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Walden University

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Walden University
2022

Abstract

Charter School, Kindergarten–6, Homeschool Parents' Perceptions, Experiences, and Strategies for Mathematics Instruction

by

Wendy How Fayard

MA, Chapman University, 2003

BA, California State University, San Bernardino, 1997

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Education

Walden University

March 2022

Abstract

The research problem for this study was the lack of understanding regarding parents' perceptions of and experiences with mathematics and instructional strategies for kindergarten through sixth-grade (K–6) students in a charter school, homeschool setting. Dewey's theory of experience and education was the conceptual framework for the study. In this basic qualitative study, charter school homeschool parents' perceptions about providing mathematic instruction for K–6 students, experiences with instructing K–6 students in mathematics, and choices and adjustments concerning mathematics teaching strategies were examined. Twelve participants took part in semistructured interviews on the Zoom platform. Their interview responses were analyzed qualitatively using coding and thematic development, resulting in the following themes: the effect of parent and child social-emotional response to math; parents' goals and expectations for math; having a support person or group helped with mathematics; state standard, curriculum, and assessment varied across participants; knowledge of the strengths and needs of the student was a factor in mathematics decisions; instructional components were recommended; and following structures and procedures aided in mathematics instruction. The results from this study may contribute to positive social change by providing information about alternative educational options and school choice that may be used to help decrease the achievement gap between students of differing ethnic, socioeconomic, and regional backgrounds.

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Dedication

This dissertation is dedicated to my family. First, to my incredible benefactors, Dr. and Mrs. Al and Glenda Fayard, my father-in-law and mother-in-law, who financially supported every step of my doctoral journey. To my parents, Fred and Beverly How, who encouraged me, cheered me on, and stepped in when I needed help or support. To my husband and children, Chris, Will, and Chloe, who allowed me to spend so much time pursuing my academic goals, even though it meant time spent away from them. I love you all!

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Chapter 1: Introduction to the Study

Homeschooling has developed as a viable educational choice with a growing number of students for the past several decades (Ray, 2017). In 2016, 2.3 million children were estimated to be receiving their schooling at home. State requirements for homeschool oversight vary significantly between states (Ray, 2017), and within those requirements, parents who choose to homeschool can do so independently or through a state charter school setting (Wearne, 2019). Parents who select a charter setting often give up some choice pertaining to curriculum options, but all parents in the homeschool setting were responsible for deciding which curriculum to use with their children and the instructional strategies used to deliver instruction to the students (Wearne, 2019). In this study, I explored parents' perceptions of and experiences with mathematics instruction and instructional strategies for kindergarten through sixth-grade students in a homeschool setting.

Chapter 1 is the introduction to this study and includes the background summary, problem statement, and purpose of the study. The research questions are presented along with a discussion of Dewey's (1938) experience and education theory, which was used to address the gap in knowledge pertaining to the perceptions and experiences of homeschool parents regarding mathematics and instructional strategies for kindergarten through sixth-grade students. I also provide relevant definitions, assumptions, scope and delimitations, limitations, and the significance of the study. Chapter 1 concludes with a summary and context for Chapter 2.

Background

Some homeschool parents have expressed educational goals that are different than the academic goals set forth by traditional school settings (Neuman & Guterman, 2021). With the concerns about mathematics achievement in the United States (Averett et al., 2018), understanding how homeschool parents approach strategies for mathematics may provide additional information for other educators. In the current, available research, it is not clear what homeschooling parents' perceptions and experiences relating to mathematics are or is there extant research on how these experiences and perceptions affect the strategies homeschool parents use when instructing mathematics.

However, previous research has revealed that parents experience and perceive homeschool instruction in numerous ways and have many reasons for making certain decisions about their children's education. Several recent studies found that parents in a homeschool setting alter strategies and approaches according to each lesson, especially focusing on the needs of the student (Dennison et al., 2020; Firmin et al., 2019; Gann & Carpenter, 2019). Many students and parents work collaboratively to develop the lessons, with each party bringing experience, needs, and understanding to the development (Dennison et al., 2020; Gann & Carpenter, 2019). Parents also shared that they use various approaches to instruction depending on the learning needs, style, and interests of the students (Burke & Cleaver, 2019; Efford & Becker, 2017; Firmin et al., 2019; Galindo et al., 2019; Gann & Carpenter, 2019; Puga, 2019; Thomas, 2019). Parents reported applying more instructional effort to subjects they value and, therefore, providing more instructional quality when they attributed worth to a subject (Burke &

Cleaver, 2019). Additionally, when parents did not feel competent to give instruction or wanted further assistance, they shared with researchers that they accessed resources outside of the home, such as cooperative learning opportunities and enrichment resources (Dimosthenous et al., 2019; Gann & Carpenter, 2019). Some homeschool parents expect mastery from the students before moving on to another level or topic within an academic subject (Gann & Carpenter, 2019); however, most parents tied learning in the homeschool setting to everyday life and experience and did not require complete understanding before moving to the next curricular step (Galindo et al., 2019; Gann & Carpenter, 2019).

Homeschool parents have countless reasons for choosing to teach their children in the home setting. Parental control over the educational decisions for their children was a focus for many of the parents who participated in the existing research (Burke & Cleaver, 2019; Guterman & Neuman, 2018; Wearne, 2019). This desire for control included an aim to teach cultural, ethnic, and religious content not available in a traditional school setting (Hassanein, 2017; Puga, 2019; Wearne, 2019). Another form that parental control can take pertaining to homeschooling is the choice to use a homeschool charter school as the setting for educating their children.

A charter is a desirable option due to the academic funding available to families through the school (California Department of Education, 2021a). Wearne (2019) studied the parents who used a homeschool charter and found that parents using the charter made this choice for reasons beyond the desire to homeschool. These parents were more diverse in ethnicity, education, and income than typical homeschooling families and

wanted both the control and flexibility of homeschooling along with school structure and support.

I addressed the gap in knowledge by exploring the perceptions and experiences of homeschool parents regarding mathematics and mathematics strategies for kindergarten through sixth-grade students in a homeschool setting. This qualitative study was needed because homeschool parents bring unique experiences, insights, and techniques to education that can inform mathematics experiences for other homeschooling parents as well as provide insight into alternative approaches that may be useful to classroom teachers and traditional school educators.

Problem Statement

As the number of students being taught in the homeschool setting increases, so must the interest be in the education they are receiving (Ray, 2017). Naturally, some of that interest must be directed at the parents who were taking on the role of teacher. Much of the current research has focused on the reason parents choose to homeschool (Apple, 2020; Burke & Cleaver, 2019; Dennison et al., 2019; Neuman & Guterman, 2021; Puga, 2019; Ray, 2017; Tilhou, 2020; Watson, 2018), but very little research has been conducted focusing on homeschool parents' approach to mathematics or knowledge of mathematics instruction. U.S. students have continued to fall below their counterparts in other nations on international mathematics tests (Averett et al., 2018). Because of the concern about mathematics achievement for all U.S. students, homeschool mathematics must also be examined.

The research problem for this study was the lack of understanding of parents' perceptions of and experiences with mathematics and instructional strategies for kindergarten through sixth-grade students in a homeschool, charter school setting. The research community has requested that further research be conducted about the experiences homeschool parents face. Wearne (2019) asked that more investigation be conducted into the motivations and experiences of homeschooling families using a charter school. Parents who choose a charter school for homeschool support have been found to want the benefits of a traditional public or private school but with increased control over decisions made for their children (Wearne, 2019). Reaburn and Roberts et al. (2018) requested that research be conducted focusing on the reasons parents would learn mathematics concepts themselves even though the parent has math anxiety. Parents have reported putting more emphasis and effort into subject areas where they feel comfortable and competent (Burke & Cleaver, 2019). Homeschool parents also informed researchers that they use outside sources for the subject areas where they feel less competent (Dimosthenous et al., 2019; Gann & Carpenter, 2019; Thomas, 2019; Tilhou, 2020). However, none of these previous studies focused specifically on mathematics. The gap in the current literature is the limited number of studies researching the charter school homeschool parents' perceptions of and experiences with mathematics instruction as well as the strategies they use when instructing in mathematics. This gap is important to address because the findings may help other homeschool educators and traditional educators due to the unique perspective homeschool parents bring to schooling.

The research setting for this study was independent study, homeschool, charter schools in the state of California. This setting provided me with parents engaged in homeschooling and part of an organization through which I could access these parents. This setting was a good choice for accessing parents who homeschool because parents who choose a homeschool charter school to support their homeschooling are more heterogeneous in ethnicity, education level, and socioeconomic status than independently homeschooling parents (Wearne, 2019). Researchers have requested that a more varied sample of homeschool parents be studied (Dimosthenous et al., 2019; Mangram & Solis Metz, 2018; Neuman & Guterman, 2017a; Puga, 2019; Wearne, 2019) This heterogeneity is a result of academic funding being made available for these parents to use for curriculum and supplies to support their homeschool (Wearne, 2019). Access to academic funding facilitates the opportunity for parents who would like to homeschool but cannot financially afford that educational choice (California Department of Education, 2022). The charter homeschool parents were part of an organized system and, therefore, were easier to contact for study purposes.

Purpose of Study

The purpose of this qualitative study was to explore parents' perceptions of and experiences with mathematics instruction and instructional strategies for kindergarten through sixth-grade students in a charter, homeschool setting. Very little research has been conducted on this topic. In this study, I addressed the gap in the literature research by interviewing homeschooling parents to collect their perceptions of and experiences with mathematics instruction.

Research Questions

The following research questions guided this study:

RQ1: What perceptions do parents share about providing mathematic instruction for kindergarten through sixth-grade students?

RQ2: What experiences do parents share about instructing kindergarten through sixth-grade students in mathematics?

RQ3: How do parents choose and adjust mathematics teaching strategies in kindergarten through sixth grade?

Conceptual Framework

The conceptual framework for this study was Dewey's (1938) theory of experience and education. Dewey believed that the traditional educational setting of the 1930s was too inflexible and did not consider the interests and experiences of the student. Although education has progressed since Dewey's time, in many respects because of Dewey's ideas, using experience as the context for learning is still an important concept for students but still little used (Giamellaro, 2017). Dewey's theory was appropriate for examining parents' perceptions of and experiences with mathematics instruction and instructional strategies for kindergarten through sixth-grade students in a charter, homeschool setting because Dewey believed that the experiences of both the student and the teacher were foundational to good learning outcomes in any subject. This theory contained the idea that the student's experiences affect the educational curriculum as does the society around the student. Because homeschool parents focus on the experiences their children bring to the educational environment, using Dewey's theory for analyzing

parents' perceptions, experiences, and selected instructional strategies had great potential for illuminating these experiences.

This theory was an appropriate lens to view how parents choose strategies in mathematics influenced by their experiences and perceptions. Those experiences may influence mathematics instruction, in accordance with Dewey's (1938) theory that includes the teacher's experience as part of the learning event. According to Dewey, the quality of the educational experience depends on the experiences and choices made by the teacher, which then creates connections and learning experiences for the student.

Dewey (1938) also presented the idea that the educator needs to use their skill to make sure that the learning experience students have is of value. Dewey wrote that teachers need to have deep knowledge of their students, use the experiences children have to create new learning, be organized, and carefully plan the learning experiences. As not only teachers but also parents of homeschool students, parents in the homeschool setting are uniquely positioned with their knowledge of the student and the student's experiences to build on. Parents in the homeschool setting must use their knowledge of the student and knowledge of the subject matter when choosing and using strategies for mathematics instruction. More information about the conceptual framework and how it relates to the study can be found in the literature review in Chapter 2.

Nature of the Study

In this study, I employed a basic qualitative study design (see Ravitch & Carl, 2021). A basic study can also be referred to as an interpretive study (Ravitch & Carl, 2021). The basic qualitative design works well in studies conducted in the social

sciences, such as education, due to the interaction between the subjects and the interviewing researcher (Babbie, 2018). I interviewed 12 homeschooling parents using a charter school about the mathematics instruction they provide for their children. The interviews were structured so that the parents and I as the interviewer, had flexibility within the interview structure and the guiding themes and questions needed to direct the conversation to the study topic (see Babbie, 2018). Personal interviews were the primary source of data collection for this study.

The research problem for this study was the lack of understanding of parents' perceptions of and experiences with mathematics and instructional strategies for kindergarten through sixth-grade students in a charter, homeschool setting. I used parents that homeschool through a charter homeschool as the participants in the study. The parents were required to use state-adopted or -approved curricula to instruct in mathematics; however, hundreds of curriculum options fell into those designations, and each parent brings their own experiences and knowledge to the task of instructing in their individual homeschool situation.

I used the basic qualitative research methodology in this study because little was known about parents' perceptions of and experiences with mathematics instruction and instructional strategies for kindergarten through sixth-grade students in a charter homeschool setting, and the goal for this study was to understand parents' perceptions and experiences. Thematic analysis was used to evaluate the data collected from the interviews (see Rubin & Rubin, 2016). I conducted this research to add to the knowledge already available in the field of education.

Definitions

California Common Core State Standards: The state standards identify what students are expected to learn and do for each grade level in kindergarten through 12th grade (California Department of Education, 2021b).

Charter school: Public schools that work outside of the school district structure and have a focused vision or purpose. These schools are flexible in the approach taken toward students and are typically more responsive to student needs (Boast et al., 2020).

Curriculum: The content of what is being taught, including the standards students must meet, lessons, books, materials, and assessments for students learning (Flake, 2017).

Experience: The collaboration between an individual and the environment they live in. These experiences include how the individual interacts with the environment and how the interactions change the individual. This definition applies to both teacher and student (Dewey, 1938).

