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Parental Perceptions of Mobile Device Learning for Students in Special Education

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Walden University
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Abstract

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by

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MSED, Metropolitan College of New York, 2015

BA, University of Rhode Island, 2005

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

The purpose of this generic qualitative study was to explore parents' perceptions of the use of mobile devices as tools for learning for their children in special education settings. Research literature on mobile-device use in special education indicates that little is known regarding parents' perception of mlearning. While studies provided information on teachers' perspectives of mlearning in their special education classrooms, parents' perspectives on mlearning to support their children's needs remained unexplored. The conceptual frameworks used included Rogers's diffusion of innovation theory and Hoover-Dempsey and Sandler's theory of parental involvement. Individual semistructured interviews of eight parents of elementary students in special education were conducted to explore parents' perceptions of the use of mobile devices as tools for learning for students in special education. After interviews were conducted, audio recordings were transcribed, coded, and analyzed using thematic inductive analysis. Through data collection and analysis, this study identified four main themes of parental perspectives relative to mlearning for students in special education. Parents affirmed their approval of mlearning overall, but not as a primary source for learning due to needs including modeling, human interaction, and novice skill. This research may provide perspective regarding the alignment between at-home and in-school use of mobile devices for learning. This insight may also lead to positive social change and overall advancement in mlearning for students in special education and the mobile learning experiences of their families by providing parent-caretakers with strategies for more effective mlearning for their children in special education class settings.

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Dedication

This dissertation is dedicated to my son Mazon ("Mase"), who has, throughout this process, been patiently seated beside me as I digested article after article and spewed out written responses. My beautiful son has shone through adversity. Mase, your love has been paramount throughout this process. You began to refer to me as a doctor the moment I enrolled! During this process, loved ones with whom we resided went to heaven, but together we healed and found the courage to dream. Though silenced in your earlier years as a result of your Autistic Spectrum Disorder findings, your voice developed right on time to cheer mommy on! You are brilliant!

I dedicate this dissertation to my siblings, who were left parentless after the 2000 death of our amazing mother, Bonnie Conry. Each of you stayed disciplined and moved forward miraculously, allowing all of us to excel without being burdened with worry for one another. Please always recall the power of education instilled in us by mommy, as well as her courage to put herself on the frontline for a cause that she believed in. Remember the example by which she led, desegregating schools, and bearing scars to prove she had done so. Bonnie Conry and Hallie Scott Burgess, may you forever guide us in spirit.

I add to this dedication my dearly departed friend James Williams, who insisted that I return to school and supported and encouraged me prior to losing his life in 2014. I started months later, pledging that this new loss and pain would not be in vain. A year later, I completed a double master's degree and dove headfirst into this incredible program at Walden, where I earned a doctorates degree. Nyisha Conry, Jontae Sanders,

Rashon Sanders, Rakim Sanders, Nyheem Sanders, your courage to move forth solidified our advancement in life. John D. Sanders, this journey is for you! Ayana Conry, Zakiyyah Conry your sisterhood soothed the most painful of moments. Teresa Evans, Lynda Kashouh, Cerissa Wright thank you for your life-long supportive best friends. Mayor and Joan (mama) Doyle thank you for never giving up on us. Childhood friends, you are far too many to name, but this is for us (from projects to PhDs. Mrs. McDonald thank you for believing in me. Ingrid Partlow, you nurture a whole community, one which I was part of. Eva Myrick, you have been a light in my life, and I thank you. Finally, Cynthia Tucker, "she believed she could… so she did". For anyone who has ever prayed for me, I love you. It takes a village to raise a child, especially one who is greatly wounded. Each one of you played an essential role in me reaching this point.

I would also like to dedicate this dissertation to the sufferers of the world who smile in spite of the pain, those who could complain but instead find joy in what they do have. To parentless children, to the impoverished, to the substance-dependent, to loners, to those with mental health needs, there is hope.

This dissertation is a dedication to the glory of God. It is also an ode to his people out in the world doing good. It is a result of what can happen when one remains determined and faithful, choosing to be a victor and not a victim.

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I would like to acknowledge my Walden University family. From the very start of this journey, faculty and staff gave me not a single doubt that they believed that I was capable of. Your belief in me has reignited my belief in self. I can honestly say that, without my professors, I could not have made this journey. You are incredible! Dr. Toledo, I thank you for your guidance and discernment. You steered me and placed me in the hands of a perfect department chairman. Dr. Courduff, for the time you have given to build me as both a writer and a human being, there are no words that can begin to express my gratitude. Your nurturing spirit mothered me throughout this dissertation process. Oftentimes I would find myself writing intensely to beat deadlines because I would rather have been tired than to think that I disappointed you. I am humbled to learn from you and grateful that you are a huge part of my journey. Dr. Russell, I thank you for your guidance and your time invested in building my research. It has been an honor to be guided by excellence. I am proud to become a sequel to generations that have come before me, and hopeful have newer generations build on this research which may lead to societal betterment.

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Chapter 1: Introduction to the Study

Education for elementary school-aged students in special education is an important topic that has been addressed both by educational leaders and federal law (Collins & Halverson, 2018; Nepo, 2017). Research also suggests that students in special education may meet their educational needs with the assistance of technology (Chigona & Licker, 2008). Scholarly research highlights evidence of a rise in student motivation, engagement, and achievement in special education classrooms when educators' use of technology is incorporated in literacy instruction (Perkmen et al., 2016).

Awareness of ways to improve learning by enhancing student engagement using technology increased when President Reagan signed the Technology-Related Assistance for Individuals with Disabilities Act in 1988 (Nepo, 2017). Many years later, the extent of stakeholders' use of technology for learning remains unclear, particularly within the realm of special education (Beriswill et al., 2016). Regarding the use of technology for educational purposes, stakeholders, including parents, reported feeling ill-prepared to use technology for learning (Chigona & Licker, 2008). Such findings indicate a need for the exploration of parental perceptions of mobile-device learning for students in special education.

With this generic qualitative study, using Rogers's (2003) diffusion of innovation (DOI) theory, I sought to address existing gaps in the research concerning the use of mobile-learning devices for students in special education. I did so by exploring parental perceptions of such learning for those students. In this study, I explored mobile-device use of students in special education. I explored four major elements: (a) time, (b)

innovation, (c) communication (channels), and (d) social system. I used Hoover-Dempsey and Sandler's (1997) theoretical model of parental involvement to explore parent perceptions of involvement in learning with their students in special education. The results of this study may further understanding of how mobile devices are used to enhance learning with students in special education and to create learning programs that will ensure continuity for students.

In the remainder of this chapter, I provide the background of the topic of mobile-device use for students in special education. The following sections include a summary of the literature, a problem statement, a purpose statement, and a discussion of the nature of the study. I also provide an overview of the conceptual frameworks, which I discuss in depth in Chapter 3.

Background

This generic qualitative study may have addressed a gap in research by focusing on the perceptions of parents of elementary school-aged students in special education. Existing research solidifies the need for further exploration of this area of study. Choi et al. (2018) concluded that technology used for learning in low-income urban families did not promote cognitive stimulation activities. These findings informed my study by prompting exploration of parent-child interaction with mobile devices for learning. This need is specifically relevant to students in special education as research has also found that device learning enhances engagement and written expression (Chigona & Licker, 2008).

Additional studies, including Corkett and Benevides (2016), Kostyrka-Allchorne et al. (2017), and Parsons and Adhikar (2016), have found that mobile-device teaching enhances learning for students. Digital writing improved students' overall spelling and increased the number of ideas expressed in writing assignments. This information indicates that writing on digital devices has long-term effects on learning, including enhanced student creativity, spelling, and grammar. (Corkett & Benevides, 2016). The various studies also revealed that television has been the "go to" device for parents of young children, but noted that touch-screen and multiuse devices are gaining popularity (Kostyrka-Allchorne et al., 2017; Parsons & Adhikar, 2016). Parsons and Adhikar found that the implementation of bring your own device (BYOD) augmented the curriculum, allowing students and teachers to implement learning and research in new ways. Some parents, however, found it disconcerting that their children's technological skills were advancing beyond their own (Parsons & Adhikar, 2016). The results of these studies indicated that parents who oversaw technology use ended up providing more positive learning experiences for their children (Corkett & Benevides, 2016; Kostyrka-Allchorne et al., 2017). Still, these studies did not address all questions regarding mobile device learning (mlearning), which suggested that more information regarding parental perception of mlearning was needed. Mlearning is learning with the use of a mobile device (Nyíri, 2002). One article specified that "m-learning enables citizens covering all social-economic levels access to education and training in a ubiquitous and even lifelong manner, using their personal devices (Liu et al., 2010, p. 211).

McCloskey et al. (2018) surveyed 192 parents in low-income rural areas with the intent of obtaining information on children's use of technology. An additional purpose of the cross-sectional study was to gain information about parents' beliefs and comfort levels with younger children's use of mobile devices. Findings indicated that 92% of children use a smartphone or tablet daily, and that 90% of parents have obtained mobile phone or tablet apps specifically for their children. Additional findings stated that both ethnicity and education played a role in parents' beliefs regarding technology. Findings also confirmed that parents' comfort level with their child's use of technology was positive in association with the child's increased use of devices. Cohesively, these studies indicated a need for further research regarding parents' perception of mobile-device use for mlearning.

The purpose of this study was to fill gaps in research regarding parents' perceptions of the use of mobile devices as tools for learning, as it was an area that remained unexplored. It was unclear how parents of students in special education perceived and used these devices. As learning institutions and job markets have moved towards certain uses of mobile devices, understanding perceptions on the use of these devices in personal learning space has become more important. Understanding perceptions of parents collected during this study may aid in the progression of training for students in special education for enhanced learning experiences. As technology changes and the use of technology increases, knowledge of effective practices may enhance innovative learning for students in special education.

Problem Statement

Mobile devices have become an essential part of daily living as more people own and use such devices to assist them in everyday tasks. Data shows a steady rise in mobile-device ownership, which has reached over 90% in recent years (Morris et al., 2016). Nonetheless, little was known of parents' perceptions of mobile devices as tools for learning for students in special education. A paradigm shift is occurring to promote technology use in formal learning settings. Due to the 2020 Covid-19 pandemic, schools across America rapidly implemented remote learning (Lipomi, 2020). However, a gap in research on parents' perceptions of mobile devices as tools of learning for students in special education remained (Harasim, 2000; Lipomi, 2020; Morris et al., 2016). Researchers have studied the role of technological devices in formal education settings (Underwood, 2009; Valk et al., 2010; D. Wang et al., 2016). They have also explored parental perceptions and how they influence students' attainment of goals and objectives. These studies have identified significant links between parents' perceptions of a goal and students' attainment thereof (Dettmers et al., 2019; Hoover-Dempsey & Sandler, 1995). Yet, until this study, there was little research on parents' perception of students in special education with regard to mlearning. Beyond this, more studies may be necessary to provide further insight on parents' perception of the use of mlearning for students in special education settings. Understanding of parents' perceptions of the use of mobile devices to teach students in special education may result in a more purposeful use of innovative learning technologies.

