interviews demonstrated that upper grade elementary teachers in Southern California have similar experiences and perceptions for engaging students in mathematics instruction. Additionally, the findings indicate that the subjects' best practices are linked to their current teaching experiences of engaging students in mathematics instruction, and how it impacts student learning. As a result, these concepts were indicative of the participants' desire to engage students in mathematics instruction which indicates a genuine commitment to help students become actively engaged in rigorous learning. This will produce growth, and prepare students to become 21st century leaders in our global society.

Through the subjects' personal narratives, the examiner generated seven themes from the research study. These thematic findings, as seen in Figure 2, run parallel to the theoretical framework of Russian psychologist, Lev Vygotsky and American logician, clinician, and instructive reformer, John Dewey. The theoretical framework consists of the social constructivism theory of engaging students in learning. Additionally, the findings align with what the literature conveys about the variables in the research study. The succeeding section discusses the meanings behind the thematic key findings, how they may have come to fruition, and how they relate to the literature review.

The seven comprehensive themes that evolved from the interviews consisted of the following: (a) engaging students in small group collaboration, (b) motivating students through rigorous instruction, (c) utilizing scaffolding techniques, (d) magnifying students' leadership through self-directed activities, (e) implementing high-level cognitive development activities, (f) engaging students in differentiated instruction, and (g) integrating of 21st century technology.

Eight ninths of the subjects, which is approximately 88.89% believed that instructors should engage students in small group collaboration for mathematics instruction. Furthermore, the subjects believed that it was crucial for students to collaborate for them to become motivated to learn mathematics. Small group collaboration is the theme that correlates with the theoretical framework of Vygotsky, who emphasized the importance of social conversations for students to acquire learning concepts (Ormrod et al., 2017; Schunk, 2012). According to Goldman and Pellegrino (2015), teachers engaging in small group collaboration during mathematics instruction increases students' critical-thinking skills, which supports the literature review.

Three out of nine participants, which consisted of 33.33% conceived that motivating students through rigorous instruction was significant in increasing students' cognitive development. The aforementioned theme is congruent since it supports the theoretical framework of Vygotsky. His theory states the importance of critical-thinking, while students are engaging in higher-order thinking through academic rigor (Ormrod et al., 2017; Schunk, 2012). Harrington (2017) specifies when students are receiving rigorous instruction while learning mathematics, this increases their problem-solving skills. The concept of students engaging in rigorous instruction is congruent to the literature review.

Four out of nine subjects, which is comprised of 44.44% deemed that utilizing scaffolding techniques during mathematics instruction would increase students' motivation to learn. This theme is harmonious with the theoretical framework of Vygotsky since he emphasized the concept of scaffolding, which consists of the point of instruction when students need assistance with instruction that concentrates on accessing students' prior knowledge and experiences (Schunk, 2012; Vygotsky, 1978). Similar to Vygotsky's supposition, Dewey believed that past experiences are important ingredients in the advancement of new understanding (Kincanon, 2009). Scaffolding is an integral segment of student engagement instruction, and correlates with the literature review. Kincanon (2009) emphasizes that instructors should consider focusing on students' prior knowledge and life experiences during mathematics instruction.

Five out of nine participants, which consist of 55.56% agreed that magnifying students' leadership through self-directed activities is significant in increasing student engagement instruction, motivation, and math proficiency. Vygotsky is of the opinion that peer to peer interaction exemplifies students' leadership abilities, specifically when one peer is assisting another peer (Vygotsky, 1978). The above theme is congruent to the theoretical framework of constructivist theory of student engagement instruction. Moreover, Vygotsky believed that students' have the ability to self-regulate and self-direct their learning, which highlights their leadership capabilities (Ormrod et. al, 2017; Schunk, 2012). Schmidt (2011) similarly indicates when students have autonomy, this empowers and challenges them which exemplifies their leadership skills. The aforementioned theme is in accordance with the literature review.