Homeschool: Learning for children takes place outside of traditional public school or private school settings, typically guided by a parent or guardian. Homeschooling is not restricted to the home environment but commonly includes community resources and cooperative work with other homeschooling families and may access charter schools, educational resource vendors, and other resources (Efford & Becker, 2017).

Instruction: The implementation of teaching the academic curriculum based on the beliefs and educational philosophy of the teacher (Flake, 2017).

Assumptions

I based the design of this study on several assumptions. One assumption was that the participants took part in the study voluntarily. This qualitative study relied on participant interviews as the data source, so I also assumed participants understood the questions and responded honestly during interviews. This assumption was important because the study's credibility depends on the participants' sharing honest reflections of their teaching practices. Another assumption was that parents teaching in a charter homeschool setting want to provide the best education available for their children. This assumption was necessary to this study because the parents' intentions greatly influence the quality of mathematics instruction. Finally, I assumed that interviewing a sample of homeschool parents would be representative of most homeschool parents' experiences.

Scope and Delimitations

This study was focused on homeschool parents with children in kindergarten through sixth grade using a state homeschool charter in California. In California, parents are not required to have any training to teach their children (California Department of Education, 2022). The delimitations involved excluding homeschool parents who worked independently and parents with students in grades other than kindergarten through sixth grade. I did not study aspects of the homeschool setting other than those pertaining to mathematics. My interest in the parents was in their role as homeschool teachers of mathematics. I selected the participants in the study from respondents to an email invitation outlining the study purpose. The experiences, perceptions, and strategies shared by the parents were elicited through interviews conducted via the Zoom video conference

platform. Data were collected by myself as the sole researcher with limited financial resources and limited time for data collection and data analysis.

Limitations

This study's findings pertain to a convenience sampled group of homeschool parents using a charter school and may not be generalizable to other homeschool populations. Another limitation of the study was the number of parents willing to participate in the interview process. Because the data were collected through interviews, the parents reported their experiences, perceptions, and strategies from memory. Memories are not always accurate, which may have negatively affected the study. Another limitation may have been the depth of confidences parents were willing to share with me.

My understanding of good math instruction may have created a bias. I needed to carefully listen to parents as they described their children's expected outcomes and apply those expectations rather than my own. I also needed to maintain a neutral stance and open mind during the study. I did not serve any vested interests while conducting this study.

Significance

Recent research on homeschool parents' strategies, goals, lesson designs, and decision making is available; however, there is scant research on their perceptions of and experiences with mathematics and the instructional strategies for students in kindergarten through sixth grades. The results of this study answered the research questions, contributed to the literature, and promoted social change. My hope is that this study may

contribute to advancing both practice and policy in education for students, parents, kindergarten through 12th-grade classroom teachers, school administrators, higher education officials, and government education officials because homeschool parents may have unique experiences, insights, and techniques for mathematics instruction. The information gathered in the study can offer understanding and insight into the unique lens through which homeschool parents view mathematics instruction.

The strategies homeschool parents use to meet academic goals and standards for mathematics may help other homeschooling parents and parents of students attending traditional schools. Other homeschooling parents may use them to learn how to best instruct in mathematics within their homeschool setting. Parents with children in a traditional school setting may learn new techniques to support the instruction being provided in the classroom and how to personalize education for their children when needed. Classroom teachers may use the study findings to understand how homeschool parents personalize instruction and apply the appropriate concepts and techniques to personalize classroom instruction. Additionally, classroom teachers who take over the education of formerly homeschooled students may better understand the instructional methods and strategies used in home instruction. School administrators may be able to use the information in the study to help identify how individualized learning benefits students and how homeschooling techniques can apply to the classroom context. Higher education providers may use the information in this study to meet the needs of formerly homeschooled students who attend institutions of higher learning. Higher education instructors may also use individualized instruction techniques from homeschooling

parents in higher education instruction. State and federal educational agencies could use the results of this study to help form policies best suited to meet individual student needs. State agencies may regulate homeschooling and use the study data to create guidance and legislation to enhance instruction for homeschooling parents and students.

This study may contribute to social change by providing more information about alternative educational options and school choice. School choice can help decrease the achievement gap between students of differing ethnic, socioeconomic, and regional backgrounds (Mason et al., 2019).

With the increase in homeschooled students, parents often take on the role of teacher. The experiences these parents have, the perceptions they bring to mathematics instruction, and the strategies they employ while instructing in mathematics all influence their students' mathematics experience and achievement. Developing a better understanding of these parents furthers knowledge in the field of education.

Summary

In this chapter, I identified a gap in the literature on homeschooling parents and mathematics. In the background section, I demonstrated that researchers have been able to gather information from homeschool parents about the reasons they homeschool, the general strategies used for choosing curriculum and developing lessons, and the level of control wanted, but there was a lack of research on parents' perceptions of and experiences with mathematics instruction and instructional strategies for kindergarten through sixth-grade students in a charter homeschool setting.

The purpose of this qualitative study was to explore parents' perceptions of and experiences with mathematics instruction and instructional strategies for kindergarten through sixth-grade students in a charter homeschool setting. The research site for this study was homeschool charter schools in California. I chose this site to access parents who represent a more comprehensive ethnic, educational, and socioeconomic range than previous studies of homeschool parents.

I used Dewey's (1938) theory of experience and education as the conceptual framework for this study because both the experiences of the parents as teachers and the experiences of the students work together as the mechanism to decide on the strategies used for instruction. I employed a basic qualitative study design that allowed the parents to share their experiences, perceptions, and strategies through interviews about mathematics instruction in the homeschool setting (see Ravitch & Carl, 2021). This study was significant because it provided an understanding of homeschool parents' mathematics instruction strategies as well as the experiences and perceptions they have pertaining to mathematics, which is new information for the field of education.

In Chapter 2, I will present a review of the literature, including an analysis and synthesis of the current research about homeschooling, the current research about mathematics in kindergarten through sixth grade, and how parent experiences align with Dewey's (1938) theory of experience and education. Chapter 2 will conclude with a discussion of themes and the gaps that appeared in the literature.

Chapter 2: Literature Review

Although many researchers have focused on homeschooling as a topic, limited research has been conducted on homeschooling parents' perceptions of and experiences with mathematics. The purpose of this qualitative study was to understand charter homeschool parents' experiences with, perceptions of, and strategies for instructing kindergarten through sixth-grade students in mathematics and how these experiences, perceptions, and strategies reflect Dewey's (1938) experience in education theory. In this chapter, I provide a critical review of the literature, focusing on the aspects of homeschooling and mathematics that pertain to the study. This chapter also includes some of the sparse literature available related to the COVID-19 pandemic and homeschooling.

A brief summary of the extant research on the topic reveals the importance of this study. Homeschooling families in the United States have continued to increase in number. Ray (2017) stated that as of 2017, about 2.4 million students were educated through homeschooling. Understanding these families, how they decide to homeschool their children, and how their perceptions and experiences interact with the mathematics instructional strategies they use will benefit the education community at large by resulting in a better understanding of this topic.

Parents who choose to homeschool make that decision for many reasons. Many prefer the flexible schedule provided by homeschooling (Efford & Becker, 2017) and the control they can exert over their children's educational environment and many parents have religious, cultural, and ethnic reasons to eschew traditional school settings (Efford

& Becker, 2017; Firmin et al., 2019; Gann & Carpenter, 2019; Neuman & Guterman, 2017a; Puga, 2019). Research on parents who choose to homeschool has revealed they make many instructional decisions for their homeschool, alter the strategies and approaches toward lessons based on the needs of the student, and may even work together with the student(s) to develop the lessons, with the needs and interests of the student(s) often driving homeschool instruction (Burke & Cleaver, 2019; Efford & Becker, 2017; Firmin et al., 2019; Gann & Carpenter, 2019). Learning in the homeschool setting is often connected to everyday life by the parent (Medlin & Butler, 2018). Homeschool parents apply different values and goals to lessons than traditional schools (Puga, 2019). Homeschool parents frequently reported acting as facilitators rather than instructors and spending time researching and providing resources outside of the home for instruction (Burke & Cleaver, 2019; Efford & Becker, 2017).

Literature Search Strategy

I conducted this literature review by analyzing peer-reviewed journals found in the following databases accessed through the Walden University Library: SAGE Journals, ERIC, Education Source, Taylor and Francis Online, Academic Search Complete, and other academic sources. Google Scholar was also used to locate literature for this review. Searches were conducted for literature published in the past five years. The key search terms used were *homeschool* or *home school*, *math* or *mathematics, instruction*, *instructional strategy*, *teaching methods*, and *parents*. I worked with a Walden University librarian to maximize the effectiveness of my searches.

Conceptual Framework

The conceptual framework for this study was based on Dewey's (1938) theory of experience and education. Dewey's theory has been recognized as a foundational viewpoint in education for more than 80 years (Giamellaro, 2017; Seaman, 2019; Thorburn, 2020). In the theory, Dewey presented the idea that the experiences of the student, the experiences of the teacher, and the experiences drawn from society, all connect to form valuable educational opportunities. These experiences develop from past experience and may also be applied by the teacher to the present learning opportunity as well as to future learning and experience (Thorburn, 2020).

The responsibility of the teacher within this framework is to cultivate an understanding of when experiences are valuable to the student and, therefore, educative, and when experiences are not educative. The teacher cultivates this understanding through knowledge of the student and their abilities and how the student's setting adds or detracts from education. Dewey referred to this as the *situation*. Part of the situation is the use of curriculum, subject matter authorities, and societal factors. Students then should take the learning from one situation and apply that learning to new educational experiences. This application is how teachers and students can evaluate the usefulness of the experience. Teachers are tasked to keep an eye out for opportunities, termed *problems,* where students can use their experience to learn and grow in new directions. The goal being that students continue looking for new experiences and new problems as continuous learners. Another opportunity for teachers is the use of *special occasions* or what may be termed current events to keep learning fresh, although Dewey cautioned that

the special occasions need to work with the current learning of the student and not be the main source of learning focus.

In this study, I used Dewey's (1938) theory as it pertains to kindergarten through sixth-grade, charter, homeschool parents and mathematics. The use of experiences to inform mathematics instruction leads to the use of what Giamellaro (2017) called contextualized curriculum, which is curriculum where the content contained therein is linked to the environment beyond the classroom. An additional descriptor used for this kind of curriculum would be authentic curriculum. Parents in a homeschool charter school setting are provided with curricular options from the charter school but are encouraged to use their knowledge of the child to choose and apply the curriculum (Efford & Becker, 2017). Parents have expressed their desire to use their child's experiences and the child's academic needs to drive instruction (Burke & Cleaver, 2019; Efford & Becker, 2017; Firmin et al., 2019; Puga, 2019; Schaeffer et al., 2018). Contextualized curriculum is created with a focus on content knowledge, the society within which the learning is taking place, and the experiences of the student (Giamellaro, 2017). The measure of the effectiveness of this curriculum is the students' ability to further apply the knowledge to new learning. Dewey (1938) referred to this ability as *continuity*. Parents often use daily activities, such as cooking, shopping, and building, to provide mathematics instruction, drawing from their expertise and the experience of the student (Galindo et al., 2019; Kladder, 2018; Kuster et al., 2018; Rubel, 2017). Another component considered in choosing learning materials to connect with experience is the developmental phase of the student (Seaman, 2019). In the homeschool environment, the

parent, who is the teacher, is uniquely positioned to know the student's experiences and development. Therefore, I selected Dewey's theory as the lens through which parents' mathematics perceptions, experiences, and strategy choices were viewed in this study.

Literature Review Related to Key Variables and Concepts

In the remainder of this literature review, I provide provides analysis and synthesis of current academic studies on parental control over learning, how student experience influences instruction, instruction and strategies used by parents, principles of math instruction, and the COVID-19 pandemic. I chose these topics to deliver a greater understanding of homeschool instruction and mathematics instruction.

History of Homeschooling and Charter Schools in California

In the modern sense, homeschooling in the United States began in the 1970s with both religiously conservative parents and with counterculture parents (Ray, 2017). Both groups of parents wanted their children educated outside of the public school system and believed that the home was the best place for education (Carlson, 2020; Ray, 2017). By 1993, homeschooling was made legal in all 50 states (Carlson, 2020). Each state manages homeschooling differently, with some states requiring extensive oversight and others requiring almost none (Tilhou, 2020). The state of California requires that parents file a private affidavit stating that they intend to homeschool, and the parent is then responsible for providing all instruction and materials. (California Department of Education, 2021a). If the parent does not want to take on full responsibility, either for instruction or providing materials, a homeschool charter school is an option.

Charter schools were developed in response to the 1983 report, *A Nation at Risk: The Imperative for Educational Reform*, that stated that public schools were failing students, and a new school format, charter schools, was developed to meet the needs of the lowest students (Tanner, 2021). Charter schools can access state educational funding and must accept all students. Students in a charter school are expected to comply with state educational policies and standards (California Department of Education, 2021a). Charter schools operate with specific aims, such as homeschooling, outlined in the charter, and a school district then sponsors the charter.

Parental Control Over Learning

Parents who choose to homeschool their children exhibit and express the desire to control their children's educational experience. This level of control is not available in a traditional school setting where teachers, administrators, and state officials make the educational decisions for the students. Homeschool parents often express the desire to control a few specific areas within education, with the most common areas being for religious or moral reasons, a concern about drugs or peer pressure, and racial or ethnic reasons (Cui & Hanson, 2019; Ray, 2017). Other areas where parents desire control are less common but are worth noting, such as political reasons, curricular control, family time, and flexibility for activities such as sports.