Purpose of the Study

The purpose of this generic qualitative study was to explore parents' perceptions of the use of mobile devices as tools for learning for students in special education. Since 2010, when mobile devices gained popularity, they have been used primarily for communication and entertainment (Teacher et al., 2013). I identified a gap in literature regarding how these devices can be used for individualized and innovative learning. I used Hoover-Dempsey and Sandler's (1997) conceptual model of parental involvement and Rogers's DOI theory (2003) framework to explore parents' perception of mlearning in special education (Beausoleil, 2019; Hoover-Dempsey & Sandler, 1997; Rogers, 2003). Findings from this generic qualitative study may fill gaps in literature by providing insight into perceptions of the use of mobile devices as tools of learning. Overall, research indicates that parental perception and involvement in learning are linked with positive outcomes and increased learning for students (Fan & Chen, 2001; Goldman & Burke, 2017; Hill & Tyson, 2009; Jeynes, 2005; Shilshtein & Margalit, 2019). By examining the parental perception of mobile devices used to support learning, this research could help to develop new understanding. Information gathered may improve the acceptance of mobile devices as learning tools for students in special education. Data collected may also heighten parents' engagement in student learning with the use of mobile devices may lead to parental empowerment.

Research Questions

I sought to explore the perceptions of parents of children in special education on the use of mobile devices for students' learning. Research questions were partially based

on the conceptual framework of Rogers's (2003) DOI theory. This theory aided in the exploration of parents' perception of mobile devices as tools for learning for students in special education. According to Rogers (2003), there are four primary components of DOI: (a) time, (b) innovation, (c) communication (channels), and (d) social system. Hoover-Dempsey and Sandler's (1997) theoretical model of parental involvement helped me to explore the parents' perceptions of mobile device learning based on involvement.

The research questions for this study were:

RQ: What are parents' perceptions on the use of mobile devices as tools for learning for students in special education?

SRQ1: What are parents' perceptions of benefits of using mobile devices as tools for teaching students in special education?

SRQ2: What are parents' perceptions of the disadvantages of using mobile devices as tools for teaching students in special education?

Conceptual Framework

The conceptual frameworks that I used in this generic qualitative study to explore parents' perceptions of mobile devices as tools for learning included Rogers's (2003) DOI theory. I also used Hoover-Dempsey and Sandler's (1997) theory of parental involvement. Using data collected from parents of students in special education settings, I explored preliminary sets of codes. Information was coded based on preliminary sets of codes and themes emerging from the data.

With Rogers's DOI theory, I explored mobile device use as a tool for learning and whether the concept was widespread based on components highlighted in the DOI theory.

With the use of Hoover-Dempsey and Sandler's (1997) model of parental involvement, I explored parent-to-student education specifically relevant to the use of mobile devices as tools for learning. Hoover-Dempsey and Sandler's theoretical model of parental involvement focuses on the understanding of components of students' learning and parents' involvement (Hoover-Dempsey & Sandler, 1997). These theories helped provide insight on exploring parents' perceptions of mobile-device use for learning. Figure 1 aligns my theoretical frameworks with my research questions, data needs, data sources, and data analysis.

A spinoff of the original works of Tarde's work on the laws of imitation in the 1890s, Rogers (2003) stated that DOI theory is the process by which an innovation is communicated. "These innovations are passed on through particular channels over time amongst members of a social system" (p. 11) and shape the way individuals use new innovations. According to the works of Valente and Davis (1999), this ideology of the DOIs was born from the impact of social influence on innovations. This information is grounded in a theory that continues to show that new innovations are spread via human communication. Information regarding the use of these conceptual frameworks follows in Chapter 2.

Figure 1

Unconfirmed Illustration of How Research Instrument May Relate to Research Frameworks

Theoretical conjuncture based on theoretical framework	**Embodied conjectures: Research questions**	**Embodied conjectures: Data needs**	**Intermediate outcomes: Data sources**	**Objective outcomes: Data analysis**
1. Diffusion of Innovation (DOI) How and why the rate of new ideas spread (Relative advantage, compatibility, trainability, observability). This increases with networking and observability.	What are parents' perceptions on the use of mobile devices as tools for learning for students in special education?	Participant experiences, perceptions, and accounts of using mobile devices for learning with students in special education. Advantages and disadvantages.	Focus group meetings, semi-structured interviews conducted via telephone and live video chat.	Understand perceptions. Improve learning through use of mobile devices. Increase mobile device use for educational purposes.
2. Hover-Dempsey's Parental involvement, encouragement, modeling, reinforcement. This increases the likelihood of mobile device usage for learning.	What are parents' perceptions of benefits of using mobile devices as tools for teaching students in special education?	Initial participant growth in exposure and competence. Perceptions on new remote learning programs. Use of technology for learning prior to remote learning. Perceptions and experiences.	Secondary analysis of initial case participants. Follow up questioning. Questioning for clarity via electronic contact.	Change in perception and behavior. Awareness and competence. More time making use of mobile devices to aid in learning. Taking advantage of technological features to aid in learning,
3. This study extends diffusion of mobile device learning	What are parents' perceptions of the disadvantages of using mobile devices as tools for teaching students in special education??	Participant accounts and experiences transferred to researcher. Patterns, repetition, and common themes begin to emerge, information to be coded for further understanding.	Revision of transcripts to gain maximum clarity and assure participant account was appropriately captured.	Change in practice: programs to aid in parent competence. More connectivity between learning institutions and home. Increase in quality mobile devices learning experience.

Note. Unconfirmed Surmise information, for the purpose of illustration processes. Modified From "Technology Integration in the Resource Specialist Environment" by Courduff, J. L. (2011).

Table 1

Unconfirmed Conjuncture Model Questioning Tool and Relation to Theoretical Frameworks

Qualitative research question: What are parents' perceptions on the use of mobile devices as tools for learning for students in special education?		
Participant questions	Follow up questions	Connection to frameworks
How does your child interact with their mobile device?	What does he or she normally do with it?	Understanding behavior
What do you do while your child interacts with his/her device?	What's your location? What do say?	Understanding behavior
How would you describe your child's experiences with their devices? (positive/negative)	What would you say makes it positive /negative?	Relative advantage Parent perception
What does your child use the device for most of the time?	Does he/she maneuver to the program or do you?	Understanding implementation
How do you gain insight on manners in which to aid your child in his/her device use?	How do you learn of programs to show him/her?	Communication channels, Social system, Parent perception
How do you feel the way your child uses their device helps them learn?	How can you tell?	Relative advantage, Parent perception
How often do you interact with your child on the device?	What activities do you do with them on the device?	Communication channels

Note. Unconfirmed original model, for the purpose of illustrating questions and connectivity to my conceptual frameworks. Inspired by "Parents' Perceptions of E-Learning in School Education: Implications for the Partnership Between Schools and Parents, Technology, Pedagogy and Education" by Siu-Cheung Kong (2018).

Nature of the Study

In this generic qualitative study, I conducted eight interviews of parent participants of students in special education to collect data on parents' perceptions of mobile devices as tools for learning. Percy et al. (2015) stated that researchers can use generic qualitative studies in conjunction with theory to explore attitudes, opinions, perceptions, and beliefs. Researchers use generic qualitative studies to understand psychological phenomena that cannot be measured statistically. These studies use step-by-step analytical processes to review and code data (Percy et al., 2015).

I used both individual interviews and follow-up interviews for information. I conducted my first round of interviews, then planned to conduct follow up interviews as needed to ensure clarity of information and emerging ideas and thoughts. Lewis (2015), highlights interviewing as a key strategy for qualitative researchers because it helps provide insight on the culture of various lifestyles. Following data collection, I searched for emerging themes from information from individual interviews. I used themes to code and cross-code data and triangulate information gathered (see Stake, 1995; Yin, 2013). I used preliminary sets of codes based on conceptual frameworks. I used Rogers's DOI theory as well as Hoover-Dempsey and Sandler's theory of parental involvement to analyze data.

According to Bogdan and Biklen (2007), qualitative researchers attempt to explore circumstances that prompt behavior to come into being. Understanding parents' perceptions of the use of mobile devices as tools for learning for students in special education might alter the way mobile devices are viewed for learning. Findings of this

research could address gaps in literature on parents' perceptions of mobile-device use as tools for learning and promoting social change. With these research findings, I might enhance the use of mobile devices for educational experiences for students in special education.

Definitions and Key Terms

Key terms defined in this section include those commonly found throughout Hoover-Dempsey and Sandler's (1997) theoretical model of parental involvement, as well as in Rogers's (2003) DOI theory. Also included are commonly used terms found in peer-reviewed research.

Adoption of innovation: The decision of an individual to buy into and make use of a new idea or technology (Rogers, 2003).

Communication channel: A system used to convey information from one individual to another or to several others (Rogers, 2003).

Critical mass: When the number of adopters making use of a new technology or innovative idea is sufficient for self-sustainment and growth (Rogers, 2003).

Diffusion of innovations: The rate of the spread of new ideas and or technologies (Rogers, 2003).

Early adopters: Initial or primary consumers who first make use of a new idea or innovation (Rogers, 2003).

Early majority: In the diffusion process, refers to the substantial size of a population adopting an innovation (Rogers, 2003).

Innovators: Individuals who adopt a technology or an idea because it is new (Rogers, 2003).

Laggards: Those showing the highest resistance to new ideas or technologies and are the last to adopt them (Rogers, 2003).

Late adapters: Those individuals who begin use of an innovation well after others do (Rogers, 2003).

mLearning: Education sought via a mobile device (Nyíri, 2002).

Mobile devices: Portable communication devices with computing capabilities (Nyíri, 2002).

Perception: The way a person interprets life and reality via personal experience and understanding (Given, 2008).

Parental perception: Parents' beliefs and expectations, which shape the way they raise their children (Goldman & Burke, 2017).

Students with disabilities: Students with impairments, be they physical, mental, or emotional, that hinder or limit functionality in life (Mahoney, 2019).

Assumptions

According to Yin (2013, 2016) and Stake (1995), assumptions are ideas accepted as the truth although they may lack verification. Several assumptions occurred during the design of this study. The first assumption was that participants chosen for this study would be honest about their criteria for inclusion. Additionally, I assumed that participants would answer questions with honesty and integrity. Finally, there was the

assumption that interviewees would have ethical and moral reasons for participating in this study.

Scope and Delimitations

The use of the internet and newer technology features such as live video chat eliminates the need to use participants who are exclusively local; however, with the thousands of students in special education in this urban school district located in the Northeastern United States, there was a high possibility of recruiting all eight participants from this urban school district. I intended to focus specifically on parents of special education students in elementary school. Additional criteria included the need for these parents to have (a) mobile devices that their children use at home or in informal workspaces, and (b) access to applications or online programs on these devices.

Although delimitations were present, there were few. I did not exclude participants by gender, socioeconomic status, or region. Delimitations included the requirement that participants must have students in special education whom they allowed to use mobile devices for learning. The students also had to be of elementary school grades and ages.