Implementing high-level cognitive development activities appeared to have significance when incorporating technology in mathematics instruction. Five out of nine subjects, which is equivalent to 55.56% believed that high-level cognitive development activities increase students' motivation to learn and comprehend mathematics. Similarly, seven out of nine participants, which is comprised of 77.78% believed that if students are not actively engaged and motivated to learn mathematics, their cognitive development will not increase. As a result, the subjects believed that it is crucial to implement high-level cognitive development activities to increase students' understanding of mathematics. Moreover, nine out of nine subjects, which consist of 100% agreed that having a positive attitude will promote students' cognitive development skills while learning mathematical concepts.

Vygotsky's theory suggests that cognitive development is well-established when students are actively analyzing the problem, and are motivated to learn (Ormrod et al., 2017; Schunk, 2012). The above theme is congruent to the constructivism theoretical framework of social learning. Farooq et al. (2008); Newcombe and Huttenlocher (2007) suggest that cognitive development skills are essential in high-level learning during mathematics instruction. Similarly, the six levels of Bloom's Taxonomy of cognitive learning include remembering, understanding, applying, analyzing, evaluating, and creating (Adams, 2015; Ormrod et al., 2017). The implementation of high-level cognitive activities are congruent to the literature review.

Eight out of nine participants, which consist of 100% deemed that differentiated instruction and heterogeneous groups would contribute to students accumulating an adequate understanding of mathematical concepts. Furthermore, five out of nine subjects, which is comprised of 55.56% were of the opinion that differentiated learning and heterogeneous groups increases student engagement and math proficiency. Vygotsky and Dewey's learning theory framework supports differentiated and heterogeneous group instruction in correlation with higher-order thinking, which promotes cognitive development in students (Vygotsky, 1978; Williams, 2017).

Adams (2015), Raines and Clark (2011), and Willis (2010) state that differentiated instruction and heterogeneous groups encompass a variation of tools that increase students' motivation to learn, and will meet the academic needs of the students. Teachers who utilize differentiated instruction and heterogeneous groups are able to design lessons that correlate with Bloom's Taxonomy six levels of cognitive learning, which include remembering, understanding, applying, analyzing, evaluating and creating (Adams, 2015; Ormrod et al., 2017). The aforementioned theme supports the literature review.

Nine out of nine subjects, which is comprised of 100% believed that implementing 21st century technology, specifically utilizing tablets and collaboration techniques are essential for students to become motivated to learn mathematics. Vygotsky and Dewey believed that technology and other machines are essential tools that are linked to higher-order thinking with student engagement instruction (Schunk, 2012; Vygotsky, 1978). Both Vygotsky and Dewey believed that technology increases cognitive development when students are collaborating with one another (Schunk, 2012; Vygotsky, 1978). The usage of technology and collaboration techniques support the constructivist theoretical framework of student engagement instruction.

Raines and Clark (2011) believe that integrating 21st century technology with mathematics instruction, increases student collaboration and critical-thinking skills. Apkon (2013) emphasizes that technology provides additional opportunities for students to explore and make discoveries utilizing math games, which prepares them for 21st century learning. The above theme correlates with the literature review regarding the constructivist approach to student engagement instruction.

Conclusions

There were seven thematic findings that provided an explanation for the research question. The investigator examined the experiences and perceptions of upper elementary teachers regarding their implementation of student engagement instructional strategies in mathematics, and the thematic findings were centered on these concepts. There were four conclusions drawn from the thematic findings in this research study.

Conclusion One

The first conclusion is indicative of instructors engaging students in small group instruction utilizing academic rigor while teaching upper grade elementary mathematics, so that students can become motivated to learn. The subjects in the research study deemed that small group discussions, and acquiring math problems that are intellectually challenging to students, will enhance their critical-thinking and problem-solving skills. The data findings included Participants B and I stating, “Student engagement means to examine students interacting and engaging with one another, focusing on the learning goal, having conversations about their learning, and utilizing problem-solving strategies in small groups.” Participants F and H further contended, “Student engagement pertains to students who work cohesively in small groups, analyzing and evaluating information.” The existing literature consists of Vygotsky who believed in small group collaboration, emphasizing high critical-thinking skills through social conversations (Schunk, 2012; Vygotsky, 1978). Similarly, Bloom’s Taxonomy six levels of cognitive learning indicates that engaging students in small group discussions include remembering, understanding, applying, analyzing, and evaluating (Adams, 2015; Ormrod et al., 2017). These learning skills increase students’ cognitive development (Adams, 2015).