Religious Reasons

The most common reason for homeschooling is the desire to provide religious instruction or to use curriculum that is religiously based (Cui & Hanson, 2019; Ray, 2017). One of the first groups to initiate modern homeschooling were conservative,

Protestant, White parents (Apple, 2020; Cui & Hanson, 2019; Hamlin, 2020; Jolly & Matthews, 2020; Marks & Welsch, 2019; Sarajlic, 2019; Thomas, 2019). This group of parents remains a large percentage of homeschooling parents today, with 83% of homeschool families identified as White and 67% who claim to homeschool for religious reasons (Dennison et al., 2020; Jolly & Matthews, 2020). This group is also the lobbying force behind many legislative changes pertaining to homeschooling. Apple (2020) reported that these parents want to protect and shelter their children from the outside world, and removing the children from the influences of the public school system is part of that protection. Parents shared that they wanted to transfer the religious beliefs and morals they held to their children through the materials and lessons taught in the homeschool. Some parents ascribed the choices made about curricular options to their religious beliefs (Thomas, 2019). These curricular choices are, at times, in opposition to the state expectations for education, and there is concern that the disregard for these expectations can negatively affect students with learning challenges (Dennison et al., 2020). Another concern about the religious choice to homeschool is the conservative religious viewpoints perpetuated about subjects, such as sexuality, evolution, patriarchal hierarchy, and being isolated and insulated from the rest of the world (Apple, 2020). Religious parents have also been found to have a more authoritarian teaching style than other homeschooling parents (Hassanein, 2017).

Concern About the Environment in Schools

The second most common reason parents choose to homeschool their children is fear of the environment in the traditional school setting. Specifically, some parents fear

exposure to drugs, peer pressure, racism, and violence (Cui & Hanson, 2019; Ray, 2017; Watson, 2018). Parents of African American, Hispanic, transgender, and gender-diverse children notably identified the need to control exposure to these school environment concerns (Gohil et al., 2021; Watson, 2018). Students in these marginalized groups are more likely to experience substance abuse, violence, and bullying due to race or gender orientation (Gohil et al., 2021; Puga, 2019). Bullying and the lack of traditional school response to stop bullying were especially important to the parents of transgender children because these students experience violence at a higher rate than other groups of students in traditional schools (Gohil et al., 2021). Transgender and gender diverse youths are homeschooled at a rate of about 21% versus about 3% for typical youths (Gohil et al., 2021). Parents whose first reason to homeschool is religion also share concerns about the environment in schools (Cui & Hanson, 2019; Ray, 2017). The concerns for these parents are focused more on peer pressure and the fear that their children will have exposure to lifestyles and beliefs that oppose the views held by the parents.

Although there is no concrete evidence to support the idea that White families choose to homeschool due to fear of integration with other ethnicities, there is tangential evidence to support that hypothesis. In a seminal study, Levy (2009) found that states with higher levels of segregation were less likely to have laws controlling or limiting homeschooling. There is also a connection between the years when integration was occurring and a greater homeschooling level by White families. Levy (2010) also conducted a seminal study of the charter school movement and race. Charter schools began as a response to the need for school choice, and Levy found some evidence that

charter schools are more prevalent in states where there is more segregation in public schools. Charter schools themselves appear to be more segregated, although that may be partly due to a focus on ethnic or urban charters.

Racial or Ethnic Reasons

The homeschooling community has been historically dominated by White, middle-class families (Dennison et al., 2020). Although this domination still exists, with 83% of homeschoolers identifying as White, African American, and Hispanic families have been joining the homeschool community more frequently in the past few years (Dennison et al., 2020; Puga, 2019; Ray, 2017; Watson, 2018). Although the reported number of Hispanic homeschoolers varies from 7% to 26% of the homeschooling population, almost no research has been conducted on this group (Dennison et al., 2020; Hirsh & Center on Reinventing Public Education, 2019). Many of these families have chosen to remove their children from the traditional school setting as a response to racial and social struggles experienced by their children (Puga, 2019; Ray, 2017; Watson, 2018). African American families, in particular, have reported not trusting the school system to adequately educate or keep their children safe (Lyiscott, 2017). Families also reported the desire to instruct their children in a culturally focused way and to choose curriculum and instruction that provided an emphasis on ethnic considerations and avoids the Eurocentric worldview (Lyiscott, 2017; Puga, 2019; Watson, 2018).

Another factor that may be a consideration for Hispanic and African American families is the lack of availability of high-quality public school districts. School districts with more spending per pupil, where students achieve higher test scores, and where the

student population has a higher socioeconomic level have fewer homeschooled students (Marks & Welsch, 2019). Parents whose children do not have access to these schools may choose to homeschool to compensate for what the local schools cannot provide due to social inequalities (Puga, 2019).

Other Control Variables

Homeschooling parents commonly shared a few other areas where they wanted control over education. The flexibility of the homeschool schedule for families to spend time together was a common desire, along with the flexibility to participate in sports (Wearne, 2019). Having the power to control the children's curriculum was another desirable aspect that drew parents to homeschool (Neuman & Guterman, 2017a). This choice in curriculum was coupled with controlling social opportunities and the actions children displayed while interacting with others (Neuman & Guterman, 2017a). In the state of California, the requirement for all students to be vaccinated to attend school also caused some parents to choose homeschooling (Mohanty et al., 2020).

Student Experience Influences Instruction

Parents who choose to become the teachers for their children often express the desire for the student’s experiences to drive the instruction being provided by the parent (Burke & Cleaver, 2019; Efford & Becker, 2017; Firmin et al., 2019; Puga, 2019; Schaeffer et al., 2018). The academic needs of the child, coupled with the interests of the child, guide the choices the parent makes for their homeschool (Burke & Cleaver, 2019; Efford & Becker, 2017). Curricular choices, instruction topics, and the parent’s academic

goals for their child revolve around the experiences the student brings to the learning environment (Gann & Carpenter, 2019; Schaeffer et al., 2018; Watson, 2018).

Ability to Adapt to Child's Interests and Needs

Parents who homeschool can change their instructional approaches in response to their children's interests and needs. This adaptation ability requires that the parent allows the child to share their preferences, interests, and needs as the school experience progresses (Efford & Becker, 2017; Gann & Carpenter, 2019; Schaeffer et al., 2018; Watson, 2018). Parents encourage the child to originate learning, and when this happens, take advantage of the information to guide instruction (Burke & Cleaver, 2019). Students can choose how they interact with their learning by choosing the kind of instruction they receive and the pace at which they work. Due to the interest from the student, engagement is easy to maintain (Neuman & Guterman, 2017a).

Parents' choices for their students are based not only on the child's strengths and deficits but on the interaction between the parent and the child, with each bringing experience and interest to the decision-making process (Efford & Becker, 2017; Puga, 2019). This collaboration between the parent and child creates a bond not available in a traditional school setting (Firmin et al., 2019). This bond serves to provide a teacher to student affinity and a way for the teacher to tap into the ultimate capabilities of the student (Reaburn & Roberts et al., 2018).

Individualized Goals

Academic goals in a homeschool setting may not be the same as the educational goals set in a traditional school setting due to the individualized and cooperative

environment (Neuman & Guterman, 2017b). Academic goals in a homeschool setting are personalized and individualized for each student (Watson, 2018). These individualized goals may not match the goals set by traditional schools for students in the same grade or the same age as the homeschooled students (Neuman & Guterman, 2017b). Assessment of educational goals for homeschooled students should not be based on the assessments used to measure students in a traditional setting but should be assessed on these individual goals (Neuman & Guterman, 2017b; Watson, 2018).

Instruction and Strategies Used by Parents

Parents who choose to homeschool use many instructional strategies to meet the needs of their students. Due to the individualized nature of homeschooling instruction, parents can use any instructional resources and strategies deemed useful for the student's needs (Efford & Becker, 2017). Curricular choices, modalities such as hands-on or media-based instruction, and resources from outside the home can all be used to meet the student's needs (Burke & Cleaver, 2019).

Parents may access a plethora of resources when individualizing instruction for their student. The very nature of homeschooling and meeting student needs leads to great flexibility in instructional choice (Burke & Cleaver, 2019; Efford & Becker, 2017). Parents may choose to use textbooks, online courses, a homeschool co-op, independent study, or direct instruction (Tilhou, 2020). Parents reported that when they started homeschooling or started new content, they often used a structured curriculum but then allowed the student to choose how to jump off from that curriculum (Burke & Cleaver, 2019; Efford & Becker, 2017; Watson, 2018). Many parents report giving their children

the freedom to choose how they want to learn and how to structure their school time (Gann & Carpenter, 2019; Neuman & Guterman, 2017a; Rubel, 2017). Activities where the parent and child learn together provide a special relationship and opportunities for the parent to make use of teachable moments (Dimosthenous et al., 2019; Efford & Becker, 2017; Firmin et al., 2019). This balance between learning where the parent leads and the child leads provide a positive learning environment (Neuman & Guterman, 2017a). Real-world learning applications are encouraged by homeschooling parents (Galindo et al., 2019; Gann & Carpenter, 2019; Neuman & Guterman, 2017a; Williams et al., 2020).

Principles of Mathematics Instruction

Effective mathematics instruction is the goal of any teacher, including parents teaching in a homeschool setting. Regardless of who is delivering the instruction, good instruction includes common components. There has been almost no research on mathematics instruction in the homeschool setting. Parents who assume mathematics teachers' positions must possess an extensive understanding of mathematics, just as a trained teacher must. Firstly, students require teachers who effectively deliver instruction (Dimosthenous et al., 2019). Teachers must use and teach the unique vocabulary that accompanies math and math instruction (Galindo et al., 2019; Kuster et al., 2018). Along with using the correct math language, effective math instruction connects mathematics to everyday life (Galindo et al., 2019; Raeburn et al., 2018). Homeschooling parents can successfully deliver mathematics instruction to their children if they are trained to do so and can overcome their mathematics deficits or fears (Ganley et al., 2019; Colgan, 2019; Foley et al., 2017; Mangram & Solis Metz, 2018; Martin et al., 2019; Medlin & Butler,

2018; Rubel, 2017; Slavit & Lesseig, 2017). Homeschool charter schools provide opportunities for parents to collaborate with trained teachers and gain instructional skills.

Teacher Effectiveness

Students who have ineffective teachers during their elementary school years may have deficits in their learning for the rest of their learning lives (Dimosthenous et al., 2019). Because homeschooling parents have taken on the role of the teacher, their effectiveness must achieve the same effectiveness as a trained classroom teacher. The elementary teachers must ensure that students have learned math facts, know how to use the basic processes of addition, subtraction, multiplication, and division, and apply that knowledge (Williams et al., 2020). Students with effective teachers in mathematics carry that success through their academic careers to areas other than mathematics (Medlin & Butler, 2018). Effectiveness can be measured by the concept understanding students achieve from their mathematics courses. The teacher acts as the expert and guide as students apply their understanding to their practice (Slavit & Lesseig, 2017). Effective teachers provide first instruction in mathematics concepts and provide many ways for students to show their understanding. Student questioning is encouraged, along with teachers demonstrating effective questioning scenarios. Teachers use scaffolding to help students reach understanding and use the knowledge and experience of students for discussions and expansion of the lessons (Stohlmann et al., 2017). These aspects of effectiveness must be present in homeschool instruction and apply to homeschool parents as their children’s teachers.

Mathematics is the school subject about which many homeschool parents report having anxiety. Math anxiety in either teachers or parents directly impacts anxiety and instructional quality for students (Ganley et al., 2019; Rubel, 2017, Silver et al., 2021). Although no research has been done on homeschool parents, parents with children in a traditional school who can participate in training toward effective mathematics support can increase mathematics achievement (Colgan, 2019; Mangram & Solis Metz, 2018). Homeschool parents must overcome any anxiety around mathematics to provide the most effective instruction to their students.

Math Language

Mathematics teachers must use the academic language appropriate for mathematics and teach it to their students (Galindo et al., 2019). This mathematical academic language needs to be how teachers and students communicate about math to access mathematics concepts and achieve future mathematics success (Kuster et al., 2018). Mathematical academic language must be used by any mathematics teacher, including homeschool parents. This language is used to explain math in textbooks and explain concepts as mathematics learning progresses.

Student Exploration and Everyday Math

Students effectively learn mathematics through everyday activities. Cooking and shopping are two chores where students can learn math skills (Galindo et al., 2019). Students can use their experiences and test out ideas in math with guidance from their teacher (Kuster et al., 2018). Using their daily experiences to make connections to the mathematics curriculum allows students to develop ownership of their mathematics

learning (Rubel, 2017). Homeschool parents report that everyday applications of mathematics within daily life will enable the parent and student to apply their knowledge, for parents to support the learning of the student, and for students to engage with their learning in a practical way (Galindo et al., 2019).

Parent Training and Intervention

According to the homeschool curricular guide for a study site, parents within a homeschool charter school setting are provided with curricular and instructional support through the charter school and the teacher supporting the family. Each family is assigned a credentialed teacher to help make curricular and instructional choices for all subjects, including mathematics. Teachers meet with the family at least once per month to review the work completed and provide guidance and support to students and the parents. State adopted curricula are provided as recommended curriculum for each core subject area. Parents can choose other curricula and have supplemental materials to match the chosen curriculum to state standards. The charter school provides workshops, vendor options, and tutor options for parents who need more support for their students. Intervention classes are available for students who are not meeting grade-level expectations in mathematics and English language arts. Parents may not have been taught how their children are learning and may not understand the techniques. With support and training, parents can effectively learn what they need to know to help their children (Martin et al., 2019). This support and training would be provided through the homeschool charter school.