Limitations

Many limitations in this study could potentially have affected the generalizability, transferability, and application of the study results. Shipman (2014) and Price and Murnan (2013) indicated that study limitations can come from the study design. The chosen methodology for a study may have also created study limitations. For example, due to my location and my criteria for participation, my findings may not transfer or

apply to parents and students in special education settings that are nonurban. In this study, I aimed to include parents with a variety of differences to offset these possible limitations.

Also, as a special education elementary school teacher currently teaching in an urban school located in the Northeastern United States, I might have personal biases due to my involvement with students, which can sometimes create limitations in a study (Jootun et al., 2009). Seeing how students in the classroom use mobile devices has left me with preconceived notions regarding the diffusion of mobile technologies in households and use during learning. To offset my personal biases relevant to my research topic, I avoided discussing my experiences, I exhibited professionalism in my interviews, and I used as many direct, verbatim quotes from my transcribed interviews as possible.

Lastly, in this study, as in many others, the sample size may create limitations. The urban school district chosen for this study is the nation's largest, with over 75,000 teachers and 1.1 million students. Thousands of those students have individualized education programs (IEPs), which means they are in some form of special education (Hale, 2015). Choosing eight parents randomly might lessen the diversity of the sample, thereby lessening the study's transferability. As a means by which to counterbalance this limitation, I made a conscious effort to seek diversity by considering case participants from varied neighborhoods whom I could interview via telephone or other innovative methods.

Significance

This study may be significant, as exploring parents' perceptions on mlearning among students in special education could lead to more effective mlearning and remote-learning outcomes. The need to fill this gap in research increases as both educational institutions and jobs call upon the use of technology (Greenstein, 2012; Jacobs, 2019). Home access to technology, including mobile devices, with supervision, can lead to enhanced comprehension and more autonomous learning (Suprianto et al., 2019). Students of this generation should familiarize themselves with devices used to compete in the global society (Greenstein, 2012; Jacobs, 2019).

I identified a gap in research regarding parents of students in special education and their perceptions of mobile-device use for learning. I was unable to locate research articles about students in special education and parental perceptions of mobile devices as tools for learning at home or in personal space. This confirmed the basis for my study. Twenty-first--century learning heavily incorporates the use of technology (Greenstein, 2012; Jacobs, 2019). Students' educational outcomes are closely linked to the involvement and perceptions of their parents (Dettmers et al., 2019). Therefore, research on parents' perceptions of mobile devices as tools for learning was needed, as findings may guide understanding of the potential benefits of mlearning.

Until recently, mobile devices have been used primarily as tools for communication and entertainment, while television has most often been used to provide children with educational programming (Teacher et al., 2013). In this study, I explored mobile devices as tools for learning outside the normal functionality of communication

and entertainment as it pertains to students in special education. Findings from this study may empower parents of students with special needs to begin to view mobile devices as tools for learning. This might enable interactive resources to be accessed directly from their mobile devices. Understanding how parents perceive new technologies such as mobile devices for learning may help students reach higher learning objectives.

This study may help educators, researchers, and program designers develop more effective programming. Finally, the results of this research may support the integration of mobile devices as new technology to help students in special education. The positive social implications of this study could include heightened use of mobile devices as tools for learning across formal and informal learning spaces and enhanced autonomy in learning. It is also likely to engage learners in special education settings and to create more awareness and involvement of parents of students in special education. The findings of this study may also contribute to learning instruction and innovative research for further development of BYOD programs. This study could also lead to potential *bridge learning* via devices used between school and home. Educational outreach programs for special-needs learners and their parents are a potential social benefit that may result in higher learning achievement and goal attainment.

Summary

Throughout this section, I discussed the lack of research regarding parental perception of the use of mobile devices for learning for students in special education. I also discussed Rogers' DOI theory and Hoover-Dempsey and Sandler's theory on parental involvement relative to the use of data analysis. Parental perceptions of the use

of mobile devices as a tool for learning for students in special education is significant because there is a lack of accessible research regarding this matter.

Valuable information regarding innovative ways to enhance learning for students in special education remains at risk of being undiscovered. It is possible that the information provided from this study may yield new educational techniques and bridges between school and home. Purposeful diffusion of mobile devices as learning tools and educational programs for both parents and students in special education may also come from this study. Thus, this generic qualitative study may serve to close an existing gap in research. In Chapter 2, I provide a thorough review of literature and a detailed overview of the conceptual frameworks that I used to guide this study.

Chapter 2: Literature Review

Introduction

In formal education, mobile devices are being used as tools for learning. The use of mobile device learning (mLearning) and programs such as BYOD are gaining popularity in learning institutions (Harasim, 2000; Kiger & Herro, 2015). With continued shifts in the educational paradigm, little is known of parents' perceptions of mobile devices as learning tools for special education students (Ali & Arshad, 2016; Harasim, 2000; Li, 2020). Researchers have identified links between parental perception of goals and students' attainment as well as the benefits of mlearning for students in general education settings (Mutambara & Bayaga, 2020). I intended that this generic qualitative study would explore parents' perceptions of mlearning for students in special education. Little was known about a link between parent perceptions and student achievement using mobile devices for students in special education. Therefore, further information was required to address this phenomenon.

According to Bariroh (2018), 63.7% parents of students in special education positively influence their children's learning significantly through their involvement. Vulliamy and Webb (2018) discussed the need for parents to serve as active advocates and participants in their children's learning processes. They also highlighted how little the public knows about how special education students learn. Additional studies regarding students in special education show that parental involvement and engagement in student learning greatly enhances a student's ability to reach their potential (Danseco, 1997; Inouye, 2000). Their study, however, did not focus on mlearning. Therefore,

further information was needed on this topic to determine if this enhances learning for special education students.

Research suggests that "gaps in the literature point to a need to understand the extent to which parents are aware of and actively engaged in emerging technologies that are available to children" (Vittrup et al., 2016, p. 44). Using Hoover-Dempsey and Sandler's (1997) theoretical model of parental involvement, I explored parents' perceptions of the use of mobile device learning for students in special education. Through this model (Hoover-Dempsey & Sandler, 2005), I explored parents' perceptions of mobile-device use for learning with students.

I used Rogers's (2003) DOI theory to explore parents' perception of mobile devices as tools for special education learning, based on perceived use. According to Rogers (2003), DOI consists of four main elements: (a) time, (b) innovation, (c) communication (channels), and (d) social system. I used Hoover-Dempsey and Sandler's (1997) theoretical model of parental involvement and Rogers's (2003) DOI theory to help explore parents' perceptions of mlearning. Rogers's (2003) DOI theory has been used to explain social acceptance of the way we use technology. I used Hoover-Dempsey and Sandler's (1997) theoretical model of parental involvement to help gain an understanding of parental roles in mobile-device learning.

Acquiring knowledge, using persuasion, making decisions, implementation, and confirmation are stages that occur when individuals adopt uses of technology (Rogers, 2003, p.169). Rogers's (2003) DOI theory suggests that networking with individuals who have strong community ties can change the way new technologies are used. Thus, I used

the DOI model noted by Rogers (2003) to explore parental perception of mobile devices as tools for learning in special education environments. Relationships between my research questions, theoretical frameworks, data needs, and data analysis can be viewed in Figure 1.

The five primary sections in this literature review include literature findings and search strategies, theoretical frameworks and their foundation, definitions of mlearning and students with disabilities, and the effects of parental involvement in informal learning spaces. Subsequent sections are related to learning engagement for students in special education. Additional sections discuss the most common uses of mobile devices based on diffusion and information on institutionalized paradigm switches. This section concludes with a summary of literature and a section analysis.

Literature Search Strategy

As a means of gathering information for this literature review, I used the Walden University Library, which included access to many search engines. SAGE Journals Online, PsychINFO, JSTOR, ProQuest, Education and Resources in Education Index, Resources Information Clearinghouse, Education Source, Academic Search Complete, and EBSCOhost were among the engines used. I also used Google Scholar, which gave me access to full articles and connected me to Walden University's database. The search terms used were *special education*, *special needs*, *learning disability*, *mobile learning*, *mobile-assisted instruction*, *educational technology*, and *technology used in literacy instruction*. Additional search terms included *reading instruction on a mobile device*,

cellular device learning, *mLearning*, *bring your own device (BYOD)*, *parental involvement in learning at home*, and *home-schooling*.

I used peer-reviewed scholarly journals published within the 3 years of the start of this study. I located information on government websites and used studies that had been completed within the last 3 years to support the needs of this study. Finally, I used seminal research to support this study, and utilized both Zotero and resource alignment documents to track references and contributions of different articles.

Conceptual Framework

According to Burkholder et al. (2019), conceptual frameworks include an explanation, data generation, and research design. A conceptual framework also emphasizes the exploration of factors involved in a phenomenon. The phenomenon that I sought to explore in this study was parents' perception of mlearning for children in special education. There was little information on parental perception of mlearning in regard to elementary students and students in special education settings. Conceptual frameworks are used to create concepts regarding how a study is approached. Multiple studies also indicated that a conceptual framework is essentially an argument for a research study (Burkholder et al., 2019; Ravitch & Riggan, 2016). Burkholder et al. pointed out that there are two parts to a conceptual type of framework. The first recognizes the value of the study to its intended population while the second part of the conceptual framework dictates the arrangement of various parts of the study (Ravitch & Riggan, 2016).

I used Hoover-Dempsey and Sandler's (1997) theoretical model of parental involvement to conduct this study and to analyze findings as it identifies a direct relationship between the perceptions of parents and children's educational practices. Hoover-Dempsey and Sandler's (1997) theoretical model of parental involvement focuses on understanding the components of students' education and parental involvement. Using this model, I explored (a) parental motivation and involvement in teaching students, (b) different forms of involvement chosen by the families, (c) learning mechanisms that parents are most likely to engage in, and (d) how parents perceive their involvement as beneficial to students in special education (see Hoover-Dempsey & Sandler, 1997). Parents' motivational beliefs, perceptions of invitations for involvement from others, and perceived life context (skills, knowledge, time, and energy) are all outlined in this model. I used this model to explore parents' perception of the use of mobile devices as learning tools for students in special education.

Hoover-Dempsey and Sandler's (1997) theory of parental perception has been applied in previous studies to explore the relation between parental perception and student learning attainment (Green et al., 2009). I used this theory in a similar manner to explore a possible relationship between parental perception and mlearning. Hoover-Dempsey and Sandler's model of parental involvement related to my study because it aided in my exploration of parent's perception based on motivation, invitation, and perceived life context. At a point, Hoover-Dempsey and Sandler's framework overlaps Rogers's (2003) DOI theory in exploring time and communication channels. Cohesively, the two theories helped me to thoroughly explore parent perceptions of mlearning by

exploring the diffusion of mobile devices for learning and gaining information on the perception of parent's on their children's mlearning practices using grounded theory. Understanding parents' perceptions on the use of mlearning for students in special education may build upon existing theory. Through this research, I identified a relationship between parental perception and effective mlearning experiences for students in special education. In doing so, I was able to build on the concept that parental perception heightens goal attainment as explained in Hoover-Dempsey and Sandler's model.

Types of Adopters

I used Rogers's (2003) DOI theory to explore the ways to use mobile devices as tools for learning when teaching students in special education. According to Rogers's DOI theory, there are five possible types of adopters in the diffusion process. This theory outlines a technological adoption life cycle and helped me to explain how innovations are accepted according to adopter groups.