Conclusion Two

The second conclusion is comprised of teachers ensuring that the mathematics curriculum is student-centered and intellectually challenging for students so that they are actively engaged and motivated to learn. The data findings indicated that the participants were in agreement regarding the mathematics curriculum being interesting and intellectually challenging for students to actively become engaged in learning. In the research study, Participants A and I specified, “If teachers would have a student-centered curriculum whereas students are engaged in rigorous discussions, this would motivate students to learn mathematics, and excel in the subject.” Similarly, Participant C stated, “It is vitally important for teachers to have a math curriculum that will stimulate students’ cognitive development, and challenge the way they think, using academic rigor which will keep them actively engaged in learning mathematics.”

The existing literature review that supports the above conclusion is indicative of Vygotsky suggesting the necessity of students needing a curriculum that promotes higher-order thinking and academic rigor, which will increase students’ problem-solving skills (Anderman et al., 2017; Schunk, 2012). Additionally, Dewey contended that students’ curriculum should reflect higher-order thinking, which increases their cognitive development (Williams, 2017).

Conclusion Three

The third conclusion consists of teachers implementing instructional strategies to engage and motivate students to learn mathematics. In the research study, the data demonstrated that the subjects believed that instructional strategies should be student-centered, so that students are actively engaged and motivated to learn mathematics. Participants A and I suggested, “I utilize scaffolding techniques in order for students to intellectually comprehend and apply mathematics to their daily lives.” Participant A further stated, “When I utilize scaffolding strategies in my classroom, the lightbulb comes on, and students accumulate a high cognitive understanding of mathematical concepts, and are motivated to learn.”

The literature review that advocates for the above conclusion is Vygotsky’s concept of scaffolding, which consists of accessing students’ prior knowledge to improve students’ cognition (Schunk, 2012). Vygotsky refers to this strategy as the Zone of Proximal Development, which is comprised of an instructor or peer executing assistance to the student (Schunk, 2012). This will help bridge the gap from the knowledge students have acquired, or what they can attempt freely, and what they can procure or execute with help (Schunk, 2012; Vygotsky, 1978).

Furthermore, additional instructional strategies to engage and motivate students to learn mathematics include differentiated instruction and heterogeneous groups. In the research findings, the data indicated that participants believed differentiated instruction and heterogeneous groups would increase student motivation and math proficiency. Participants C and H emphasized, “I believe that students who learn from their peers in the best form of differentiated instruction, since students are able to develop higher critical-thinking skills.” Participant B suggested, “Teachers can increase student engagement and math proficiency within an upper grade classroom utilizing small heterogeneous groups, which will enable students to build on experiences in sharing information and risk taking.”

The literature review supports the above conclusion of differentiated instruction and heterogeneous groups. Adams (2015) and Raines and Clark (2011) and Willis (2010), state that differentiated instruction and heterogeneous groups increase students’ motivation to learn academically. Implementing differentiated instruction and heterogeneous groups in mathematics will enhance students’ self-confidence, self-esteem, and will improve their emotional and social behavior, which will enable them to become 21st century leaders (Adams, 2015; Stephani, 2008). Moreover, differentiated instruction and heterogeneous groups are congruent to the six levels of Bloom’s Taxonomy Cognitive Learning (Adams, 2015; Ormrod et al., 2017).

Conclusion Four

The fourth conclusion is comprised of educators integrating 21st century technology in mathematics instruction to engage and motivate students to learn. In the research study, there was consensus amongst the participants regarding incorporating technology in mathematics instruction, which increases student engagement and motivation to learn. Participant G specified, “Several of my students stated they used to dislike math, but utilizing technology has created an environment for them to become motivated and interested in learning mathematics.” Participants D and H emphasized, “Incorporating technology in my classroom provides students with an intellectually deeper, more personalized learning experience.”