COVID-19 Effects

The COVID-19 pandemic has directly affected students, parents, and teachers (Poletti, 2020). In the spring of 2020, 90% of students worldwide were kept out of their schools (Emmart & Emmart, 2020). As a result of the schools being shut down, parents were forced to take on the role of homeschool teacher (Kaden, 2020). As in-person schools have had to shut down, many families have turned to charter schools and private schools as a support system for homeschooling. Many parents who were already considering removing their children from public school now had no other option but to instruct their children at home (Deangelis, 2020). Whether parents wanted to take on the role of the teacher or were forced to, parents who were able to access teachers for support during this time were much more successful and had much lower stress (Emmart & Emmart, 2020). Additionally, these parents report having a more positive experience in homeschooling due to ongoing assistance from teachers (Deangelis, 2020). Almost 20% of families who started homeschooling because of the pandemic plan to continue homeschooling after schools reopen (Deangelis, 2020).

Summary

The literature review addressed the following topics: parental control over learning, how student experience influences instruction, instruction and strategies used by parents, principles of math instruction, and the COVID-19 pandemic. These topics created an understanding of homeschool instruction and mathematics instruction. Parental control includes religious beliefs, fears about the environment in schools, and racial or ethnic focus or concern. Student experience is used as the focus for homeschool parents.

The child's needs and interests and the individual goals set by the parents inform homeschool instruction. Homeschool parents use any resources, modalities, and strategies for instruction that they feel are best for their students. Principles of math instruction that are best for classroom teachers are also best for homeschool parents. Teacher effectiveness, math language, using math in everyday life, and teacher training and intervention all apply to instruction by parents in the homeschool setting, as they are taking on the responsibility of the classroom teacher.

The COVID-19 pandemic has caused parents to become homeschool parents without their choice. Support from teachers has created the best outcomes for these parents and their students. The consequences of that success are that several parents plan to continue homeschooling after schools reopen.

Much is not known about homeschool parents and their mathematics instruction. There is very little information about marginalized groups, especially. Low socioeconomic status parents and minority parents have not been studied concerning their homeschool mathematics instruction. There is also very little known about fathers who homeschool and how their mathematics instruction may differ from the instruction provided by mothers, as mothers are the predominant homeschooling teachers studied. More studies need to be carried out to fully understand the mathematics strategies used by homeschooling parents.

In Chapter 3, I will explain the reasoning behind choosing a basic qualitative study and present the study design. I will describe the role of the researcher the methodology and explain the issues of trustworthiness. The methodology presented in

Chapter 3 is consistent with qualitative studies which strive to understand the experiences of participants.

Chapter 3: Research Method

The purpose of this qualitative study was to understand the experiences, perceptions, and strategies of homeschool parents while instructing kindergarten through sixth-grade students in mathematics. To accomplish this purpose, I interviewed homeschool parents to collect data on their perceptions of mathematics instruction, their experiences with mathematics, and their strategies for instructing mathematics in kindergarten through sixth grades.

In Chapter 3, I discuss the research method chosen for this study. I also provide the research rationale, research design, and my role as a researcher. The chapter concludes with an examination of ethics and trustworthiness.

Research Design and Rationale

In this section, I present the research questions for this qualitative study, explain the central phenomenon of the study, and offer my rationale for the chosen methodology. The main research question of this study was: What are parents' perceptions of and experiences with mathematics instruction and instructional strategies for kindergarten through sixth-grade students in a homeschool setting? The central phenomenon of the study was parents' mathematics instruction of kindergarten through sixth-grade students in the homeschool environment. The research questions are:

1. What perceptions do parents share about providing mathematic instruction for kindergarten through sixth-grade students?
2. What experiences do parents share about instructing kindergarten through sixth-grade students in mathematics?

3. How do parents choose and adjust mathematics teaching strategies in kindergarten through sixth grade?

Qualitative research affords scholars the opportunity to study the lives, experiences, cultures, stories, and meaning that make us human (Patton, 2015; Ravitch & Carl, 2021). Qualitative research can be undertaken to prove, disprove, understand, reflect, share, identify, and validate all aspects of living. Scholars have developed research approaches to apply order to the study of the chaos of human life, and procedures, checks, and fidelity practices have been established toward the goal of better understanding and explaining the complexities of experience (Patton, 2015). However, qualitative research has often been perceived as a less rigorous study.

I chose to employ a basic qualitative research design in this study. According to Merriam and Tisdell (2016), a basic qualitative study focuses on the participants about whom the research is being conducted and the experiences of those participants. The resultant data contribute to the available information about the research topic. Due to the gap in literature pertaining to homeschool parents and mathematics, I conducted a basic qualitative study to contribute scholarly knowledge on this topic. Ravitch and Carl (2021) stated that a basic qualitative study is used to understand peoples' experiences, perceptions, and approaches to the world they live in. This explanation matched my desire to focus on homeschool parents' perceptions and experiences related to mathematics instruction within their world (see Groenewald, 2004; Guest et al., 2006; Ravitch & Carl, 2021). I am interested in hearing the stories homeschool parents have to

share regarding their perceptions and experiences of mathematics and mathematics instruction.

Role of the Researcher

I am a teacher working in a homeschool charter school in California. I have taught for 23 years in public and charter school settings and have expertise in mathematics instruction. This experience could have presented a possible bias when interviewing parents about mathematics. Homeschool parents choose to take on the role of the daily classroom teacher and assume the responsibilities thereof. Each student is assigned a credentialed teacher to support and guide the family. My role within the school is to guide parents in choosing curriculum, meeting state academic standards, providing intervention and support, and working with parents to report grades for the 34 students on my roster.

I guarded against any personal or professional bias by only interviewing parents whom I did not support as a teacher within the homeschool charter at the time of the study. No conflicts arose; however, five participants were affiliated with the charter where I am currently working. I was not the supervising teacher for any of the participants.

My role within this study was as an observer-participant. Merriam and Tisdell (2016) described this role as one where the researcher makes use of their knowledge of the phenomenon being studied and applies that knowledge to the direct observation and interaction happening with participants during the interview process. The observer-participant can provide the framework within which the data collection occurs. This role

also allowed the participants to control the information shared with me (see Merriam & Tisdell, 2016).

Methodology

Participant Selection Logic

The target group of interest for this study was homeschooling parents instructing students in kindergarten through sixth grades in mathematics through any California independent study charter school. In California, independent study charter schools are allowed under the Independent Study Education Code, first enacted in 1976 (California Department of Education, 2021a). Independent study students are required to use the state-adopted or approved curriculum, follow the state graduation requirements, and be supervised by a fully credentialed teacher.

I recruited 12 participants to the study to provide a thick commentary (see Groenewald, 2004; Guest et al., 2006; Ravitch & Carl, 2021). Parent participants were recruited through recommendations from homeschool acquaintances, charter school teachers, the charter school Facebook page, and my social media network. I asked participants who know other parents who may want to participate to contribute to snowball sampling. Email invitations were sent to potential participants, with text or email follow-up communication to arrange interviews and provide consent information.

Instrumentation

Interviews are a common instrument used in qualitative studies (Rubin & Rubin, 2016). I developed an interview guide (see Appendix) for semistructured interviews based on the interview development guidance provided by Rubin and Rubin (2016) and

Merriam and Tisdell (2016). The guide contained seven questions, with prompts to be used if needed. I had my doctoral committee review the questions for validation. The interview questions were designed to elicit parents' experiences with and perceptions of mathematics. Experiences are paramount in the educational theory presented by Dewey (1938), and this theory informed my conceptual development of the interview guide and prompts. The interview questions were developed based on my experiences as a teacher who supports homeschool parents. I took field notes during interviews to capture the participants' nonverbal cues.

Procedures for Data Collection

I conducted semistructured interviews to collect the data for this study. Basic qualitative inquiry relies on interviews as the primary data source (Rubin & Rubin, 2016). Interview questions, transcripts, and coding were necessary to uncover the patterns and themes shared by the participants (see Saldaña, 2021). The interviews were conducted through the Zoom video platform due to the COVID-19 pandemic. Remote interviews are an accepted version of in-person interviews (Archibald et al., 2019; Gray et al., 2020; Mirick & Wladkowski, 2019). The interviews took about an hour of the participants' time and were audio recorded through Zoom. I used the transcripts from the recorded interviews for paper-pencil coding.

Issues of Trustworthiness

Trustworthiness is central to the process and development of a qualitative study (Ravitch & Carl, 2021). I maintained the credibility, transferability, dependability, and

confirmability of the study over its duration. The strategies used to ensure trustworthiness are discussed in the following subsections.

Credibility

As a member of the community I studied, I developed rapport quickly while establishing relationships with the participants. Being a part of the interviews and the research contributed to the credibility of the research (see Dennis, 2018). By using what Dennis (2018) termed *researcher praxis*, I assured readers that I have returned to the data to evaluate and assess my work and have placed that information within the context of my understanding and caring for the participants. I used the process of triangulation (Patton, 2015), where I used the literature available from other researchers in the field, allowed the participants to member check my work, and had experts review the data and my conclusions. All these factors provided credibility to the study.

Transferability

Transferability refers to how well the results of a study can be used in other conditions (Patton, 2015). Qualitative studies are not designed to be transferable to other settings; however, components of qualitative studies may apply to other settings (Ravitch & Carl, 2021). Because homeschooling is a unique setting depending on each parent and student, transferability was difficult to achieve.

Dependability

I established dependability in this study by providing a thorough description of the data collection process (see Merriam & Tisdell, 2016). This description included an

explanation of the study, the questions, and the criterion for participant selection. Other researchers can use the description to recreate the study.

Confirmability

In a qualitative study, conformability is how the researcher shows that the data collected are neutral and that biases are acknowledged (Ravitch & Carl, 2021). I used member checking to ensure confirmability in this study. Member checking is where the researcher checks with the participants during the analysis process to confirm the findings (Saldaña, 2021). I had my participants verify the accuracy of our interviews by reviewing the interview transcripts. The use of an audit trail established the confirmability of my study (see Patton, 2015). Through divulging any biases I brought to the study as the researcher, explaining the reasons for my research choices, and openly displaying the data collection process and outcomes, readers can follow the research process.

Summary

I chose a basic qualitative study design to explore homeschool charter school parents' perceptions, experiences, and strategies about mathematics instruction. Participants were recruited through acquaintances, charter school teachers, and social media networks. I used semistructured interviews to collect the participants’ qualitative responses to address the research questions about their mathematics experiences, perceptions, and strategies.

In Chapter 4, I will share the results of the study. The setting of the study and the demographics and characteristics of the participants will also be presented. Additionally,

I will provide a description of the data collection, data analysis, evidence of trustworthiness, and a summary of the study findings.

Chapter 4: Results

The purpose of this qualitative study was to understand the perceptions, experiences, and strategies of charter school homeschool parents while instructing kindergarten through sixth-grade students in mathematics. The research questions were:

RQ1: What perceptions do parents share about providing mathematic instruction for kindergarten through sixth-grade students?

RQ2: What experiences do parents share about instructing kindergarten through sixth-grade students in mathematics?

RQ3: How do parents choose and adjust mathematics teaching strategies in kindergarten through sixth grade?

I used a basic qualitative design for this study. To gather data, 12 charter school homeschool parents participated in semistructured interviews. In this chapter, I present information on the interview settings, participant demographics, data analysis, and evidence of trustworthiness. The chapter concludes with a discussion of the results and a summary of the findings.

Setting

Following receiving approval from the Walden University Institutional Review Board (Approval Number 06-25-21-0673755) in June 2021, I recruited participants for this study through social media and my social network. The study was limited to the state of California due to the differences in charter school law throughout the United States. Seven participants responded to the initial recruitment effort, and those seven participants recommended the remaining five participants through snowball sampling. However,

having the participants suggest further participants could result in similar experiences and backgrounds.

I conducted the semistructured interviews using the Zoom video conferencing platform due to the COVID-19 global pandemic. Although Zoom facilitates video and audio recording, only audio recordings of the participants' interviews were made. All participants elected to participate in the Zoom interviews from their homes. I also conducted the interviews from my home office. Three of the participants' settings had minor distractions, such as pets and children coming into the room, but those distractions did not take away from the quality of the interviews. The recruitment and interview process was completed over 6 weeks in June and July of 2021.

Demographics

I interviewed 12 participants for this study, all of whom were female and White. The participants were from five different charter school systems across the state of California, representing the Northern, Central, and Southern California regions. As shown in Table 1, the educational background for the participants varied from some college to graduate degrees. Of the participants with graduate degrees, seven had degrees in education. Those with education degrees are identified in the table. Several of the participants had homeschooled for many years and others for only 1. All participants taught more than one grade level, with more than one child being homeschooled.

Table 1

Research Participants' Demographics

Pseudonym	Educational Level	Education Degree	Number of Years Homeschooling	Number of Children Homeschooled
P1	Graduate degree	No	1	2
P2	Graduate degree	Yes	4	2
P3	Graduate degree	Yes	1	3
P4	Some college	No	5	4
P5	Graduate degree	Yes	4	3
P6	College degree	No	1	3
P7	Graduate degree	Yes	7	3
P8	Graduate degree	Yes	1	2
P9	Graduate degree	Yes	1	2
P10	Graduate degree	Yes	2	2
P11	Graduate degree	No	1	2
P12	Graduate degree	No	5	3

Data Collection

After receiving Walden University Institutional Review Board approval to begin collecting data, I posted a recruitment flyer to several social media outlets. The participants volunteered to take part in the study by responding to the recruitment flyer and through recommendation from other participants. Both my email address and mobile phone number were listed on the flyer, and participants contacted me through either method. I followed up through email or text within 24 hours of the participant reaching out to me to confirm their interest. I then emailed a consent form and study description to each participant along with possible options for interview dates and times. Each participant chose the date and time that was most convenient for them.