The DOI theory highlights five potential adopter types: innovators, early adopters, early majority adopters, late majority adopters, and laggards (Rogers, 2003). Rogers (2003) also outlined adopter percentages. Majority adopters and late majority adopters form the top of the bell curve and each account for 34% of adopter types. Laggards (the last to adopt innovations) represent 16% of the bell curve representation, and the two lowest adopter rates include early adopters at 13.5% and innovators at 2.5% (Rogers, 2003). In conjunction with the previously identified statistics, and according to Rogers's theory, fewer individuals take risks early on.

Innovators, the rarest of adopters, are risk-takers who enjoy the newness of innovation. These are individuals who believe that the risks are worth it. They are prominent players in diffusing innovations and technologies. It is through these individuals that early adopters become exposed to innovations via a network or social system of sorts. Early and late adopters also aid in innovative diffusion, and these individuals take on leadership roles, as these adopter groups can cause critical mass and allow for the self-sustainability of new innovations. Critical mass, a term borrowed from nuclear physics, speaks to a chain reaction, or a point of self-sufficiency in innovation (Rogers, 2003).

According to Rogers (2003), early majority adopters—also referred to as early adopters—show no qualities as leaders, but all five adopter types play a serious role in the successful diffusion of an innovation. This group looks to the support of innovators for influence. Late majority adopters have, as Rogers (2003) pointed out, uncertainties regarding the use of new technologies and ideas. Individuals in early adopter social constructs must adopt innovations prior to late adapters. This group is suggested to be one that needs support and guidance (Rogers, 2003).

Rogers (2003) explained that within the five adopter types, laggards are the least receptive to change and the most resistant. “Traditional” is a word often associated with laggards as they are less open to innovative change. Laggards are the last to consider new innovations. Though strong in their decisions to abstain from new innovations, this group of adopters does not consist of leaders.

Innovative Diffusion in Formal Learning

Research indicates that Rogers's (2003) DOI theory was not constructed with research in formal education settings. Januszewski and Molenda (2013) specifically suggested that theories on innovative diffusion are separate from those explained in formal education settings. In school settings, teachers are bound by policy and curricula and are therefore subject to the innovations chosen by the school system. In a 2013 study on innovative diffusion within the school system, Dobuzinskis (2013) countered Rogers's stages of innovative diffusion. Dobuzinskis found that the persuasion stage occurred after the decision stage in cases where innovations are chosen by systems. Additional studies have similarly noted that when innovative strategies are chosen, the persuasion stage may occur after the decision stage (Manwaring et al., 2020; Scott, 2013). In this study, Rogers's (2003) DOI theory was used to explore mlearning in informal learning spaces. However, in lieu of remote education due to Covid-19, chosen mlearning platforms may rise as a theme. Information from this study may help me to understand parents' perceptions relative to experience.

Innovative Diffusion Process

According to Rogers's (2003) theory of adoption, early adopters jump-start the diffusion process as they cause and promote expansion in innovation usage. Within the process, researchers view early adopters as agents of change (Christensen et al., 2020; Januszewski & Molenda, 2013; Rogers, 2003). Rogers also claimed that the further an innovation is from aligning with social norms, the less likely the innovation is to be adopted. Conversely, innovations that do coincide or fit into social norms are likely to be

adapted more quickly. In general, individuals are optimistic, and thus likely to use an innovation, if they are aware of the success of others making use of that innovation. Still, adoption rates vary from one society to the next (Christensen et al., 2020; Rogers, 2003). The process of adopting an innovation within societies differs, depending on the perceived benefit, lifestyle, and perception in general (Christensen et al., 2020). Innovative ideas and technology perceived as benefitting individuals are likely to be adopted (Christensen et al., 2020; Khambari et al., 2012). New innovations should present individuals with advantages, including socioeconomic status, location, compatibility, observability, relative advantage, or complexity (Rogers, 2003).

Innovative Decision Process

Perceived usefulness is a key factor in technology adoption (Christensen et al., 2020; Davis, 1989; Khambari et al., 2012). Rogers (2003) outlined five components in the process of deciding to adopt an innovation (Christensen et al., 2020). The five components include knowledge, persuasion, decision, implementation, and confirmation (Christensen et al., 2020; Rogers, 2003). Knowledge refers to awareness of innovation, as well as additional information on how it functions (Christensen et al., 2020). During the persuasive part of the process, an individual is attempting to explore favorability or lack thereof, relevant to an innovation (Mazzarol & Reboud, 2020).

Decision making takes place when individuals either adopt the innovation or decide not to (Christensen et al., 2020). In the implementation part of the decision process, adopters begin trial use of the innovation. The last part of the process is confirmation. During the confirmation stage, individuals make a conscious decision

either to continue the use of the innovation or decide against further use based on their experience. This process does not require a set amount of time and may take several months for individuals to decipher.

Rogers's (2003) DOI theory and the outline of the adoption of new ideas and innovations can be used as tools to study parents' perception of mobile devices as learning tools for students with learning disabilities. These parental perceptions inform the way education occurs at home to coincide with a societal paradigm shift in mlearning. Studies have suggested that students who use one-to-one digital devices as part of their learning experiences benefit from this type of learning in areas of engagement and in meeting learning goals and objectives (Crook et al., 2015; Li, 2020).

Diffusion of Innovation

In this study, the innovation was the mobile device used as a tool for learning in special education settings. Rogers (2003) indicated that the study should assess the innovation according to the components of time, communication channels, and the social system. For clarity, it is important to emphasize that the innovation studied here is not the technology that makes up a mobile device; it is, instead, the perception of the innovative idea of this type of technology being used by parents in informal settings to teach students with disabilities. Innovation is a method, idea, product, or technology assumed to address needs, meet new requirements, or offer benefits or advantages to an individual or society (McKelvey, 1997).

Thus, in this case, the innovation under exploration is an idea or perception held by the communication channels. Rogers's (2003) communication channels refer to the

transmission of information and communication via participants and the way individuals share information to create understanding. More specifically, Rogers defined a communication channel as "an information-seeking and information-processing activity in which individuals are motivated to reduce uncertainty about both the advantages and the disadvantages of an innovation" (p. 172). Rogers also stated that communication channels include the components of at least one innovation, two or more individuals, and a means of communication, which in this case is interpersonal communication.

According to Rogers (2003), time is a component that determines relativity and displays strength in the deciphering of adopter types (i.e. innovators, early adopters, late adopters, and laggards). Relevant to this study, little is known regarding how parents of students in special education are using mobile devices as tools for learning (Ali & Arshad, 2016). "The research in m-learning is still very new and there are limited studies have analyzed the acceptance of mobile technology in learning" (Ali & Arshad, 2016, p. 1113). Similar studies suggest that learners with special education needs should be motivated for device engagement (Kamaghe et al., 2020). Research also suggests that for best results, knowledge and skills must be taught and applied (Kamaghe et al., 2020). Understanding parents' perception of mlearning may help decipher adopter types to take subsequent steps to enhance the diffusion of effective mlearning.

Within the last three years, mlearning has gained popularity in formal and higher education (Kanbul, 2018). Programs such as BYOD are growing in popularity in learning institutions (Kiger & Herro, 2015). According to Kanbul (2018), "Educators who want to provide their students with a high-quality, well-supported, technologically-rich

environment are using mobile devices" (p. 128). Nevertheless, scant research exists regarding parents' perception of mlearning practices (Ali & Arshad, 2016). New formal and institutionalized practices have prompted curiosity regarding the perception of digital learning in informal learning spaces. In one 2020 study, Mutambara and Bayaga concluded that in rural environments, parental attitudes towards mlearning and the perceived ease of use are the key factors in mlearning acceptance. I was unable to locate studies regarding parents' perceptions of mlearning for students in special education. However, many schools have moved completely to online learning platforms in response to Covid-19 (Setiawan, 2020). Remote learning has forced millions of students in special education around the U.S. to engage in mobile learning (Setiawan, 2020).

"Relative advantage," a concept discussed in Rogers's (2003) DOI theory, outlines why certain populations are less likely to adopt new innovations. This component may aid in the explanation of parents' adoption rates in the use of mlearning. Relative advantage may also provide insight into why some parents might be less likely to adopt new ideas or technologies. Parents' perceptions of mlearning for students with special needs was explored in this study. I specifically explored parents' perception of mlearning for students in special education with a focus on the relative advantage. Parents' perceptions and "buy in" to the use of mobile devices as tools for learning for students in special education may provide insight on students' use of mobile devices for educational purposes.

Rogers's (2003) DOI theory explains how society adopts new innovations through interpersonal communication systems. I used this theory, in conjunction with Hoover-

Dempsey and Sandler's (1997) theory of parental involvement. These theories helped me to explore parental perception of mlearning for students within special education. According to Greenstein (2012), students in the 21st century must familiarize themselves with technology as a means of competition in the global economy.

Parental Involvement Model

I chose the Hoover-Dempsey and Sandler (1997) model for this research as it provided answers to the question: "How does parental involvement influence child achievement?" (p. 543). According to Hoover-Dempsey and Sandler (2005), there are two forms of parental involvement: home involvement and school involvement. In this research study, I focused on home involvement. These two involvement types are divided into three categories: parents' motivational beliefs, parents' perceptions of invitations for involvement from others, and parents' perceived life context. Parents' motivational beliefs consist of two components: parental role construction and parental efficacy. Parent involvement is a key factor in student achievement (Mutambara & Bayaga, 2020; Qudsyi et al., 2020).

Parents' perceptions of invitations for involvement from others included three subcategories: general school invitations, specific child invitations, and specific teacher invitations (Qudsyi et al., 2020). Parents' perceived life context includes two subcategories: skills/knowledge and time/energy (Qudsyi et al., 2020). According to Hoover-Dempsey and Sandler (1997), parental role construction can strengthen and grow based on parents' interactions and experiences with individuals and with groups. Mutambara and Bayaga (2020) also highlight the social learning of parents through

networks. Thus, social influence and exposure plays a role in this theory, which overlaps with the idea of exposure and adaptation.

Further Analysis

Research on Rogers's (2003) DOI theory concludes that there is a way that innovative ideas, techniques, and devices are diffused with the intent of perceived benefit. Rogers (2003) has outlined the way individuals use, adopt, and pass along innovations. With the commencement of BYOD programs and other curricula that incorporate students' use of mlearning, the DOI theory can be used to explore the component of parental perception of mlearning.