The literature review that advocates for 21st century technology which is integrated with mathematics instruction includes Vygotsky and Dewey, who believed that technology produced higher-order thinking with student engagement instruction (Ormrod et al., 2017; Vygotsky, 1978). Additionally, Vygotsky and Dewey contended that technology usage and student collaboration during mathematics instruction, increase students’ critical-thinking skills (Ormrod et al., 2017; Vygotsky, 1978). Raines and Clark (2011) suggest that technology promotes students to intellectualize, collaborate, and become motivated to learn mathematics, which is congruent to Vygotsky and Dewey’s constructivist theory of student engagement learning. Figure 3 demonstrates the alignment of Vygotsky and Dewey’s theory of student engagement learning integrated with 21st century technology.

Figure 3

Vygotsky and Dewey’s Theory of 21st Century Technology

<table>
<tr><th>Lev Vygotsky
Russian Psychologist</th><th>John Dewey
American Logician and Instructive Reformer</th></tr>
<tr><td colspan="2">Both believed that technology produced higher-order thinking with student engagement instruction
Both believed that technology usage and student collaboration during mathematics instruction, increase students’ critical-thinking skills
Both believed that technology promotes students to intellectualize, collaborate, and become motivated to learn mathematics</td></tr>
</table>

Implications for Policy and Practice

The purpose of this qualitative phenomenological research study was to explore how teachers of upper elementary students in school districts within Southern California explain their experiences, and perceptions of using their chosen strategies for engaging students in mathematics instruction. It is well documented in the preceding chapters of this research study that student engagement instruction in mathematics is an important element of learning. Hence, through the data collection process, the researcher aimed to acquire a better understanding of the factors that influence mathematical instruction of upper elementary teachers in school districts within Southern California. The data results in this research can provide the educational community with insight on the current teaching practices of mathematics instruction, and how it impacts student collaboration utilizing various teaching strategies. Additionally, this study can lead to the identification of instructional practices that exemplify student engagement in mathematics at school sites that are successfully meeting the educational needs of the community, and how to share the content with other educators. Based upon the findings of this research study, the examiner poses steps that school districts and policy makers should consider:

1. School sites could have professional development training that focused on various teaching strategies for implementing student engagement instruction in mathematics, which could become a district mandate through the approval of the board of education for elementary and secondary schools.
2. The researcher could share the findings with members of the state legislature, and one of the members could author the legislative bill, and the house of representatives, which consist of the state assembly and the state senate could vote, and hopefully support it.
3. Teachers should acquire an in-depth knowledge of the California Common Core State

Standards for mathematics instruction. Teachers should review each standard, and compile the best instructional practices to engage students in mathematics.

There has been evidence that exemplified if pupils are not actively collaborating in learning math, and are not intellectually stimulated, their motivation level will diminish drastically, which will affect their academic achievement (Bodovski & Farkas, 2007). It is imperative for educators to utilize efficient methods, such as pupil collaboration, so that children will become excited to learn math and improve academically (Durksen et al., 2017; Ingram, 2011; Marsh, 2014; Pantziara & Philippou, 2015). Teaching pupil collaboration strategies within the class atmosphere are crucial in enhancing children's interest in learning math (Durksen et al., 2017; Pantziara & Philippou, 2015). Hopefully, the research findings in this study will inform and encourage teachers to effectively utilize instructional strategies to engage students in mathematics, and not implement traditional teaching strategies that do not engage students in the learning process.

Recommendations for Further Research

In the future, the examiner can extend this research study further by completing the same research process with additional teachers in other states. These findings could further prove that the sentiments uncovered in this study are truly universal. Additionally, the researcher can employ the same research methods in other subject areas, since there is a clear benefit to utilizing engaging instructional strategies that is not specific to mathematics. The options for building upon this research are truly endless, as there are many aspects that could be investigated further. The investigator can locate future studies, which will contribute to the field and increase the validity and reliability of the research study. Finally, it is the intention of the examiner to continue this deep dive into the power of engaging strategies, and how teachers can implement these instructional strategies effectively, with support from administrators and district officials.