I used the Zoom conferencing platform to conduct and record each interview. Although Zoom does have a video recording feature, only the audio recording feature

was used to capture the interviews. The interviews were then downloaded and saved to a flash drive that is safely stored in my home office. Each interview lasted between 30 and 60 minutes and was conducted once. I used an interview guide and took notes on a paper copy of the guide during each interview. After completion, each interview was transcribed through the transcription service available on Zoom. I reviewed each transcript while listening to the interview recording to manually correct any errors in the transcript. Very few errors were found, with most pertaining to proper nouns.

Data Analysis

I manually coded the data using in vivo, descriptive, and axial coding to analyze the data from the participant interviews. Each participant read through an emailed copy of their transcript to verify the accuracy of the transcript and make corrections or changes to their data. None of the participants changed their responses other than to spell proper nouns correctly.

First Cycle Coding

I read the transcribed data several times and used in vivo and descriptive codes by highlighting directly in the transcripts and making notes in the margins (see Saldaña, 2021). I wrote short phrases and word codes on sticky notes where I found connections to the research questions and Dewey's (1938) theory of experience and education. Each participant was assigned a color of note.

Second Cycle Coding

As each code fell into a pattern, I placed the sticky notes under a category determined to fit the code on a paper matrix. I read through the transcripts to confirm the

accuracy of the patterns I was finding. Along with pattern coding, axial coding was used to find relationships between the codes (see Saldaña, 2021). The categories and codes were then input into a coding matrix using a Microsoft Excel spreadsheet.

Developing Themes.

From the Excel spreadsheet, I categorized the codes into themes. I returned to my research questions and created another electronic table in Microsoft Word to sort the themes and align them to the research questions. The codes and themes are displayed in Tables 2–4.

Table 2 contains the codes and themes aligned with RQ1, which addresses the perceptions parents shared about mathematics instruction. Two themes emerged from the data aligned with the first research question. Theme 1 was that parents perceived that social-emotional responses from themselves and their children affected mathematics instruction. Several participants shared stories about their mathematics learning while they were in school. Interestingly, both positive and negative experiences were shared.

The second theme aligned to the first research question was that parents identified goals and expectations that guided math instruction. The perceptions parents had of math affected the goals and expectations they brought into their instruction for students. For example, several parents expressed the goal for their students to have confidence in math and to be able to view math as a “puzzle,” something fun and interesting to solve.

Table 2

Themes and Codes Connected to Research Question 1

RQ 1: What perceptions do parents share about providing mathematics instruction for kindergarten through sixth-grade students?			
Codes	Categories	Themes	Quotes
1. Frustration in math 2. Challenging 3. Comfort is needed 4. Student needs to be confident 5. It [math] is/has been a struggle 6. [Math] needs to make sense 7. The child needs control over their math learning	1. Parent experience with math 2. Parent first perception of math instruction 3. Student barriers 4.Stress/concerns	Theme 1: Parents perceived that social-emotional responses from themselves and their children effected mathematics instruction.	P4: "(Math) was very challenging for me. I got to a certain point, and then hit the wall, so to speak." P8: "Math is a struggle for me. A goal for me as a parent is to make sure that my kids don't have the same level of stress."
8. Goals for math outcomes 9. Preferences of parent and/or student 10. Expectations 11. Attitude	5. Goals 6. Knowledge of student 7. Learning styles and needs	Theme 2: Parents identified goals and expectations that guided math instruction	P7: "Math was very easy for me, mathematically things make sense to me. It's one thing to be able to understand it, but it's another thing to be able to teach it." P2 "If you go back to public school, are you going to be competitive with peers?" P6 "I don't want them to be afraid of math or shy away from it, have confidence."

Table 3 contains the codes and themes aligned to RQ 2, which asks what experiences parents share about instructing kindergarten through sixth-grade mathematics. Theme 3 emerged as parents reported that having a support person or network was important to mathematics instruction. Parents mentioned the assistance from the teacher assigned to support them from the charter school, parent support groups, tutors, and the input of friends who are teachers. One parent even has a family friend who is a credentialed math specialist they collaborate with.

The fourth theme I uncovered that aligned to RQ2 was how parents implement the state standards, curriculum, and assessments into their math instruction. The level at which parents implemented these components seemed to vary between the parents who were trained educators and those who were not. Some parents relied on their curriculum to meet state standards and provide assessments to gauge what level students were achieving in their math course. All parents reported that they used assessments, but some used them to guide instruction while others only used the information a few times per year to make sure students were on track for their grade level.

Table 3

Themes and Codes Connected to Research Question 2

RQ 2: What experiences do parents share about instructing kindergarten through sixth-grade mathematics?			
Codes	Categories	Themes	Quotes
12. Use the expertise of the teacher assigned to you 13. Use a tutor 14. Join or start a parent group 15. Access friends or family to support, especially if they are teachers	8. Support for parent 9. Structure/ strategies	Theme 3: Parents reported that having a support person or network was important to mathematics instruction	P2: "Need good working relationship with supervising teacher." P6: "[I] have a group of very supportive families in our pod. I didn't feel like I was doing it alone. I felt like I had a supportive community." P12: "my husband will help, my friend who is a teacher [will] give different ways of doing it [math]."
16. Back to standards when in doubt 17. Minimum requirements 18. Mechanism for measurement 19. Know where to focus 20. Know when to teach again	10. Standards 11. Assessment 12. Curriculum	Theme 4: Implementation of state standards, curriculum, and assessment varied across participants	P1:"understanding where your child is and what they need to work on. Get them to the level they need to be." P7: "More for information. Can assess in real time. If there is an issue that they're struggling with, we can deal with it."

Table 4 shows the codes and themes aligned to RQ 3 asking how parents choose and adjust mathematics teaching strategies in kindergarten through sixth grade. Theme 5 revealed that all parents interviewed expressed some need for knowledge of their individual children and the needs, preferences, strengths, and weaknesses of the child. This knowledge provided the parents with the information they need to approach the challenges their child(ren) face in math and how to use the interests and strengths of the students to make math more accessible.

Theme 6 was that the parents interviewed found common instructional components that contributed to their math instruction. Most parents mentioned math language, or academic language, as being important for student understanding of math. Real-life scenarios or applications were a way that almost all participants got their children interested in using math. Another component mentioned regularly in the interviews was the need for the parents to learn how to teach math. One participant took a class, and several read blogs and other online resources as well as used the resource of their assigned teacher to get information and guidance about instruction.

The final and seventh theme for this study was where parents found structures and procedures that supported their math instruction. Several participants mentioned the importance of planning their math instruction. This varied from year-long to interest-focused plans. Multiple participants also mentioned the use of videos as a support or first instruction. No matter the method of first instruction, participants recommended instructing one-on-one and side-by-side with students to work on math together. This method was credited with reducing stress on both the student and parent and helped with

intervening when the student struggled with a concept. Having a schedule or structure to math time was another common suggestion from the study participants, although several mentioned that flexibility was needed to accompany the structure and schedule. Participants cited having math talks with their student as a method that worked well both as instruction and as a way for students to share their learning. Having the student take notes, especially during first instruction, as well as showing their work was a suggestion many participants made as a procedure that was necessary for student success.

Table 4

Themes and Codes Connected to Research Question 3

RQ 3: How do parents choose and adjust mathematics teaching strategies in kindergarten through sixth grade?			
Codes	Categories	Themes	Quotes
21. Want to enjoy math 22. Know what challenges are present 23. Know patterns of student 24. Know student preferences 25. Methods that work for the student 26. Build confidence 27. Flexibility in all	12. Learning styles and needs 13. Benefits of homeschool math environment	Theme 5: Parents reported that knowledge of the needs and strengths of the child was a crucial factor in curricular and instructional decisions	P3: “Be flexible with the student. Gotten more laid back. Relax with it and learn at your own pace- more fun, less pressure.”
28. Use Math language 29. Problem solving 30. Real life applications 31. Focus on basic math skills 32. Teach to mastery 33. Attend and seek out “professional development”	14. Hands-on/real life 15. Math vocabulary/ Academic language 16. Parent training	Theme 6: Parents recommended instructional components for successful mathematics instruction	P12: “Tried to cater to their own abilities and not holding back at all. If it doesn't click, I'll teach it a different way. Here's how someone else would instruct this.”
34. Long- and short-term planning 35. Use videos to aid instruction 36. Work with the student side-by-side/ one-on-one 37. Maintain a flexible structure 38. Learn and teach toward student learning styles 39. Have a schedule 40. Use math talks 41. Have student take notes	17. Structure/ strategies 18. Flexible structure	Theme 7: Parents reported that following structures and procedures aided in mathematics instruction.	P1: “Learned trick words [vocabulary] Made it fun, short, [word problems] weren't too complicated.” P5: “[I] did teach to mastery, but there are different progressions. Games, card games. Follow the teacher's manual and the guide.” P10: “Draw a picture, make a model, organize work on the page, write a story, make it as concrete as possible”

Evidence of Trustworthiness

As stated in Chapter 3, trustworthiness is integral to a qualitative study (Ravitch & Carl, 2021). To increase trustworthiness, I interviewed 12 participants who were engaged in homeschooling their child or children through a charter school in the state of California. I also achieved trustworthiness in my study by attending to the concepts of credibility, transferability, dependability, and confirmability.

Credibility

Credibility depends on the study design and the instruments used by the researcher (see Ravitch & Carl, 2021). I used member checking to ensure credibility (see Patton, 2015). I implemented member checking by discussing my findings with a sample of three of my study participants. These participants were individually interviewed again through the Zoom platform, and transcripts were made of those interviews. I asked the sample participants to respond to my findings. I presented the concepts and themes I found from the original participant interviews. The participants confirmed concepts and themes as accurate. Each sample participant asked clarifying questions and followed up their previous comments with additional information and confirmation of their previous interview comments. None disagreed with my findings.

Transferability

Transferability cannot be guaranteed in a basic qualitative study (Merriam & Tisdell, 2016). However, by providing a detailed description of each component of the study, other researchers could recreate the study in other contexts. Patton (2015) referred to detailed descriptions as part of external validity. My descriptions of the setting,

participants, and interview procedures contribute to possible transferability (see Ravitch & Carl, 2021). Each homeschool parent and student functions as an independent educational situation. Due to the individuality of each parent and child, general transferability cannot be guaranteed with this study, but readers in similar settings, such as other homeschool parents may find the information applicable. Educational professionals such as homeschool supervising teachers, traditional classroom teachers, and administrators may also find the information useful in working with families and students.

Dependability

Dependability relies on the methods used within the study answering the research questions (Ravitch & Carl, 2021). Dependability was established in my study through a thorough description of the methods I used while conducting the study, as well as a detailed description of each component completed within the results of the study (see Merriam & Tisdell, 2016). Future researchers could take the questions and methods used and replicate the study. I also regularly participated in conversations with my dissertation committee chair to discuss data collection, analysis, and to check alternative procedures and limitations for my design (see Ravitch & Carl, 2021). My study was dependable due to these measures.

Confirmability

Confirmability is the assurance that the researcher has remained neutral within the study (Ravitch & Carl, 2021). As a homeschool supervising teacher and a trained math educator, I have a bias about how math should be taught. In order to reduce bias in my

study, I wrote the interview questions to only elicit the perceptions and experiences of the participants. After each interview, I wrote reflectively about the interview and worked to maintain a neutral view of the participants' answers. I maintained records of my interviews, returning to transcripts continuously and creating a matrix to check for agreement between participant quotes.

Member checking was also a method I used to confirm the accuracy of my findings (see Saldaña, 2021). Through checking back with my participants to verify the accuracy of the transcripts, as well as sharing my findings with a sample of the participants, I confirmed that I had reported their answers accurately. I emailed each participant a copy of their interview transcript and asked that they review the transcript for accuracy. No participants responded with changes to be made to their transcripts. More importantly, as mentioned previously, a sample of three participants agreed to take part in a follow-up Zoom interview where I shared the codes and themes discovered in my study. The Zoom interviews were audio recorded and transcripts were made of those interviews. The sample participants confirmed the accuracy of my findings.

Another tool used to provide confirmability was the use of memos (see Ravitch & Carl, 2021). During each of the initial interviews, I took notes of the non-verbal responses of the participants and noted my reactions and thoughts after the interview. I then used this information as a tool for reflection while coding the data. During data analysis I used reflective journaling to further examine the findings and my thinking. By guarding against my bias, member checking, and returning to my memos, confirmability is assured for this study.

Results

In this basic qualitative study, I examined three research questions. In this section I report the results of the study. Dewey's (1938) theory of experience and education informed the results. I include evidence to support each finding, such as summaries of participants' responses and quotes from participants.

Research Question 1: Themes

The first research question is: What perceptions do parents share about providing mathematics instruction for kindergarten through sixth-grade students? I found two themes connected to parent perceptions. The first theme was that parents perceived that social-emotional responses from themselves and their children effected mathematics instruction. The second theme was that parents identified goals and expectations that guided mathematics instruction.