Crook et al. (2015) explored one-to-one mobile device use in an educational setting and found that, overall, students found it to be beneficial in learning. Li (2020) also discusses learning benefits of mlearning. "Customizable and adaptable applications tailored to students with disabilities provides many benefits as it helps mold the learning process. This appeals to different cognitive, sensorial, or mobility impairments" (Fernández-López et al., 2013, p.78). By using Hoover-Dempsey and Sandler's (1997) theory on parental involvement, I further explored parents' perception of mlearning for students in special education. I explored parental perceptions relative to motivational beliefs, invitations for involvement from others, and parents' perceived life context. Increased motivation, enhanced goal attainment, and positive outcomes may be viewed as possible advantages of mlearning (Crook et al., 2015). Mobile devices remain the most common technological devices across all socioeconomic backgrounds (Poushter, 2016). Still, "communication remains, first and foremost, the function of a mobile phone" (Cui

& Roto, 2008, p. 909). Home access to technology, including mobile devices, and continued practice can lead to enhanced comprehension and more autonomous learning (Suprianto et al., 2019). Through this innovative study, I explored mobile devices outside their most common uses of communication and entertainment. I also explored parental perception of mlearning for students in special education. I explored mlearning relative to the use of features that can both enhance learning and engage children at home or in other formal or informal learning spaces.

As education changes, so should the support of students. Parental involvement that impacts student learning is often governed by parental perception (Green et al., 2009). Thus, more information is necessary regarding parents' perception of the use of mlearning for students with disabilities. Rogers's (2003) DOI theory identifies various steps from exposure to an innovation to a concluding choice on whether to adopt or reject a new idea or technology based on its perceived benefit. Thus, I used this theory to explore the parental perceptions of the innovation of mobile devices as tools for learning for students in special education.

It is important to remember that the innovation in this study is not the mobile device itself. Mobile devices hit critical mass and were integrated into society as the most popular mobile computing devices to date (Poushter, 2016; W. T. Wang et al., 2019). The innovative idea in this study is the exploration of mlearning. Rogers's (2003) DOI theory, along with Hoover-Dempsey and Sandler's (1997) parental involvement theory, aided me in providing structure and insight into the exploration of parents' perception of mLearning for students with disabilities.

Foundations in the Literature

In this section, I discuss literature findings as they pertain to the social construct for my intended research. I also discuss research on parental perception and the effect that parental perception has on students in special education. Heightened awareness of the ways that technology could enhance learning through engagement and assistive technology prompted the launch of the Technology-Related Assistance for Individuals with Disabilities Act 3 decades ago (Nepo, 2017). More than 30 years later, gaps in research remain regarding how technology is being used to teach, in both formal and informal learning spaces. Stakeholders remain unsure of how mobile device technology can be used for learning (Choi et al., 2018). In this section, I focus on literature that informs my study of parents' perceptions of the use of mlearning for students in special education. Reviewing existing literature, I was able to categorize information into four sections, which include parental perceptions of technology for learning, a paradigm shift in education, mobile device support and diffusion, and device-use advantage. This section ends with a discussion of a summary of literature findings.

Parental Perceptions of Technology for Learning

A demographic is a specific section of the population separated and grouped relative to specific social features. Examples of demographics include gender, age, marital status, nationality, education level, and occupation (Griffiths et al., 2004). Parents of students in special education are the demographic group that I explored in this study. Students in special education are defined by differentiated learning tactics and

techniques. These specifications are stated in an individualized education program issued by the department of education due to a specific need or condition of a student.

Schools are integrating mobile devices into formal educational settings to increase engagement and provide learning access for students in special education (Afreen, 2014). Still, there is little information on parental perception and "buy-in" on the use of mLearning. It is unknown whether parents of students in special education are employing mobile devices to support their child's learning at home; thus, their attitudes and perceptions regarding doing so are unknown, as well. It is also unknown whether parents of students in special education understand the potential of mLearning to support their child's education.

Many research studies point to the importance of innovative learning both inside and out of the classroom, as well as continuous parental involvement for best outcomes (Hoover-Dempsey et al., 2005; Perkmen et al., 2016). However, few studies address the learning that occurs in informal learning spaces. Existing research suggests that innovative learning techniques, incorporating device use, can enhance learning for students in special education. Research also suggests that parents remain unaware of how to conductlearning with the use of mobile devices (Damodaran et al., 2014; Hoover-Dempsey et al., 2005; Perkmen et al., 2016).

Several factors contribute to parents' comfort with mlearning, which may include age and gender (McCloskey et al., 2018; Morris et al., 2016). Some research suggests that younger parents are more likely to turn to the Internet for information, when compared to older generations (Walker et al., 2011). This insight may explain why some parents with

access to mobile devices may or may not be using them to aid students in special education with their learning. Nevertheless, studies confirm that the overall use of mobile devices is steadily increasing among both parents and children. Data indicates a steadily rising rate of cellphone ownership among Americans in general, in recent years. (Crompton & Burke, 2018; Morris et al., 2016; W. T. Wang et al., 2019). "Mobile device ownership has exploded with the majority of adults owning more than one mobile device" (Crompton & Burke, 2018, para 1). With such prominent numbers and growth, studies confirm that parents feel ill-prepared for teaching their students who are in special education with the use of mobile devices (Choi et al., 2018; Damodaran et al., 2014; Kamaghe, et al., 2020).

Research indicates a steady increase in mobile device use among both parents and children. The Pew Research Center's survey data shows a steadily-rising rate of cellphone ownership among American adults in general, in recent years, from 73% in 2006 to 93% in 2015, and is currently even higher (Morris et al., 2016; W. T. Wang et al., 2019). With such prominent numbers and growth, studies confirm that parents feel ill-prepared for teaching their students that are in special education with the use of mobile devices (Choi et al., 2018; Damodaran et al., 2014; Kamaghe, et al., 2020).

According to existing research, it is unknown whether parents possess the skills necessary to use mobile devices as tools for teaching their children (Damodaran et al., 2014). Mazzarol and Reboud (2020) suggest that older individuals have a harder time with technology and thus adopt it more slowly than younger individuals). Additionally, older individuals are less comfortable with newer technologies. Rogers (2003) discussed

the perceived advantages of the use of mobile devices for learning, indicating that obvious benefits must be seen for populations to adapt technology use. It is unknown if parents of students in special education are informed regarding the perceived advantages of mlearning (Choi et al., 2018; Damodaran et al., 2014). "After more than 20 years of mobile-learning research, there is still relatively little systemic knowledge available, especially regarding the use of mobile technology" (Crompton & Burke, 2018, para 3). It is unclear whether parents who express the use of technology as an advantage, possess the knowledge to access programs and applications. It is unknown if programs are being used which allow for students in special education to learn (Choi et al., 2018; Damodaran et al., 2014). For mlearning to be successful, parents must have access to working devices, and sufficient data and infrastructure set-up (Mutambara, & Bayaga, 2020). Studies highlight a need to understand mlearning from a parent's perspective. One study concluded that for successful implementation, parents should expect that their children be trained in mlearning (Mutambara, & Bayaga, 2020). That information may suggest a willingness for parents to be more accepting of mlearning if they or the students' have training or understanding of various programs.

From reviewing literature, I found that parents report feeling more secure with mlearning when lead by educators (McCloskey et al., 2018; Parsons & Adhikar, 2016). This reported positive attitude from parents was due to training and modeling of device use, application use, and paid prescriptions to quality programming (McCloskey et al., 2018; Parsons & Adhikar, 2016). Rogers (2003) stated that individuals most often adopt technology for benefits and advantages in lifestyle and seldom for more practical uses.

This may indicate that mobile devices used as learning tools for students in special education might improve if perceived as beneficial, or as a tool that provides an advantage for learning. This information prompts the question of parents' perceived comfort levels as well as skill levels with mLearning. That is, do parents feel that they are adequately able to access programs, or teach their children, who are in special education, or how they might use these devices for learning?

To explore parents' acceptance of m-learning, Mutambara and Bayaga (2020) explored parents' perception of general education students in rural areas. The study theorizes that the parents' acceptance of the mlearning model is in large part due to social influence and resources. This research, conducted via stratified random sampling, was used to select 200 parents in the survey. Attitude towards the use of mlearning was found to be the best factor, having a direct effect on behavioral intention while using mobile devices for learning. The findings indicated that for successful implementation, mlearning resources need to be provided. This information informs my study by providing insight on a line of questioning to parents regarding where they learn the necessary skills to effectively use learning devices.

I analyzed studies that explored mlearning to inform my generic qualitative study. I use information from these studies to understand existing information. I also use the information found in these studies to decipher gaps in existing research by exploring suggestions for future research. Current research highlights a need for the exploration of parental involvement in mlearning (Crook et al., 2015; Hoover-Dempsey & Sandler, 1995).

Overall, existing research suggests that parents may have limited perceptions of mobile device use for teaching students in special education based on novice interactions and limited expertise (Choi et al., 2018; Damodaran et al., 2014; Kostyrka-Allchorne et al., 2017). It appears that, despite a certain increase in the rate of adoption and use of mobile device technology, parents have recognized doubt and uncertainty concerning the most effective way to incorporate the use of mobile devices into the everyday lives of their children (Sanders et al., 2016). Parents view mlearning as significant to their children's futures in the job market and in education but indicate concern regarding possible negative effects it may have on their children (Jeno et al., 2019;Lampard et al., 2013; Ortiz et al., 2011). A prevailing theme among researchers is that parents are nervous, and understandably desire more information and knowledge regarding the use of mobile devices to teach their children (Sanders et al., 2016). This lack of information may affect parents' perceptions of the use of mlearning for students in special education.

Paradigm Shifts in Education

In literacy lessons, teachers are required to use technology such as Promethean boards, smartboards, tablets, and chrome books (Nepo, 2017). Home access to technology, including mobile devices, and continued practice can lead to enhanced comprehension and more autonomous learning (Suprianto et al., 2019). Currently, the most found computing device across all socioeconomic backgrounds is the mobile phone (Poushter, 2016). It is unclear as to whether these mobile devices are being used as a tool for learning in informal spaces.

There is a huge push for the incorporation of technology into today's learning. Thus, it is necessary to integrate the use of technological innovations to support learning both inside and outside the classroom (Greenstein, 2012; Li, 2020; Mazzarol & Reboud, 2020; Pensky, 2012). Empirical research has highlighted a rise both in student motivation and in student engagement in special education classrooms when technology is used effectively during lessons (Beriswill et al., 2016; McKnight et al., 2016; Perkmen et al., 2016).

Bring-Your-Own-Device models have incorporated mlearning in formal learning spaces (Parsons & Adhikar, 2016); yet I have been unable to locate many studies that explored the use of mlearning outside of the classroom. In a qualitative study conducted by Parsons and Adhikar (2016), 125 parents, 117 teachers, and 195 students were surveyed with three sets of online questionnaires administered in 2012, 2013, and 2014 to explore parents', teachers', and students' perceptions of the concept of BYOD to heighten the use of technology owned by students, both in the classroom and for outside learning. Programs such as this one in higher education institutions have allowed for college students to bring their own devices into classrooms to learn how to use these devices to educate themselves. These programs are steadily becoming more common and are thought to be innovative and successful (Parsons & Adhikar, 2016).