Summary

Many studies have exemplified that teachers are not engaging students in mathematics instruction within school districts in Southern California. The intent of this qualitative phenomenological research study was to examine upper elementary teachers' instructional strategies with their experiences and perceptions regarding implementing student engagement in mathematics. The literature review supports student engagement instruction in mathematics. Freedberg (2015) suggests that teachers providing instruction in a traditional environment have caused students to become bored and frustrated with learning mathematics and have performed poorly on the Smarter Balanced Assessment, which is aligned with the California Common Core State Standards.

Durksen et al. (2017), suggest that when teachers concentrate their instruction on students being actively engaged in learning mathematics through small group collaboration, they are motivated to learn mathematics, which exhibits an interconnection between student engagement and motivation. Moreover, when students begin to believe in themselves and have a student-centered classroom environment, as a result, they demonstrate growth and development in their mathematical skills (Bodovski & Farkas, 2007). A student-centered environment is comprised of students who are actively engaged in learning mathematics through small group collaboration, which involves students engaging in critical-thinking and analysis (Bodovski & Farkas, 2007).

Through the Zoom virtual semi-structured interviews, there were ten open-ended interview questions that were asked to ascertain descriptions of the participants' lived experiences and perceptions of their best instructional practices that foster students engaging in upper elementary mathematics. The interview questions were linked to the following research question: How do upper elementary teachers in school districts within Southern California explain their experiences, and perceptions for engaging students in mathematics instruction? There were seven comprehensive themes that emerged from the coding of the analysis of each variable that related to the research question: (a) engaging students in small group collaboration, (b) motivating students through rigorous instruction, (c) utilizing scaffolding techniques, (d) magnifying students' leadership through self-directed activities, (e) implementing high-level cognitive development activities, (f) engaging students in differentiated instruction, and (g) integrating 21st century technology.

The findings in this research study exemplify that if teachers engage students in mathematics instruction, they will become motivated to learn, and possibly excel in mathematics (Bodovski & Farkas, 2007). Furthermore, the theoretical framework supports the findings that is based on the constructivist theory, which is indicative of Vygotsky and Dewey's theory of social learning. Vygotsky and Dewey's theory focuses on engaging students in higher-order thinking with social conversations and prior experience being key ingredients in increasing students' cognition (Kincanon, 2009; Schunk, 2012; Williams, 2017; Vygotsky, 1978). Additionally, Bloom's Taxonomy six levels of cognitive learning, which are remembering, understanding, applying, analyzing, evaluating, and creating are in alignment with the study's findings, and are congruent to the California Common Core State Standards.

The researcher has been an experienced educator for approximately 25 years, and has taught mathematics to upper grade elementary students. During this time, the examiner implemented student engagement instructional strategies utilizing small-group discussions, which correlate with Bloom's Taxonomy six levels of cognitive learning. The researcher witnessed the students becoming motivated, optimistic, and enthusiastic regarding learning mathematics. In fact, mathematics became students' favorite subject in contrast to them previously disliking it.

Although there is limited information regarding specific experiences and perceptions of upper elementary teachers engaging students in mathematics instruction, the research is profound in exhibiting instructional strategies that teachers utilize. If additional research is done, it will enable teachers to practice implementing student engagement strategies during mathematics instruction. Consequently, students will have the opportunity to engage in mathematics, which will enable them to become 21st century global leaders.

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APPENDIX A

Recruitment Letter

Dear INSERT NAME,

My name is Gail Willis, and I am a doctoral student in the Graduate School of Education and Psychology at Pepperdine University. I am conducting a research study examining the experiences and perceptions, upper elementary teachers have regarding implementing student engagement instructional strategies in mathematics in school districts within Southern California, and you are invited to participate in the study.