Theme 1: Parents Perceived that Social-emotional Responses from Themselves and Their Children Effected Mathematics Instruction

The first theme to emerge in this study was the perception of parents that social-emotional responses from themselves and their children effected mathematics instruction. This theme came from parents reporting both their own social-emotion responses and reactions to math or reporting the responses their students had to math. Interestingly, there was variation in how parents reported their own social-emotional response. The parents in this study either responded negatively or positively about math, with no spectrum of responses between negative and positive. The social-emotional responses of both the parent, who is also the teacher in this setting, and the student, connect to the

conceptual framework for this study. The theory of experience and education posits that the experiences of the student, the experiences of the teacher, and the experiences drawn from society, are all connected, and that the connection is what forms valuable educational opportunities (Dewey, 1938). In sharing the perceptions of social-emotional responses to mathematics, the participants commented on the outcomes of those experiences in their current mathematics instructional practice. I found that the parents who shared negative math experiences educated themselves when they chose to teach their children or made sure to use a curriculum with video instruction, enrolled the student in a math class, or hired a tutor. These parents were aware of the detriment they experienced due to math negativity and did not want that same experience for their children. Participant 1 shared a story about how her own math experience as a student formed some of her current math perception. She said:

> My dad tried to explain it [math]the way he was taught, and I knew that wasn't the way my teacher wanted me to learn. I would get really frustrated. Those were honestly the only arguments academically I ever had with my parents.

She went on to share that the negative experiences with her parents guided her to provide clear instruction for her children, and as both the teacher and parent, she did not have to endure arguments. Similarly, Participant 4 reported that, "[Math]was very challenging for me. I got to a certain point, and then hit the wall, so to speak." She started homeschooling in the first place to support her oldest son's struggles in math. Because of the challenges she faced, she made sure to learn what she had missed in her own education to bring the expertise to her instruction. She used the negative response she had to math as a

springboard for making math a better experience for her own children. Another participant who fell into the pattern of negative emotional responses to math was Participant 8, who described her math experience with, “Math is a struggle for me. A goal for me as a parent is to make sure that my kids don’t have the same level of stress.” Again, I found a parent who used the negative experiences from her own mathematics learning and took that experience as an opportunity to make math instruction and learning better for her children. Another participant who expressed experiences following this pattern was Participant 10. She related that:

> If you give me the rules and the recipe step by step, I can regurgitate it. If you keep the concepts the same but you change the language and you change the numbers around, I struggled. I still struggle. It was a matter of not getting enough background education and how to think about math.

This parent dove deeply into relearning the basic math concepts she had missed as a student to provide those opportunities and resources to her children. As one of the participants with a graduate degree in education, she used her connections to other educators to help fill in those gaps for herself. Following this pattern, Participant 11 reported that she was not the strongest in math.” Again, the parent was able to take that experience and turn it into what Dewey (1938) described when writing about how the teacher’s experiences effect the learning event for the student.

Another group of parents reported positive associations and emotional responses to math as a subject. This difference in emotional response to math was noticeable in the participants’ interview responses. Without negative emotional math baggage of their

own, these parents did not indicate that they had to re-learn math or work as hard at providing math instruction for their children. Participant 3 said, “I’ve always had a math brain. I like the idea of numbers and that when you are working with something there’s a right answer. It’s comforting.” Similarly, Participant 6 echoed that sentiment by stating that she “felt very math confident. I definitely like math and gravitate towards [math].” The pattern continued with Participant 7, who also said, “Math was very easy for me. Mathematically things make sense to me. It’s one thing to be able to understand it, but it’s another thing to be able to teach it.” Finally, Participant 12 said, “I have a good relationship with math.” These parents were able to also use these perceptions to create learning events for their children. Still, they did not share the level of concern about math that the parents with negative responses expressed. In contrast to the negative parents, these positive parents did not talk about learning themselves.

Many parent participants also shared the social-emotional responses their children had to math. Although several of the parents were positive about math themselves, almost all parents reported having to support and deal with emotional responses to math from their children. These responses would be part of what Dewey (1938) termed the *situation*, where the teacher uses the knowledge of the experiences of the student, the curriculum, the student’s capacities, along with the learning environment, to provide the optimum educational experience. I was able to find similarities between the experiences of a good number of my participants. Firstly, Participant 1 relayed that her older student experienced an “emotionally driven word problem situation” and that the younger student had difficulty “when he didn’t know how to do it [math] without help.” The parent had to

use the situation, along with the support of other experts, to work through the emotional responses and provide the instructional experience to meet the needs of the students. Similarly, Participant 4 stated that she "took into account how they were personally feeling about it [math]. It was important to me that they felt in control of their education." his parent also was using her knowledge of the situation to create valuable educational experiences for her children (see Dewey, 1938). Participant 6 stated a similar condition where, "I used their emotional feedback to see how they're doing," and how her son was "a little intimidated so we kind of had to work through." Again, a parent using her knowledge of the student and the setting to create an educational experience. In a variation on this theme, Participant 7 stated that although she finds math easy, her daughter "didn't understand the way I teach." This parent, who is also a trained educator, needed to put the experience of the student at the forefront and use her knowledge of the student's needs, capabilities, and curriculum to find new ways to teach math. The pattern continued with the experiences of Participants 8, 9, and 10. Participant 8 revealed that her son had "meltdowns" and "most days, a lot of frustration." Similarly, Participant 9 shared that for her older daughter, "It was the emotional aspect of math for her that I was supporting." Similarly, Participant 10 shared that her older child struggled and that "social anxiety disorder just completely shut the brain down." She wanted to make clear that:

> Parents' experiences are not going to be kids' experiences. I had the rules and the recipe and can regurgitate and get accurate and fluent. [Parents] internalized the

> way parents learned and way they were taught and then project that. I didn't get enough background education in how to think about math.

She needed, like several others, to go back and learn the math she had missed as a student, as well as support the emotional responses from her child. None of the parents who participated in the study indicated that they wanted math to be easier or less rigorous for their children, only that they wanted to provide better instruction that did not result in fear or a stress response to math.

Parents said that they sometimes needed to use classes, tutoring, or video instruction as an option to instruct their children because of the social-emotional conflicts between parent and child when math was being instructed. Participant 11 talked about her daughter and herself, “butting heads. She’s the kind of kid that she doesn’t get something right away, she gets really frustrated.” Again, this is a clear example of the parent needing to use the knowledge of the student to create educational experiences that are not fraught with emotional baggage. One solution to that dynamic was to remove the parent from the situation, as Participant 7 presented. She said, “I'm a big fan of outsourcing. There's so much emotion behind the math.” This parent found that by using other adults who perhaps are removed from the emotional response, the student could get a better educational experience than that provided by the parent. Still, the parent needs to remain open to that option and remove their own possible emotion from the situation.

Although parents reported both negative and positive social-emotional responses to math, both parent types wanted to create a positive experience for their children. The responses from the children were noted by the parents and had a bearing on how the

parents perceived mathematics instruction. The students' responses were more important than the past math experiences of the parents. The parents' experiences and the students' experiences created the educational learning events in math.

Theme 2: Parents Identified Goals and Expectations that Guided Mathematics Instruction

The perceptions of the participating parents in my study extended to the goals they expressed for their children. These goals helped the parents evaluate their students' learning, whether tied to the curriculum, the standards, assessments, or the parent's perception of knowledge and learning. Two of the participants, Participant 2 and Participant 5, referenced the possibility of a successful return to traditional school as a goal for their instruction. Participant 2 referred to having a fear of, "If you go back to public school, are you going to be competitive with peers?" Similarly, Participant 5 wanted to "make sure they're always prepared to go back into the regular school." Neither of these participants plans to send their children back to traditional school but want to maintain equivalent educational levels. The perceptions of what goals were needed to be changed for some participants the longer they homeschooled their children. Participant 6 spoke about the change in how she set her goals. She said:

> Early on, I really valued grades. [Now I] see the knowledge take away. The value of the grade is something different because I know exactly where they are. Grading was kind of just my gut instinct of, do you feel like you're mastering this material.

Her ultimate goal for math was, “I don't want them to be afraid of math or shy away from it- have confidence.” This comment is also tied to Theme 1. In a variation on parents’ goals, the goal for math expressed by Participant 9 was, “The expectation that students understand the concept, not the algorithm.” She wanted to make sure that her students could transfer their learning. This desire connects to Dewey’s (1938) theory, where successful educational experiences result in the student applying learning to new situations. Participant 3 took a more emotional route for her goals, stating, “[My] goal [is] to support them, [to] be super flexible, figure out what works best for each of them.” Returning to Dewey, this approach calls upon the experience of the student and teacher as they create educational opportunities together. In a variation on this theme, Participant 12 had a more global approach to her goal, expressing, “I want my kids to be successful in life; I think that's my ultimate goal with them for education.”

Most of the parents interviewed for my study indicated goals based on their perception of mathematics. These goals ranged from keeping the students ready to return to the traditional classroom to generally being successful in life. Although the goals varied, each parent expressed a goal related to the students’ experience, the transfer of learning to new learning opportunities, and a desire to create experiences that catered to their children.

Research Question 2: What Experiences do Parents Share About Instructing Kindergarten Through Sixth-grade Mathematics?

Theme 3: Parents Reported That Having a Support Person or Network was Important to Mathematics Instruction

While sharing the experiences involved in homeschooling and instructing math, several participants talked about the other people who supported them. Friends, family, and paid tutors were some of the support people credited by my participants. The curriculum choice of the homeschooling parent also appeared to influence the support needed to instruct in math. Tutoring help was mentioned by Participant 1. She said, “I used a curriculum that didn't require as much from me. I also had help with tutoring.”

Each of the participants worked with a credentialed teacher as part of the support provided by the charter school. The cooperative relationship between the parents and that teacher was a component of support mentioned by four of the participants. “[I] need a good working relationship with the supervising teacher. You just need to ask, so you know you're doing the right way,” was how Participant 2 described this support.

Charter schools vary in how credentialed teachers are assigned to support parents. Some schools will have one teacher assigned for all students in a family, whereas others will be assigned by grade level or grade span. If families had more than one child enrolled, they could have more than one teacher for support. Participant 3 also referred to the support from her teachers when asked who could give her support: “My two teachers, [I] ask [their] advice. I went to the teachers. [I] follow the process and then ask for help.” Another area where support from the assigned teacher was helpful was in finding

resources to teach math. Participant 5 said, “Make sure that you are attached with a credentialed teacher to help you find those resources.” Although not a teacher connected to the charter the participant was enrolled with, Participant 11 told how she gets support from a teacher friend of her husband. The parent said, “My husband shares some of the homeschooling. One of his best friends is a math teacher.” The parent credited the math teacher friend with helping with her homeschool math success.

Participant 12 also credited her husband and a teacher friend by saying, “My husband will help, [and] my friend who is a teacher [will] give different ways of doing it [math].” This participant also brought up another support system, a homeschool community. She explicitly referenced that she recommends to “Join [your] community.” The community aspect of accessing other homeschooling families was echoed by Participant 6. She gave credit to her community by saying, “[I] have a group of very supportive families in our pod. I didn't feel like I was doing it alone. I felt like I had a supportive community.” As mentioned previously, several of the participant parents were trained teachers. Those participants went to their educator colleagues for support. One of those trained teachers was Participant 9. She valued “having conversations with other educators or other teachers” to gather support and ideas for instructing her children.

Theme 4: Implementation of State Standards, Curriculum, and Assessment Varied Across Participants

Homeschool charter students are expected to learn the same academic standards as other California, public school students. When parents enroll their child in a charter school, they sign a master agreement consenting to participate in state testing and uphold

state standards. The parents who participated in my study approached standards in various ways. Some assumed that the curriculum chosen through the charter school covered the standards, and those parents didn't worry any further about standards. A few parents viewed the standards as a guide to understanding where the child was achieving. Another approach, usually followed by those trained as educators, was to refer regularly to the standards. Some even went to the deeper framework, the guiding document used to teach the standards.

For the parents who relied on curriculum to provide standards content, there was also variation from trusting the curriculum completely to still checking standards to ensure nothing was missing. Trusting the curriculum was illustrated by: "I don't think [standards] played much of a role on a day to day. Curriculum was done for me," from Participant 1. Another participant, Participant 6, had confidence in the curriculum but went further to make sure of the standards included. She said:

> I was pretty confident that they were progressing through them. I was reviewing the curriculum and making sure we're picking something that was going to hit all the standards. I knew that [the] curriculum had a hole in it and would pull our own resources.

The level of importance participants placed on the California State Standards varied. Several participants, especially those with education degrees, emphasized the standards, while others saw them as guidelines or basic expectations. Those who placed importance on the standards used them frequently for instructional guidance. Participant 2 said, "Go back to standards." Another variation was shared by Participant 10, who took

that approach even further by “taking the time to read the framework.” Participants 3, 4, and 11 used standards as general guides to direct their instruction but fell in a continuum from most basic to more complicated in their approaches. “Keep them on pace with the standard. Use standards to make sure that they are placed correctly,” was how Participant 3 described her use of standards. Moving to a slightly more in-depth use, Participant 11 was similar in that she explained that she would “Print out the standards, and I'm like if we can check off these, I feel like we're doing what we need to do.”

Participant 4 was even more relaxed about standards, saying, “[Standards are] a backburner guideline, and would reflect on the testing. [Are the students] at the areas they should be?” Participant 12 was the least driven by standards, saying, “I feel like that's kind of the bare minimum. [I] look over at the beginning of the year and January.”
In a variation on the theme, Participant 9 reflected that she would have liked to have used standards more. Specifically, she wished to have understood the grade level progression before and after the grades she was teaching. She expressed, “[I] should have read the standards five, six, seven [to]understand the progression. That would have been helpful. [Standards showed it was] ok for her to struggle because she hadn't gathered the full picture. [The content] was taught in little snippets.”