In large part, educators themselves do not view cell phones and other mobile devices in the same way that they view computers, as devices to aid in education (Sánchez-Prieto et al., 2019). Still, as costs have fallen and the functionality of mobile devices reaches new heights, reasons for paradigm shifts toward the use of mobile

devices for education have become ever more important to learning (Librero et al., 2007; Poushter, 2016; Sánchez-Prieto et al., 2019). In an article, Librero et al. (2007) indicated that mlearning fulfills a type of learning that no other methods can, by engaging learners. More recent articles similarly indicate that technological features of mobile devices possess features that can appeal to a wide range of learners (Mohd Yusof et al., 2014; Tekale, & Jadhav, 2020). Mlearning is also increasingly more likely to attract students who are socially disadvantaged or who lack confidence, which includes students in special education (Herrera-Bernal et al., 2020; Librero et al., 2007). Liberero et al. outlined accessibility, interactivity, usefulness, immediacy, adaptability, ease of use, privacy, and suitability as components of mlearning, making it ideal for students in special education. Still, it remains a mystery as to whether parents view mobile devices as learning tools at all.

Mobile Device Support and Diffusion

In one study, Young et al. (2014) suggested that technology and innovation adoption is based on perception, attitudes, and skills of potential users. Their research solidified the significance of understanding parental perceptions of the use of mlearning for students in special education. Attitudes and perceptions may enhance or discourage the diffusion of technology as tools for learning. Competence and support may lead to more positive learning experiences and a more effective diffusion of mlearning. Confusion and lack of knowledge may create negative experiences, and thus, less acceptance of innovation (Sánchez-Prieto et al., 2019). According to some studies, many

people do not realize the potential for learning in mobile devices such as cell phones (Herrera-Bernal et al., 2020; Librero et al., 2007).

In a cross-sectional study, McCloskey et al. (2018) surveyed 192 parents in low-income rural areas with the intent of obtaining information on their children's use of technology, gaining insight into parents' beliefs and comfort levels with younger children's use of mobile devices. Findings indicated that 92% of children used a smartphone or tablet at some point and that 90% of parents had obtained mobile phone or tablet apps specifically for their children. Additional findings indicated that both ethnicity and education played a role in parents' beliefs regarding the use of technology for student learning in special education, and that parents' comfort with their children's use of technology was most often positive in association with children's increased use of devices due to student engagement (McCloskey et al., 2018).

Another qualitative study examined parental attitudes and perceptions of child engagement and knowledge with the use of technology. Vittrup et al. (2016) interviewed and distributed questionnaires to 101 parents of students between the ages of two and seven, recruited from childcare centers, home-school networks, higher education institutions, and other agencies. Findings indicate that mobile phones were used less than all other technologies. "Cell phones were rarely reported to be used by this age group (0–1 hour/day), as compared to the device most often used, the television (0–12 hours/day)" (Vittrup et al., 2016, p. 46). This information informs my study by providing a line of questioning and provides insight into parents' perceptions of mlearning.

These two articles indicate that mobile devices are being used for more than communication. However, it appears that the devices are not being diffused for learning, but instead for entertainment (McCloskey et al., 2018; Poushter, 2016; Vittrup et al., 2016). According to Kostyrka-Allchorne et al. (2017), parents are interested in the use of mobile devices for learning but need more information on how to do so. Radesky et al. (2015) indicated that inquiries made to parents regarding how mobile devices are being used with their children provide insight on how children learn. By this measure, it can be presumed that parents are unclear as to how students in special education are learning with the use of these devices.

Even with hand-held convenience, parents of young children are not using mobile devices for learning as often as some might expect. In a study designed to explore media preferences used among children and to acquire information on both beliefs and supervision in media use, Kostyrka-Allchorne et al. (2017) surveyed 90 parents. All parents involved had children between the ages of three and six in an economically advantaged area. The findings of the study revealed television as the "go to" device for parents of young children. The study did highlight that touchscreen and simultaneous multi-use devices are gaining popularity. Additional findings indicated that parents see technology use for learning as positive and that more information regarding the cognitive effects of such learning is necessary. Information gleaned from this study suggest that although television is the "go to" device for parents of younger children, parents show interest in mlearning with newer features. This information highlights a need for information, guidance, and learning on the part of parents.

For this study, I researched prior studies to help explore positive learning experiences in mlearning. I also explored possible barriers to technology use for learning. Lastly, I explored parents' perceptions regarding mlearning for students in special education. I interviewed parents regarding mlearning and casual mobile device use, which may lead to a deeper understanding of how parents help their children learn (Radesky et al., 2015). This study may provide insight into the role of innovative diffusion on how parents view the advantages of mlearning for students in special education.

Device Use Advantage

Throughout the research processes, studies and articles consistently highlighted advantages and perceived advantages of the use of devices for learning. In a quantitative study, Corkett and Benevides (2016) examined the role that mobile device technology has on the writing abilities of students with learning disabilities. Paired-sample T-tests were used to decipher how handwritten works of nine students with learning disabilities differed from work done on iPads. Writing productivity, accuracy in spelling, lexical variety, ideas expressed, and syntactical complexity were assessed. Study findings revealed that digital writing improved both the spelling and the number of ideas expressed in writing assignments, indicating that writing on digital devices such as tablets and smartphones has a long-term positive effect on learning, including enhanced student creativity. This information informed my study by allowing me to explore the idea of relative advantage.

Zabatiero et al. (2018) surveyed 515 study participants, to explore the development of young children and the impact of digital technology use on children's health. Findings indicated appreciation for online learning tools, and further need for digital technology-based programs that enhance children's emotional, physical, social, and developmental health. I use information from this review of literature to highlight the scope of the gap to be filled with research. I also used this research to explore the barriers, and next steps.

The technology used among students in special education can appeal to multiple senses (Kamaghe, et al., 2020; Nepo, 2017). Accommodations, adaptations, visual components, and audio components can be built directly into devices and applications (Nepo, 2017). Enhancement of student engagement and motivation can occur using technology (McKnight et al., 2016; Perkmen et al., 2016). Still, more specific information is needed regarding how parents perceive the use of mobile devices as tools for learning.

Methods within academia highlight the importance of diffusing technology into special education classrooms to enhance learning and aid students in reaching their potential (Baglama et al., 2017). Data points to the increased achievement in special education classrooms when technology is incorporated into lessons. Special education teachers have highlighted mobile devices as tools when asked about tools that help their students learn. Effective use of any mobile device that enhances student learning is evident in literature (Jeffries et al., 2016; Li, 2020; Wiest, 2001). For example, Kiger et al. (2012) have documented that mlearning applications have increased learning achievement in mathematics in students diagnosed with autism. Additionally, Tunaboylu

and Demir (2017) highlighted advanced achievements for students in special education with the use of interactive devices. Positive experiences are reported by instructors who are provided training and information on the use of technology for using mobile devices as tools for learning for students in special education. Similar diffusion models for home usage may positively affect parents' mlearning use, resulting in mobile device learning being viewed as beneficial.

Findings

Mobile devices have the potential to support exceptional learners of all ages (Qahmash, 2018). The summary of this literature review revealed mostly positive outcomes and suggested a need for improvement in digital skills for parents. Researchers interested in exploring mlearning have often viewed the use of mobile devices in a school or formal space. Studies on mlearning in formal education suggested that foundational learning at home helps students to form mlearning habits (Choi et al., 2018). This literature review provided me with insight into overcoming barriers of mlearning, which include increasing parent comfort (Choi et al., 2018; McCloskey et al., 2018; Mutambara & Bayaga, 2020). This information also informs my study by solidifying the association between children's use of these devices and parent comfort, and by highlighting the presence of these devices in households and the availability of mobile phones for learning. When provided with training, it appeared that learners and parents had positive interactions using mlearning in formal learning spaces. Still, questions remained regarding parents' perceptions of the use of mobile devices as tools for learning for students in special education.

Limitations

Limited research was available regarding parental perception of mobile devices as tools for learning for students in special education. However, the research that was found helped me to lay the foundation and support needed for this research study. No research on my intended population could be found on this exact topic. The research presented in this section includes a range of information from different demographics on similar areas of study. Each study highlighted a component of parental involvement and the use of technology for learning. Factors differed and included both formal and informal learning spaces. In this section, I also explored areas of need for future studies as stated by different researchers that provide me insight for this current study. Each of these studies addressed young students, and students in the general population, and does not specify documentation of students in special education.

Summary and Conclusions

Each literature selection identified helps to specifically inform my study. Vittrup et al. (2016) helped to support my line of questioning regarding the use of mobile devices and the parents' role in students' technology experiences. McCloskey et al. (2018) helped to solidify a relationship between children's use of these devices and parents' comfort. Choi et al. (2018) informs my study by providing insight into the way to overcome the barriers of mobile phone learning as well as by highlighting areas of needed research. With each additional literature finding, I was able to explore the specifics of my study in different ways. Cohesively, this information helps me to identify specific gaps in research. The generic qualitative research approach is ideal as I seek answers to my

research questions. Data acquired to explain and provide insight were best used with this approach.

By reading the articles addressed in the literature review section, I have discovered subtle but existing needs in mlearning research. Among those needs are resolutions for barriers and areas of concern that arise regarding teaching students to use mlearning as a mobile device function. Understanding parents' perception of mobile devices as tools for learning for students in special education is an area that requires attention (Mutambara & Bayaga, 2020). To explore these matters further, I interviewed eight parents of students in special education. With this research, I hope to add to the existing body of literature in the field of educational instruction and innovative technology. Exploring parents' perceptions of mobile device use for mlearning in students with special needs, is underrepresented in research and literature. Chapter 3 discusses an in-depth methodology for this research.

Chapter 3: Research Method

Introduction

The purpose of this generic qualitative research study was to explore parental perceptions of mlearning for students in special education. In this chapter, I explain the methodology used to acquire data relevant to this study. I also outline participant selection and explain criteria used to determine quality participants. This section includes information on data collection and analysis and concludes with discourse regarding ethical matters relevant to this study.

Research Design and Rationale

Researchers use a qualitative methodology when they aim to explore a phenomenon to learn more about it (Antwi & Hamza, 2015). During these studies, researchers probe individuals' lives and experiences in relation to a phenomenon and their interaction with the phenomenon or on the nature of the phenomenon itself (Yin, 2016). Devers (1999) expressed that good qualitative research addresses a societal phenomenon and has the capacity to address a problem or ease a burden. Qualitative research should set out to gain clarity on a specific matter (Devers, 1999). I sought to explore parents' perceptions of mlearning for children in special education. Central concepts surrounding parents' perception of student learning points to a need to understand parent beliefs and involvement (Hoover-Dempsey & Sandler, 1997).

In my study, I explored parents' perceptions of the use of mobile devices as tools for learning for students in special education. From these parents, I gained insight into their beliefs surrounding the use of mlearning devices for their special needs students.

Using qualitative research, researchers seek to understand, explore, and explain phenomena observed in daily living (Eriksson & Kovalainen, 2016). The goal of qualitative research is to conduct in-depth inquiry to answer *why* questions about a phenomenon (Eriksson & Kovalainen, 2016).

Knowledge, belief, tradition, conclusion, distinguishing belief from opinion, analysis of cognition, culture, and justified premises are unique components of qualitative research (Denzin & Lincoln, 2011). In this research study, I explored knowledge, beliefs, and culture related to the use of mlearning devices to teach special education students through the perception of the students' parents. The general qualitative method of research was most appropriate for this study as individuals were probed for life experiences to seek clarity about this phenomenon.