The study participants are required to have at least five years of teaching experience, a Clear Multiple Subject Teaching Credential, and use the six levels of Bloom's Taxonomy cognitive learning, while engaging students in small group discussions in upper grade mathematics. The six levels of Bloom's Taxonomy of cognitive learning include remembering, understanding, applying, analyzing, evaluating, and creating (Adams, 2015; Ormrod et al., 2017). Student engagement concentrates on the degree of inspiration, interest, and motivation that pupils demonstrate when they are learning or receiving instruction, which amplifies the level of inspiration they have to learn and advance in their education (Martin, 2006).

If you agree, you are invited to participate in an interview which will occur over five days, interviewing one to two participants per day with a least nine participants. The research study timeline is five days, and 9 hours total for the data collection.

The interviews are expected to take no more than five days. The researcher will record the interviews, which are only utilized for transcription purposes. Recordings are housed on the researcher's computer, and will never leave the researcher's possession, and will be destroyed after five years. Access to the recordings is only accessible to the researcher. Recordings are only utilized for transcription purposes.

Participation in this study is voluntary. Your identity as a participant will remain confidential during and after the study. All identities are protected by a pseudonym, such as Participant A, Participant B, Participant C, etc. to maintain confidentiality. Additionally, school information is not identified. Data are stored on the researcher's computer. All interviews are transcribed by the researcher; therefore, never leaving the possession of the researcher. Each participant will receive a copy of the transcriptions at the conclusion of the interview.

If you have questions or would like to participate, please contact me at [redacted] Thank you for your participation.

Sincerely,

Gail Willis
Pepperdine University
School of Education and Psychology
Doctoral Student

APPENDIX B

IRB Approval Letter

Pepperdine University
24255 Pacific Coast Highway
Malibu, CA 90263
TEL: 310-506-4000

NOTICE OF APPROVAL FOR HUMAN RESEARCH

Date: July 30, 2021

Protocol Investigator Name: Gail Willis

Protocol #: 21-06-1618

Project Title: TEACHER EXPERIENCES AND PERCEPTIONS IN IMPLEMENTING INSTRUCTIONAL STRATEGIES FOR FOSTERING STUDENT ENGAGEMENT IN UPPER ELEMENTARY MATHEMATICS

School: Graduate School of Education and Psychology

Dear Gail Willis:

Thank you for submitting your application for exempt review to Pepperdine University's Institutional Review Board (IRB). We appreciate the work you have done on your proposal. The IRB has reviewed your submitted IRB application and all ancillary materials. Upon review, the IRB has determined that the above entitled project meets the requirements for exemption under the federal regulations 45 CFR 46.101 that govern the protections of human subjects.

Your research must be conducted according to the proposal that was submitted to the IRB. If changes to the approved protocol occur, a revised protocol must be reviewed and approved by the IRB before implementation. For any proposed changes in your research protocol, please submit an amendment to the IRB. Since your study falls under exemption, there is no requirement for continuing IRB review of your project. Please be aware that changes to your protocol may prevent the research from qualifying for exemption from 45 CFR 46.101 and require submission of a new IRB application or other materials to the IRB.

A goal of the IRB is to prevent negative occurrences during any research study. However, despite the best intent, unforeseen circumstances or events may arise during the research. If an unexpected situation or adverse event happens during your investigation, please notify the IRB as soon as possible. We will ask for a complete written explanation of the event and your written response. Other actions also may be required depending on the nature of the event. Details regarding the timeframe in which adverse events must be reported to the IRB and documenting the adverse event can be found in the *Pepperdine University Protection of Human Participants in Research: Policies and Procedures Manual* at community.pepperdine.edu/irb.

Please refer to the protocol number denoted above in all communication or correspondence related to your application and this approval. Should you have additional questions or require clarification of the contents of this letter, please contact the IRB Office. On behalf of the IRB, I wish you success in this scholarly pursuit.