Assessment was another component where parents varied in their responses. The parents’ assessment definition ranged from state testing and school-wide common assessments to everyday measurement of growth and achievement. Several parents reported using assessments to determine what the students needed to work on.

Assessment was both helpful and stressful to Participant 1, who said, “understanding where your child is and what they need to work on. Get them to the level they need to be.” She also reported a little apprehension about state testing and “feeling responsible or being responsible for testing.” A similar sentiment was reported by Participant 3. She saw assessments as “measuring academic growth- interesting.” Moving to a greater level of assessment usage was Participant 8. She used assessment as a guide so that she could “could figure out where to focus.” Participant 5 assessed to: “Make sure everybody is working at grade level. “[It was] neat to see the different strands.”

In a variation from the use of assessment reported by earlier participants, Participant 7 did not report on assessment in the more formal way reflected in the responses from Participants 1, 3, and 8. She described assessment as what she was always doing. She assessed “more for information, can assess in real time. If there is an issue that they're struggling with, we can deal with it.” Similarly, Participant 12 also believed that everyday instruction was assessment and that she can “see that you're excelling in a certain area. [Or] well, that didn't stick, so we need to reiterate that. [Learn] terms, what's sticking.”

Parents had varied opinions and ideas of what constitutes assessment and what assessment is used for. Some participants saw assessment as tests, whereas others perceived everyday work as assessments. Some parents used the information to gauge how the students were progressing, while others used it to guide instruction.

Research Question 3: How do Parents Choose and Adjust Mathematics Teaching Strategies in Kindergarten Through Sixth Grade?

Theme 5: Parents Reported That Knowledge of the Needs and Strengths of the Child was a Crucial Factor in Curricular and Instructional Decisions

Having a deep understanding of the students was a critical factor for parents when choosing curriculum and making decisions for math instruction. Flexibility as the teacher, giving importance to the student's needs, and pivoting as needs arise connect with Dewey's (1938) view of experience as the driving force for quality educational opportunities. Participant 3 stated: "Be flexible with the student. [I've] gotten more laid back. Relax with it and learn at your own pace, more fun, less pressure." Participant 6 agreed, stating, "You need to know where your kids are. Be there with them, observing how it was going. I used their emotional feedback [to make decisions]."

Understanding the students' needs extended to the parent's decision making when it came time to choose curriculum for math. Although charter schools recommend and supply state-adopted curricula to the families enrolled in the charter, parents may choose other options that meet the state standards. The parents in my study used both the recommended curricula and curriculum they believed better suited their family of learners. Parents fell into a pattern when sharing how they chose and adjusted strategies. Participant 4 spoke to making those choices by saying, "There is no right or wrong curriculum because it's so specific to what your child needs."

Participant 11 spoke to the extensive and varied experiences that helped her make instructional decisions:

> Get to know your child's learning style so you can teach towards that. Help them get those small gains that help them feel confident. [They need to be] in a good mind space to learn. [I] really tried to listen. Bring experiences from gymnastics to math, work hard, it's ok not to understand and to work hard at it. Go off their growth individually.

Similarly, Participant 12 spoke about being able to pivot and make decisions, "[I] tried to cater to their own abilities and not holding back at all. If it doesn't click, I'll teach it a different way. [I'll find out] here's how someone else would instruct this."

In summary, parents shared that the students' needs drove instructional decisions and curricular decisions. Knowing the students' learning style, along with the students' emotional state, helped parents develop instruction to support those needs. The parents curriculum to complement the child's needs, and the parents believed they should change curriculum if the child's needs indicated that change would be beneficial.

Theme 6: Parents Recommended Instructional Components for Successful Mathematics Instruction

Several problem areas in math instruction came up in the interviews with participants, and as some common tips and tricks the parents found worked well in their math instruction. Word problems and academic math language were where parents found that students needed more support. Parents also reported how they gathered the information required to instruct their children. Real-world applications for math were strategies parents recommended highly.

Word problems are challenging for many students, so it was not a surprise that they also challenged the participants in this study. Learning tips and tricks to understand these problems helped these families. Participant 1 mentioned that her student “learned trick words (vocabulary), made it fun, short, weren't too complicated,” whereas Participant 3 shared the tip to: “Read last sentence first, circle the numbers, then go backwards, and change names.” Participant 10 shared that she would remind her children to “draw a picture, make a model, organize work on the page, write a story, [to] make it as concrete as possible.”

Another math component that was a focus for several participants was math academic language. Like any other academic subject, math has vocabulary and terms unique to math. Students need to know this language to be successful in math. Participant 1 had not considered this academic language before homeschooling and learned how important it was. She said, “It became apparent that (academic language) is key to understanding.” Participant 4 talked about how intentional she was in teaching this vocabulary to her students. She described, “Define keywords, defining terms. Math, it's a language and defining those key, making sure that they understand the language at the base points, fully understand what that means and can use it in a sentence.”

The participants in my study took their job as homeschool teachers seriously and educated themselves in many ways to prepare for math instruction. They also were open to allowing instruction to come from videos, tutors, or other teachers. Although some who were trained teachers credited that training, most did not. Participant 4 described educating herself, saying, “I got every book I could get my hands on and read

everything." Participant 9 talked about diving deeply into the math her children were doing herself before providing the instruction. She said she needed to "understand how math is being taught as far as understanding math conceptually vs. how to use a formula." Participant 10 went even further to talk about how different math is for students now than for parents when they went to school. She believed that parents needed to:

> Ask for help. Goals [for math] are different from when you went to school. It's not about [parent]. With numbers as base 10, start with think aloud conversations, arrays, and multiplication. Look over what is coming up. Search for support in other ways, add in a couple of classes.

Parents could rely on another trained teacher to give the first instruction by adding outside classes. They could also choose to use a program with video instruction if they are not comfortable with providing the first instruction. Participant 5 suggested, "get a program where there is some direct instruction."

Real world applications for math were a favorite strategy for my participants. Several participants shared similar opportunities they had provided to their children. Participant 3 spoke about just such an opportunity when she said, "[Take the] things that the kids understand where it applied to their life. Incorporate it [math] into something they actually care about. You can grab a moment in time, apply it to their learning." Likewise, Participant 4 talked about the same idea: "Teaching is so much hands-on practical application. Use as much hands-on and apply it in life. Actually, physically see, then transfer to paper." Some examples of this practical application were given by Participant 8: "Quilting, building, using manipulatives, hands-on." Participant 12 had

taken this concept even farther by developing a yearly project where her children have a "lemonade stand every year. We go buy supplies, see how much are supplies, and pay mom and dad after you get the money." She went on to say that they "do a lot of applicable math, life math, how much per item, math at a larger level. Everything that I'm teaching you, I want you to know how to apply it in life."

Theme 7: Parents Reported that Following Structures and Procedures Aided in Mathematics Instruction

I found that the participants credited similar structures and procedures for creating successful math instruction for their children. One-on-one, side-by-side instruction, games, video instruction, taking notes, using a whiteboard, and songs were some of the components mentioned by the participants. The participants described the homeschool environment as an asset for these families.

One-on-one attention from the parent, focusing on the student's needs, was a typical instructional structure that the participants mentioned as a successful math strategy. Participant 1 talked about the advancement she saw in her children, "So much progress with one-on-one attention. Couldn't have gotten that much attention at school. Math is kind of like a puzzle. [It was] fun to see progress." Participant 6 returned to speaking about the focus on the student coupled with the knowledge of the student and described her math instruction process, "[I] like the flexibility. They have probably gone beyond where they need to be. We kind of had to pivot a little to find that just right, not too challenging, not too easy, not too dry." That teamwork between parent and student is a strong pattern, expressed by Participants 7, 8, 9, and 11.

Participant 7 described the homeschool math experience as, “It's [math teaching] much more like side by side, learning together.” This sentiment was echoed by Participant 9 when she talked about the video lessons her child watched: “Sitting and watching the lessons with her was the best thing, to use the same verbiage. It was helpful to know how it's being instructed.” Participant 8 reflected on how she and her children look ahead together in their curriculum: “We know what's coming in the books and so we can apply it.” That same spirit of teamwork and collaboration was reflected in the comment made by Participant 11:

> If we need to dig deeper and watch other videos or print out a different worksheet or play a game. Find what works, rather than trying to force it because I think this is what I need to be doing.

Although these parents were teaching in a flexible homeschool setting, having a schedule or structure to their math instruction was an important factor they credited for success. Some participants, such as Participant 2, referenced “creating a good solid routine,” although Participant 3 went much deeper by explaining, “Know yourself first. What kind of project leader [are you]? Plan out the year. Be flexible.” Participant 6 also touted the need for planning and preparation: “Organization is key, planning where we were going, a measurable time for when homeschool begins and ends.” Participant 7 agreed and shared that she had found, “[The] biggest component is how consistent. It's got to be everyday math instruction.”

Note taking and working out problems were deemed necessary by the participants. Mental math strategies and math talks accompanied note taking for many

families. Participants recommended whiteboards to have students show more friendly and less stressful work. A pattern emerged in the interviews with Participants 1, 8, and 9, who referred to a whiteboard as their students' preferred method to take notes and work out problems. Mental math strategies and math talks accompanied math instruction, as well. Participant 8 described her instruction as, "Think alouds, whiteboard, math talks, a lot of review and revise." Correspondingly, Participant 10 referenced "mental math strategies, think aloud." Several participants describe mental math strategies as discussions about math and math processes between the parent and student.

Although a few participants used a video lesson for first instruction, these parents actively guided the student during the video. This pattern of behavior was described by Participant 6: "I watched the video [with them]. Work it out together, a notebook, let's watch together, let's pause it, let's do an example." Even though a teacher on video provided the initial lesson, the parent participated alongside the student, providing support, explanation, and further instruction.

Wordplay, songs, mnemonics, and games were similar strategies described by participants used to provide math instruction for their children. Participant 7 even mentioned using an abacus. Participant 1 talked about using "acronyms, mnemonics, wordplay" when she spoke of instructing word problems and reminders for the steps in a problem for long division. In a variation on this theme, Participant 4 talked about creating "a gentle progression through the different steps of math. Make it as fun and gentle as possible." She specifically spoke about drilling with flashcards, which her kids loved. Participant 5 also used games and card games in her math instruction. Participant 12

strongly believed that “skip-counting and memorization to song” were integral to success for her students.

Having the foundational math skills such as addition, subtraction, multiplication, and division mastered was important to the participants in this study. Several mentioned the need to teach to mastery and master “the basics.” Some participants even required their students to redo assignments if a certain achievement percentage was not reached. This theme was reiterated when Participant 4 talked about “how important it is to have those very basic math skills just really down,” and Participant 11 built on this pattern when she said, “You have to get that foundation. You have to do it over and over and over.” Participant 6 placed a percentage mastery threshold on her students when she said, “below 85% we were redoing it.”

Summary

In Chapter 4, I reported the results of my study. This study showcased the perceptions, experiences, and strategies charter school homeschool parents shared about mathematics instruction for their children. I was able to find patterns, variations, similarities, and differences among the responses provided by the 12 participants in response to my open-ended interview questions.

The setting of the study was limited to the state of California due to the differences in charter school legislation throughout the United States. I was able to recruit participants from northern, central, and southern California. The participants represented six different charter schools. Of the 12 participants, 10 held graduate degrees, seven of which were in education. The years spent homeschooling raged from 1 year to 7 years,

and the number of children being homeschooled ranged from two to four children per participant.

My data collection efforts consisted of individual interviews conducted using the Zoom platform. I used an interview guide and asked open-ended questions. The interview audio was recorded, and transcripts were made from those recordings. I also took notes during the interviews of nonverbal responses from the participants.

I conducted my first cycle of data analysis by reading, rereading, and noting responses pertaining to my research questions and the theoretical framework for the study. I used in vivo and descriptive coding during this cycle. During the second cycle of coding, I created first a paper and then an electronic matrix to keep track of both pattern and axial coding. This information was then put on a spreadsheet, as well as a table showing codes, categories, and themes. I was then able to confidently write about the codes and themes emerging from the interview transcripts. I demonstrated the trustworthiness of my study through a description of how the study was credible, transferable, dependable, and confirmable.

My first research question, RQ1, addressed what perceptions parents share about providing mathematics instruction for kindergarten through sixth-grade students. Participants shared in Theme 1 that both their own social emotional responses to math and their children's social emotional responses to math affected mathematics instruction. Parents who had negative beliefs about math reported that they worked at re-learning math concepts and used strategies to mitigate their own math struggles or the struggles expressed by their children. The second theme tied to RQ1, Theme 2, was that parents

shared goals and expectations used to guide their instruction. Participants wanted their children to be able to clearly understand how math works and use their knowledge of the student to make math accessible.

Research Question 2 addressed the experiences parents shared about instructing kindergarten through sixth-grade students. The participants shared in Theme 3 how they benefitted from having a support person, whether it be the assigned credentialed teacher from the charter school, friends who are teachers, or tutors hired to help the students. Theme 4 was where parents disclosed a varied approach to focusing on the state standards required for students and a varied approach to assessing student achievement. Parents shared that some used assessment as a daily check for understanding for their students, while others talked about formal assessments.

Research Question 3 asked how parents choose and adjust mathematics teaching strategies. In Theme 5, several parents reported that knowing their child and using that knowledge to make decisions helped create successful math instruction. In Theme 6, most of the participating parents recommended learning the academic language used in math and using mnemonics, wordplay, and games to support student learning. Theme 7 included having a structure for the math instructional time and was the last theme the participants shared. They expected their children to master the basic math facts and repeat their math work until mastery was achieved.