According to Percy et al. (2015), traditional qualitative designs are not suitable for researching all topics. Percy et al. further asserted that exploring subjective quantities, such as people's opinions, attitudes, beliefs, and experiences are difficult to examine statistically. Therefore, researchers may need a more generic qualitative approach than offered through a case study, ethnographic, or narrative design. Researchers use a generic qualitative research design when their aim is to solve a problem, create change, or identify themes relevant to their research topic (Mihas, 2019). The aim of this study was to explore parental perceptions of mobile device learning for students in special education. With this study, I sought to answer the following questions:

RQ: What are parents' perceptions of mobile devices as tools for learning?

SRQ1: What are parents' perceived benefits of using mobile devices as tools to teach students in special education?

SRQ2: What are parents' perceptions of the disadvantages of using mlearning for teaching students in special education?

Therefore, a generic qualitative research design was most appropriate for this study. I obtained information for this generic qualitative inquiry through conducting in-depth interviews. To ensure participants were comfortable during the interviews I provided them with the following options: a telephone call, a live video call, or email. A parent of a student in special in education is defined as a parent whose child requires and has received an individualized education plan (IEP) in the public-school sector to ensure accessible learning. To qualify for participation the parents must have had a child in the elementary school (kindergarten through fifth grade) at the time I conducted the study and must have allowed their child(ren) to use some sort of mobile device for learning.

Role of the Researcher

At the time of this study I was a special education teacher for New York City's Department of Education (NYCDOE). I taught Grades 3-5 in a 12:1:1 classroom setting in Brooklyn, NY. Every child in my classroom had an IEP. Therefore, at the time of this study, the duties of my professional role required constant contact with parents of students in special education classroom settings. My direct contact with parents rose substantially during this study because remote learning increased significantly due to the Covid-19 pandemic. This increase resulted in my speaking to the parents of my students daily as I guided and modeled for them how to access their students' work via mobile

devices. I would like to emphasize that during the Covid-19 pandemic I became not only a teacher to the students but also an instructor to the parents regarding how to access and submit work into my Google classroom via iPad devices sent out by the NYCDOE. I acknowledged that my position was one that resulted in a perceived authority over potential participants, and I took measures to limit biases in my research.

To offset biases and the possibility of contacting any parents that I had relationships with, I employed several strategies. Because the purpose of the study was to research parents' perceptions, I explored community programs that provide services to parents of students both in special education and who have been determined to have a disability. Once I obtained consent, I asked the program directors to provide my information to parents who fit the study criteria. Furthermore, I contacted sites throughout New York City, excluding the area in Brooklyn where I work.

For this study I contacted two programs that service the parents of students in special education. The Front Door is a New York State program run by the Office for People with Developmental Disabilities. The purpose of this program is to aid parents in determining student eligibility for services and assist them in creating service plans. The Front Door Program operates throughout New York State and services several locations. This program holds weekly meetings for parents to discuss the services and needs of their children in special education. The second program I contacted, another New York City based program operated and monitored by the New York State Office for People with Developmental Disabilities, was New York State on Disability, Inc. This New York City based organization also helps to service students in special education.

I prevented researcher bias and ethical issues by ensuring that I took appropriate measures. To avoid conflict with my position as a special education teacher for NYCDOE, I did not attempt research through the NYCDOE. Additionally, I avoided ethical issues by contacting service providers that work directly with students and families all over New York City and did not attempt to elicit information from parents I worked with. I also did not reach out to parents of students that I taught in past years. Additionally, by seeking participants outside of the NYCDOE and Brooklyn, I avoided contact with any parents who may have perceived me as having authority or power over them or their children. I also refrained from gathering information from parents who might have seen this study as a justification for incentives. Finally, I did not allow parents with whom I have a working relationship or know to participate in this study.

In generic qualitative research, the researcher, without bias, collects data, seeks to interpret the data via a process of coding, and analyzes data collected. Thus, I coded individual interviews for information. I also coded information gathered for emerging themes, and triangulated data from gathered information. To analyze the data, I developed a preliminary set of codes based on the conceptual frameworks used for this study, which included Rogers's (2003) DOI theory as well as Hoover-Dempsey and Sandler's (1997) theory of parental involvement. Per Bogdan and Biklen (2007), qualitative researchers attempt to explore circumstances that prompt behavior to come into being.

To ensure the accuracy of the data I employed member checking. According to Lincoln and Guba (1985), member checking is a method for enhancing the rigor of

qualitative studies. Birt et al. (2016) asserted that researchers can conduct member checking of individual interviews through either providing the participant the opportunity to review the interview transcript or conducting a second member check interview. To reduce the possibilities of biases and increase the objectivity of the information gathered, I provided participants the opportunity to review the interview transcript for accuracy.

Methodology

In this section, I discuss the study design for this generic qualitative research used in the exploration of parental perceptions of mlearning for students in special education. Using this design, I was able to ascertain information to fulfill each research question. I used a semistructured interview method, which allowed participants the opportunity to introduce new ideas for this generic exploratory research. Throughout the process, I gathered information from parents regarding their perspectives on mlearning for students in special education while at home. In this section, I also discuss participant selection, data collection, and data analysis by hand and with use of qualitative data analysis systems.

Participant Selection Logic

To gather information on parents' perceptions of mlearning for students in special education, I needed participants who fit specific criteria. My inclusion criteria for this study were parents with children in special education who use mobile devices to facilitate at-home learning. All parents involved in this study had a child in grades kindergarten through fifth with an active IEP. The participants also had at least one mlearning device that they allowed their child to use at home. Participants were willing to discuss

information relevant to their children's use of mlearning. Parents were open and willing to discuss their perceptions of their mlearning experiences. This study was based in an urban district located in the Northeastern United States. The target population consisted of parents of elementary children in special education programs in urban cities. I elected to study the urban populations due to the larger number of students there. Cities are ideal places for research due to their large scales and diversity (Balland et al., 2020). No protected populations such as children, individuals deemed mentally disabled, or prisoners were targeted in this sampling of study participants.

I took measures to ensure that participants met the study criteria by using purposive sampling. Researchers use purposive sampling to choose participants with the qualities they seek as they explore a research topic (Etikan et al., 2016). I selected participants using the purposive method, which allowed me to choose members of a specific population for the purpose of study. To establish that participants met the criteria for my study, I selected participants from agencies that service only parents of students in special education. Eligibility and participation in the Front Door or New York State on Disability, Inc. programs ensured each participant had a student with special learning needs. I also created a closed parent group on Facebook in hopes of locating additional parents of students with special needs who were interested in this study.

Purposive sampling is often used for information rich inquiry. One type of purposive sampling is stakeholder sampling. In this type of sampling, "a researcher deciphers what needs to be known and sets out to find people who can and are willing to provide the information by virtue of knowledge or experience" (Tongco, 2007, p.147).

Using this form of sampling allowed me to make preliminary inquiries and decipher whether potential participants were appropriate for this study. I used this sampling technique specifically because although there are many parents who have students in special education settings, they do not all allow their children to use mobile devices. I aimed to attract and select a diverse group of parents.

Sample adequacy is important to the trustworthiness of research (Vasileiou et al., 2018). In qualitative research, the purpose is to gain in-depth information and sample sizes are often smaller. Participant ranges in purposive sampling are often between six and eight participants (Vasileiou, et al., 2018). Guest et al. (2006) and Wutich et al. (2020) explained saturation as the point where no new themes are being observed in research. In those instances, it can be appropriate to recruit larger numbers of participants. Because parental perception of mlearning was not previously explored I interviewed eight participants to gain in-depth information regarding this phenomenon.

Despite recent trends of online interviews and interactions in research, direct advertising geared at hard to reach or sensitive populations may benefit from a face-to-face approach to build trust (Robinson, 2016). However, due to the Covid-19 pandemic and subsequent restrictions, video and telephone calls were the best methods for contacting participants and maintaining their safety. Groups deemed disadvantaged generally have less online access, which increases the need to use the telephone to conduct interviews (Robinson, 2016). Recruitment invitations highlighted my desire for diverse participants and included a note that participants were welcome to interview via cellular phone in hopes of drawing in diverse individuals who may not have been familiar

with video calling. Additionally, I sought out case participants by creating a group on Facebook in hopes of drawing in a diverse pool of participants.

I chose two agencies for this general qualitative study in which potential participants were probed regarding their willingness to participate in this study. Snowball sampling was then used. I asked parents if they were aware of anyone else who fit the identified criteria. Potential participants were encouraged to pass along information to others that they knew fit the study criteria. Collecting information from a diverse group of participants allowed me to explore similar themes, projected needs, and perceptions. It also allowed me to explore parental involvement and assess parents' perceptions of mobile devices as tools for learning for students in special education.

Instrumentation

To collect generic qualitative data, I conducted semistructured interviews with participants. I asked case participants a series of interview questions (Appendix). These questions were intended to address the research question and included interview prompts to invite the possibility of new information from case participants. According to Yin (2016), broad and open-ended questions are essential to allowing participants to zero in on potential topics of exploration, without closing out possible information.

The instrumentation that I used for this study was an original tool inspired by Kong (2018). In a study conducted in Hong Kong, Kong explored parental understanding of elearning. In the study, Kong explored parental perception of support, time spent elearning, homework, and the most common uses of devices for learning. Kong was effectively able to gather information from 161 parents using a survey-styled instrument.

Kong's instrument was a modified version of the instrument used by Anastasiades et al. (2008) and Vekiri (2010). Both the Anastasiades et al. study and the Vekiri study were designed to understand parent perceptions of device learning.

The instrument was fitting for this study as it was previously used in a large city and focused on gathering information related to parent perceptions of device learning, which aligned with my study. I altered the instrumentation to more specifically meet the needs of my research study, and in doing so was able to create an instrument designed to measure parents' perceptions of mlearning for students in special education. Using Kong's instrument as a model, I was able to ensure that my instrument measured what it was intended to measure. I did so by aligning the instrumentation questions to the research questions. I assessed the instrumentation used in the prior study and deciphered how each question worked to elicit very specific information relative to the research questions.

To ensure validity, during the reconstruction of the instrumentation to form open-ended questions more appropriate for interview-styled research, I remained conscious of what each question was intended to address. Furthermore, I spoke with advisors and peers regarding whether this modified instrument had the capacity to measure what it was intended to measure. After initial consultations with advisors and peers, I modified the instrument and developed new open-ended questions more suitable for interview-styled research that would also address the research questions. These questions had similar content. I used the modeled instruments to create open-ended questions designed to gather information from parents regarding mlearning. Thus, the content of this instrument

was altered to fit the goal to obtain information regarding parents' perceptions of device use for mlearning. Using the information in the existing studies, I created a line of questioning that helped elicit information regarding time, communication channels, and over all usage. To limit confusion for participants I used language in the instrument that was simple and straight forward.

The interview questions were aligned both with the research questions for this study and with the principles of Rogers's (2003) DOI theory and Hoover-Dempsey and Sandler's (1997) theoretical model on parental involvement. I used these interview questions to acquire information from study participants. Using these questions, I aimed to explore parent perceptions regarding the advantages of device use. I also asked questions regarding the implementation of device use, communication channels, social systems, parent perception, and parent-child interaction during device use. To heighten the validity in my line of questioning, I asked a peer and a parent of a child in special education who was not included in my study to provide feedback. This prompted revisions to the interview questions to increase the clarity of my research.