Sincerely,

Judy Ho, Ph.D., IRB Chair

cc: Mrs. Katy Carr, Assistant Provost for Research

APPENDIX C

Interview Questions

PEPPERDINE UNIVERSITY

1. How do you define student engagement?
2. How does curriculum affect students being actively engaged in learning mathematics?
3. What instructional strategies do you utilize to engage and motivate students to learn mathematics?
4. Why do you think the research demonstrates that student engagement is important in increasing motivation, and promoting math proficiency?
5. What are your experiences in incorporating technology in mathematics instruction to engage students?
6. If students are not actively engaged and motivated to learn mathematics, how can this process possibly increase their understanding of the subject?
7. If students have a positive attitude while acquiring mathematical concepts, how can this possibly increase their cognitive development?
8. In what capacity, if any, can differentiated instruction contribute to students acquiring an understanding of mathematical concepts?
9. How might teachers increase student engagement and math proficiency within an upper grade elementary classroom?
10. How might teachers utilize tablets, or collaboration techniques to motivate students to learn mathematics?

APPENDIX D

Informed Consent

PEPPERDINE UNIVERSITY

You are being requested to participate in a voluntary research study. Before you give your consent to participate, it is important that you read the information on this form, and make the necessary inquiries to ensure that you have an understanding of what will transpire.

Study Title

Teacher Experiences and Perceptions in Implementing Instructional Strategies for Fostering Student Engagement in Upper Elementary Mathematics

Study Purpose and Rationale

The purpose of this qualitative phenomenological research study is to explore how teachers of upper elementary students in school districts within Southern California explain their experiences, and perceptions of using their chosen strategies for engaging students in mathematics instruction.

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 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 Educational Leadership, Administration, Policy program. This research adds to the researcher's body of knowledge, since student engagement involves instructional strategies within the classroom climate.

Procedures

If you volunteer in this study, you are requested to complete interview questions, and to participate in an individual interview via Zoom for approximately one hour. The researcher will email the interview questions electronically for you to complete. During the interviews, the participants will provide additional clarification, and dig more deeply into your lived experience. Your participation will take approximately one hour. All participants are treated in an equitable manner, and respond to the same inquiries. No procedures being utilized are experimental.

Potential Risks or Discomforts

There are no foreseeable risks or ill effects from participating in this study. As the respondents' identities are confidential, choosing not to participate will not incur any negative consequences.

Potential Benefits of the Research

Participating in this research provides participants with an opportunity to reflect upon their teaching practices and experiences. The students may ultimately benefit from the research study, since they are actively engaged in the learning process, which could increase their motivation to learn, and possibly excel academically (Bodovski & Farkas, 2007). The teachers may benefit from the importance of the research study, since they are focusing on instructional practices to engage students in mathematics. Hence, 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, the schools will benefit since the teachers are implementing student engagement instruction in mathematics. This could further construct meaningful professional development, and help improve teacher preparation programs in the area of mathematics education.

Confidentiality and Data Storage

All identities are protected by a pseudonym, such as Participant A. Additionally, school information is not identified. Data are stored on the researcher's computer. All interviews are transcribed by the researcher; therefore, never leaving the possession of the researcher. Recordings are housed on the researcher's computer with a secured password, and will never leave the researcher's possession, and will be destroyed after five years. The examiner will utilize a USB drive to back up files, which will be locked in a file cabinet at the examiner's residence. Access to the recordings is only accessible to the researcher. Recordings are only utilized for transcription purposes.

Voluntary Participation

Participation in this study is completely voluntary, and you are free to withdraw at any time for any reason without penalty or prejudice from the researcher. If you have any questions regarding the information that I have provided above, please do not hesitate to contact me at the email address and phone number provided below. If you have further questions, you can contact my dissertation chairperson, Dr. Leo Mallette, at (310) 568-5600. If you have questions about your rights as a research participant, contact Andrea Quintero, Interim IRB Manager, at (310) 568-2305.

By completing the informed consent and returning it to the researcher, you are acknowledging that you have read and understand what your study participation entails, and are consenting to participate in the study.

Thank you for taking the time to read this information, and I hope you decide to complete the informed consent.

Sincerely,

Gail Willis
Pepperdine University
[redacted]

Consent

You have been given the opportunity to ask questions, which 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