In Chapter 5, I will interpret the findings from my study and relate those findings to the literature review. I examine the limitations of the study, along with further research

on the topic. I share the implications of the study and discuss how this study can contribute to positive social change.

Chapter 5: Discussion, Conclusions, and Recommendations

The purpose of this qualitative study was to understand the perceptions, experiences, and strategies of charter school homeschool parents while instructing kindergarten through sixth-grade students in mathematics. Twelve charter school homeschool parents were interviewed for my study, and from those interviews, seven themes emerged: (a) Theme 1: Parents perceived that social-emotional responses from themselves and their children effected mathematics instruction; (b) Theme 2: Parents identified goals and expectations that guided math instruction; (c) Theme 3: Parents reported that having a support person or network was important to mathematics instruction; (d) Theme 4: Implementation of state standards, curriculum, and assessment varied across participants; (e) Theme 5: Parents reported that knowledge of the needs and strengths of the child was a critical factor in curricular and instructional decisions; (f) Theme 6: Parents recommended instructional components for successful math instruction; and (g) Theme 7: Parents reported that following structures and procedures aided in math instruction.

Interpretation of the Findings

In this section, I describe how my findings confirm, disconfirm, or extend knowledge in this discipline by comparing them with what has been found in the literature described in Chapter 2. I also interpret the findings through the context of the theoretical framework for this study, Dewey's (1938) theory of experience and education. In this theory, Dewey presented the idea that the experiences of the student and the teacher work together to create learning opportunities for the student. The teacher's

knowledge of the student is integral to creating quality learning experiences from which the student can expand their learning (Dewey, 1938).

This section is arranged by research question and corresponding themes. I examine each of the seven emergent themes in relation to the literature review and the theoretical framework.

Research Question 1: What Perceptions do Parents Share About Providing Mathematics Instruction for Kindergarten through Sixth-Grade Students?

The two themes tied to Research Question 1 confirm and extend knowledge in this discipline when compared to the studies discussed in Chapter 2. The first theme connected to the research question was that parents perceived that social-emotional responses from themselves and their children affected mathematics instruction. The participants explained that their anxiety about math, usually the result of poor math instruction when they were in school, caused several of them to work hard at learning the math concepts to instruct their children. The participants also reported that if their child showed anxiety or fear about math, the parent would approach math differently in an effort to help the child's social-emotional response. My findings confirmed those of two studies that discovered that when math anxiety was present for teachers or parents, anxiety rose for the students, and instructional quality declined (Ganley et al., 2019; Rubel, 2017). Additionally, several researchers found that parents with children in a traditional classroom could learn to better support their children's math learning (Colgan, 2019; Mangram & Solis Mets, 2018). Furthermore, many studies found that homeschool parents can learn to deliver math instruction, even if they have their own shortfalls or

fears about math (Ganley et al., 2019; Foley et al., 2017; Mangram & Solis Metz, 2018; Martin et al., 2019; Medlin & Butler, 2018; Rubel, 2017; Slavit & Lesseig, 2017).

This theme connected to Dewey's (1938) theory as parents apply their past math experiences to the new math experiences they are providing for their children. Thorburn (2020) proposed that in Dewey's theory, educational experiences develop from experience, which can come from the teacher or the student. Dewey believed that the experiences of both the student and the teacher were foundational to good learning outcomes in any subject.

The second theme related to Research Question 1 was that parents identified goals and expectations to guide mathematics instruction. Several participants stated that they had goals for their children, such as confidence in math and viewing math as a puzzle to be solved. The goals stated by the parents are also related to the learning styles and needs of the students. This theme is aligned with research by Watson (2018), who found that homeschooling parents develop goals for their children based on the student's needs. The current study results also extended the findings of Neuman and Guterman (2017b), who found that the academic goals set by homeschool parents were typically not the same goals set in a traditional school situation. This finding also confirms Dewey's (1938) ideas that the quality of the educational experience depends on the experiences and choices made by the teacher, which then creates connections and learning experiences for the student.

Research Question 2: What Experiences do Parents Share About Instructing Kindergarten Through Sixth-Grade Mathematics?

Two themes emerged from the second research question. The first theme was that parents reported having a support person or network was important to mathematics instruction. This theme extended the knowledge reported in two studies focusing on the bearing the COVID-19 pandemic had on homeschooling that found parents reported lower stress and better success with homeschooling if they had teachers to support them (Emmart & Emmart, 2020). Deangelis (2020) also found that positive homeschooling experiences were reported by parents when they had support from teachers. My results confirmed the findings of these previous studies.

The second theme to emerge from Research Question 2 was that implementation of state standards, curriculum, and assessment varied across participants. The parents reported implementation ranging from using standards to measure student achievement, knowing where to focus instruction, and referring back to the standards when the parent needed instructional information. Students who attend a charter school must meet the same state standards and take the same state assessments as traditional public school students in the state (California Department of Education, 2021a). This theme connects to Dewey's (1938) theory through the insight that teachers also need to access curriculum and the input of subject matter authorities (i.e., the state standards).

Research Question 3: How do Parents Choose and Adjust Mathematics Teaching Strategies in Kindergarten Through Sixth Grade?

Three themes emerged connected to this research question. The first theme connected to Research Question 3 was that parents reported knowledge of the needs and strengths of the child was a crucial factor in their curricular and instructional decisions. This theme was confirmed in the literature by five studies that found that the homeschool parent chose to use the needs and strengths of the student as the guide for choosing and adjusting their teaching strategies (Efford & Becker, 2017; Gann & Carpenter, 2019; Schaeffer et al., 2018; Watson, 2018). In the theory of experience and education, Dewey (1938) wrote that teachers need to have deep knowledge of their students. They then use the experiences children have to create new learning. Teachers can carefully plan the learning experiences through having knowledge of the student and their abilities, along with knowledge of the setting where students are learning.

The second theme connected to Research Question 3 was that parents recommended instructional components for successful mathematics instruction, including math vocabulary and academic language, hands-on math experiences, training for the parents, and extended knowledge. Two previous studies found the necessity of academic language for successful mathematics learning (Galindo et al., 2019; Kuster et al., 2018). Similarly, three other studies discovered that hands-on or everyday math experiences created successful mathematics instruction (Galindo et al., 2019; Kuster et al., 2018; Rubel, 2017). Additionally, Martin et al. (2019) found that parents can be trained to support their children in mathematics effectively.

The final theme connected to Research Question 3 was that parents reported following structures and procedures aided in mathematics instruction. Some of these structures and procedures included planning for instruction, using videos for instruction, and working individually with the student. This finding confirmed the work of Tilhou (2020), who found that parents may choose to use textbooks, online courses, a homeschool co-op, independent study, or direct instruction when teaching their children. The participants also confirmed the success of one-on-one instruction. Several previous studies found that the parent and child working together not only provided successful instruction but also strengthened the bond between the parent and the student (Dimosthenous et al., 2019; Efford & Becker, 2017; Firmin et al., 2019).

The close working relationship reported between the parent and child confirms another component of Dewey's (1938) theory regarding teachers needing to keep an eye out for opportunities where the student can use their experience to learn and grow in new directions. The parents can use their close relationship in choosing learning materials to connect with experience in the developmental phase of the student (Seaman, 2019).

Limitations of the Study

I identified there were several limitations within this basic qualitative study. Firstly, only homeschool parents using a charter school were studied. Parents who homeschool independently or through another learning organization were excluded from the study. Another limitation was the number of participants who were willing to participate. Twelve participants were interviewed. Collecting the data through interviews created another limitation in that the participants had to rely on their memories, which are

not always accurate. I worked to mitigate that limitation through careful questioning. Associated with memory is the limitation that participants may not have felt comfortable to share deep confidences with me, which could have restricted the extent of their responses.

Recommendations

The findings of this study support and extend existing research on homeschooling. In this study, I focused on the experiences, perceptions, and strategies of charter homeschool parents while instructing kindergarten through sixth-grade students in mathematics, a topic about which there is a gap in the literature. Little has been written specifically about mathematics instruction in homeschooling, and even less from the parents' perspective. Through interviews with charter school homeschool parents, I was able to identify seven themes. From these seven themes, I developed the following recommendations for homeschooling parents, charter schools, traditional schools, and educational policymakers to better meet students' needs for mathematics instruction:

- Homeschooling parents need access to resources to learn mathematics skills they may have missed as students themselves.
- Parents should be asked what their goals are for the mathematics achievement of their children.
- Parents should be encouraged to provide insight and information to educators about the learning styles and needs of their children.
- Support groups should be easily accessible for parents.
- Parents should have training to learn state standards and expectations.

- Parents should be provided with the necessary resources to learn about the structures and procedures used in mathematics instruction.

By implementing these recommendations, homeschool parents could have the support needed to instruct mathematics effectively. Charter schools could improve the mathematics outcomes for their students by providing specific support to the parents using the charter to homeschool their children. Traditional schools could use these recommendations to provide robust support for mathematics instruction within the classroom from parents at home. Additionally, educational policymakers could use these suggestions to support both parents and teachers with mathematics. This is especially important within the context of the global COVID-19 pandemic, when teachers and parents are working to provide instruction under unusual circumstances.

Future research should be conducted to understand further the mathematics instruction provided by homeschool parents. This research could be conducted by:

- replicating this basic qualitative study with parents who belong to marginalized populations, such as low socioeconomic status or ethnic minorities
- replicating this basic qualitative study with fathers who are providing the main homeschool instruction for their children; and/or
- using a mixed-methods study to examine the mathematical practices of homeschool parents and compare the test scores of their children to typical, school-attending children.

Homeschooling is growing in popularity among families, so educational leaders and homeschooling families both need to understand the strategies best suited to providing mathematics success for homeschool students and how to implement these strategies.

Implications

This study contributes to filling the gap in the current literature. There were a limited number of studies researching the perceptions, experiences, and strategies charter school homeschool parents use when instructing in mathematics. This study has potential to bring about social change in several areas. This study brings to light the perceptions, experiences, and strategies of homeschool charter school parents regarding mathematics instruction, which provides information about alternative educational options and school choice. School choice may help decrease the achievement gap between students of differing ethnic, socioeconomic, and regional backgrounds (Mason et al., 2019).

With the increase in homeschooled students, both through parent choice and due to the global COVID-19 pandemic, more parents are assuming the role of teacher. The experiences the parents from the study have shared, the perceptions they bring to mathematics instruction, and their strategies while instructing in mathematics all influence their students' mathematics experience and achievement. Understanding these parents can contribute to further knowledge in the field of education.

This study may also have methodological implications because similar studies can be conducted with other groups of parents and focus on other subject areas. Recruiting parents who are not as educated as those in the current study and parents from different socio-economic and ethnic backgrounds as participants would further the breadth of the

study. Studying fathers who provide homeschool education would also bring another set of perspectives to the area of study. Extending this area of study would provide the education community with information to support not only homeschooling parents but classroom teachers as well.

Conclusion

In this study, I explored parents' perceptions of and experiences with mathematics instruction and instructional strategies for kindergarten through sixth-grade students in a charter homeschool setting. The theoretical framework for the study was Dewey's (1938) theory of experience and education. I used this theory to establish an understanding of how the experiences of both the parent and the student are used in the educational choices made by the parents, who were the teachers in this study. There had been limited research on charter homeschool parents, and no previous studies had focused on parents' perceptions, experiences, and strategies in mathematic instruction. I conducted the current study to fill this gap in the literature.

Homeschooling continues to be a growing option for families, especially in the context of the COVID-19 pandemic. Learning about homeschool charter school parents' perceptions, experiences, and strategies regarding mathematics and mathematics instruction provides information for other homeschooling parents and for traditional education systems. Educational policymakers can also use the information to understand the needs of this growing educational population.

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Appendix: Interview Guide

Thank you for agreeing to share with me the experiences and perceptions you have about teaching math to your children. I have had the privilege of supporting homeschool parents for more than five years now and am excited to learn from you. Before we get started, I want to make sure that you are comfortable with working with me and have read the consent form I gave you. Your participation is voluntary, and you are free to stop the interview at any time. I will keep all information confidential, however, as a mandated reporter I am legally obligated to report any suspected child abuse. Remember that I will be recording our interview and then will send you a transcript for confirmation. Our interview should last about an hour. You are welcome to skip any questions that you choose not to answer or stop the interview at any time. Are you ready to begin?

1. Please share a bit about your education and homeschooling background.

Possible prompts:

- Why did you start homeschooling?
- Do you have any background in education?
- What grades are you currently teaching?

2. When you started homeschooling, what was your perception of mathematics instruction?

Possible prompts:

- What was mathematics like for you as a student?
- Have you taken any courses or training on teaching math?

- Did you have any emotional response to thinking about teaching math?
- Did any friends or family members share guidance about math when you started?

3. What is your perception now?

Possible prompts:

- What changed or reinforced your perception?

4. In your experience, what has been most interesting about mathematics instruction? What has been most challenging? Can you share examples with me?

5. How have your experiences influenced the strategies you use in teaching math?

Possible prompts:

- How do you choose the strategies you use?
- Do you have any favorite strategies you use often?
- How do you determine if a strategy is working?

6. What else have you learned about mathematics instruction?

Possible prompts:

- Have you done training or reading about math instruction?
- Have you attended classes or watched videos about math?
- Do you have a favorite blog or website to help with math instruction?

7. Based on your experience, what tips would you give a new homeschool parent about mathematics instruction?

Thank you so much for sharing your time with me. You have helped me understand the experiences and perceptions homeschooling parents have regarding

mathematics. If I have further questions or want to clarify anything from our interview, may I contact you again? Please feel free to reach out to me with any further questions. Thanks again!