To assess parents' perceptions of mlearning using Rogers's (2003) DOI theory and Hoover-Dempsey and Sandler's (1997) model of parental involvement, I created interview questions. These questions helped me to explore behavior, relative advantage, device implementation, social systems, and communication channels. The questions were as follows:

1. How does your child interact with their device? (Understanding behavior)
    - What does he/she normally do with it? (Follow up question)

2. What do you do while your child interacts with his/her device? (Understanding behavior)
    - When do you generally allow your child to use their device? (Implementation)
    - What ways do you limit or monitor your child's time on their device? (Implementation)
3. How would you describe your child's experiences with their devices? (Relative advantage)
    - If the experiences are described as positive, why? If the experience is described as negative, why? (Follow up question)
4. What can you recall teaching your child how to do with their device? (Understanding implementation)
    - When your child began to maneuver the device independently, did they use the program that you showed them. (Follow up question)
5. How do you learn new ways to teach your child how to effectively use his or her device for learning? (Communication channels, social systems, parent perception)
6. Where do you learn about new programs to show him or her? (Communication channels, social systems, parent perception)
    - How were you taught to use a device (including applications and programs) for your child? (Communication channels)

7. How does your child's interaction with his or her device help them to learn? (Parent perception, relative advantage)
    - What if any learning applications do you have on your child's device? (Communication channels)
8. In what ways do you feel that the way you use your device helps your child learn? (Parent perception)

The method that I used to address my proposed research question was interviewing. I used information from eight consenting research participants using semistructured in-depth interviews to answer the questions: (a) What are parents' perceptions on mlearning for students in special education? (b) What are parents' perceptions of benefits of using mlearning for teaching students in special education? and (c) What are parents' perceptions of the disadvantages of using mlearning for teaching students in special education?

Procedure for Recruitment, Participation, and Data Collection

Participant recruitment was conducted with moral and ethical regards at the utmost standard. Prior to carrying out my research, I obtained approval from the Walden University Institutional Review Board under IRB number 14:11:46-05'00' to conduct research. Once the Walden University IRB, which serves as an independent ethics committee, provided conditional approval, I began to contact the human resource divisions of potential agencies inquiring about the proper way to obtain permission to conduct my study. Individuals who elected to participate in the study and met study

participant requirements were met with transparency and informed that they were free to disengage from the study at any time, should they feel the need to do so.

Recruitment

To recruit participants, I conducted the following recruitment processes:

1. obtained permission to present information on my study;
2. virtually presented study information to parents of special education students via social media;
3. asked cooperating programs to send out the recruitment materials to parents that meet the inclusion criteria, for example, their child was in kindergarten through fifth grade and had an IEP;
4. created a closed group on Facebook for parents of school-aged students in special education;
5. emailed or called parents who showed interest in my study;
6. asked preliminary questions to solidify participant eligibility;
7. provided an informed consent form; and
8. scheduled interviews.

Sampling

Once a potential participant contacted me, I asked them the following questions:

1. What grade is your child in?
2. What school is your child in?
3. Does your child have an IEP?
4. Do you allow your child to use a device at home for learning?

Informed Consent

The following steps were followed regarding informed consent:

1. If potential participants answered yes to the sampling questions I emailed them an informed consent form.
2. All potential participants received the informed consent form for their review at least 24 hours prior to their scheduled interview.
3. For snowballing, I also sent a recruitment flyer for them to give to anyone they knew that might have been interested so they could contact me.
4. I scheduled telephone interviews.
5. Immediately prior to telephone interviews I obtained consent by requesting participants reply to my informed consent email with "I consent" and received confirmation of replies.
6. I assigned each participant an alphanumeric pseudonym, e.g. P1, P2, P3.

The informed consent form included information regarding the voluntary nature of participation in this study and explained to participants they were free to change their minds and withdraw from the study at any time. Potential participants were informed that they would not be paid or receive any gifts for participation in this study. They were also informed that the purpose of the study was to gain valuable information, which may contribute to betterment for the special education population and involved stakeholders.

Additionally, the informed consent form included information regarding confidentiality, risks, and benefits for potential study participants to ensure they had access to tangible documentation that they could reference. Potential research participants

were informed that this study would present minimal risks of harm and would not compromise safety. Potential participants were informed that any information obtained would be confidential and steps to ensure privacy were included in the informed consent form. To ensure transparency, I discussed the intent of the research and how the research may affect stakeholders. Along with documentation of what was discussed, I provided participants direct contact information for advocates at Walden University should questions arise.

No protected populations, such as children, individuals deemed mentally unfit to consent, or prisoners were targeted in this sampling of study participants. Purposive sampling was the method used to gather information regarding the research topic. According to Etikan et al. (2016), the purposive sampling technique involves the intentional choosing of study participants due to certain qualities the individuals may possess. This method is often used for information rich inquiry. In this type of sampling, "a researcher deciphers what needs to be known and sets out to find people who can and are willing to provide the information by virtue of knowledge or experience" (Tongco, 2007, p.147). Using purposive sampling allowed me to make preliminary inquiries and decipher whether potential participants were appropriate for this study. This sampling technique was used specifically because although there were many potential participants with students in special education settings, they may not all allow their children to use mobile devices.

Setting

New York's urban school district currently includes over 200,000 students in special education classrooms, making it the most concentrated place in the United States servicing special education needs (Fancsali, 2019). To support the needs of these students are programs designed to service parents and families in need. The many students in special education in this area provided an ideal opportunity to reach out to local families. I focused on a dense and urban multicultural population, which helped me to gather a collection of rich data from diverse participants.

Social Media (Online) Recruitment

To recruit participants for data collection in my study, I used the social media platform Facebook. Use of social media to acquire research and data has grown significantly as access to these platforms have increased (Kosinski et al., 2015). Facebook, for example, continues to surge in usage and has been named the most used social network with over 2.6 billion users worldwide (CNN Editorial Research, 2020). Therefore, Facebook has the potential to be a powerful research tool providing both large and diverse samples (Wilson et al., 2012). According to research, "The size and reach of the Facebook platform offers researchers an unprecedented opportunity to acquire large and diverse samples of participants" (Kosinski et al., 2015, p. 6). I used Facebook to attract participants using snowballing sampling. In snowballing sampling, one potential participant who is aware of a study, may recruit other participants, who in turn, may recruit additional participants (Chambers et al., 2020; Goodman, 1961).

To access potential study participants using Facebook, I created my own page to recruit parents of students in special education who allowed their students to use mobile devices. I located pages of specific organizations that provided information to aid parents on educating students and pages that trained parents of elementary-aged children on using mobile devices for learning. To draw in participants, I acquired permission to post information regarding my proposed study, how to find my page, and specific requirements. If the organization serviced general education and regular education students, I was sure to highlight the need for parents of children with IEPs. Then, using snowball sampling, I continued to accept potential participants until I confirmed a solid eight interviewees who met the criteria for my study.

Digital Recruitment

In this qualitative study, I used two digitally operating service programs to help my participant recruitment process. I emailed them a flyer that included the details of my study. I recruited participants digitally due to Covid-19 social distancing orders. After viewing the study invitation, potential case participants were asked to reach out if they fit the criteria and were interested in participating. Participants were provided the option to contact me via telephone or email. During the first contact, I verified the participants preferred means of contact and asked them to identify the program they were associated with. I then asked questions to verify whether they met the criteria for the study.

Request the Permission from the Programs to Email Parents

After obtaining permission from the Walden University IRB, I reached out to New York State agencies that provide services to parents of children in special education.

I informed them that I was a student researcher. I then asked for any policies on research within their organizations. I followed their procedures and policies by simply sending recruitment flyer and asking who I would contact to have it posted. After speaking to several individuals, I was pointed in the direction of the individual to whom I should speak for the flyer to be posted. I explained that I would like to have a flyer containing information on a study that I was conducting posted either in their facilities or virtually as many activities were routed online due to the pandemic. I also asked if I could send a digital invitation to my study that they could present and forward to parents. I advised them that if anyone was interested in my study and felt that they fit the study criteria, that the person could call or email me. According to Walden University's IRB protocol, once an agency posted my study invite, that solidified their permission for cooperation recruitment.

Snowball Sampling

In snowball sampling, one potential participant made aware of a study, may recruit other participants, who in turn, may recruit additional participants (Chambers et al., 2020; Goodman, 1961). After acquiring potential study participants through digital and social media recruitment efforts, I used snowballing as a method of acquiring additional participants. Snowball sampling was used by asking parents if they were aware of anyone else who fit the identified criteria and whether they would be willing to refer them or pass along information my to. My goal was to identify eight diverse participants to interview to increase the depth and quality of information. Participants were required to meet the study criteria. I was able to locate eight study participants who fit the criteria

for my study, in a timely manner. I followed through with the same procedures for participants located via the use of snowballing, as with the digital and social media recruitments.

Data was collected from parents of elementary-aged students in special education classes who used mobile devices while at home. I collected this data through interviews with each of the study participants. I scheduled meetings and follow-up contacts within a 4-week period. During this 4-week period, I spoke to participants alternating days for interviewing, and used the following day to complete, review, and transcribe provided data. Each interview ranged from a minimum of 30 minutes to a maximum of 60 minutes. This time range allowed participants to feel that they had been issued enough time to respond to the questions without feeling rushed but also respected their time. Data was recorded with the use of a digital audio recording device to ensure that it could be transcribed with precision.

I identified eight participants to interview in a timely fashion. I choose eight participants that represented diversity and could offer rich experiences and input. Therefore, participants who met the criteria for participation in my study were informed that they must confirm their intent to participate in the study within 10 days of having received an invitation. To do so they were asked to send a return email that stated, “I consent.” To ensure that eight participants were confirmed, after the 10-day period, I electronically reached out to parents who remained in my data base. This process continued until eight study participants confirmed their participation and sent back the required consent emails. This cycle was discontinued once eight participants were

confirmed and seven more were solidified as a back-up list should a need arise for additional participants.

Data Collection

I confirmed times and dates for interviews via both telephone and email. Actual interviews were conducted via a telephone call. These interviews were recorded. During planning stages, participants were informed that they would be allotted times slots which ranged from 30 minutes to 60 minutes. These time slots allowed participants to divulge enough information without feeling rushed but also respected their time. This time frame also allowed me to adequately explain the study purpose and potential gains, highlight matters of informed consent, and address participants' questions or concerns.

Interviews began with the iteration of privacy, followed by highlighting each person's right to stop the interview at any time. I also ensured that participants returned consent forms prior to the actual interview. Then I reviewed methods that I would use to ensure confidentiality and reaffirmed the nature in which each of the eight participants met study criteria, thus meeting study parameters. I asked participants for consent to recording their interviews for coding and analysis purposes. Once I obtained permission, I began to ask open-ended questions in a semistructured manner. I used follow-up questions to elicit details during questioning. I stopped at the proposed times to honor participants' time. I set new dates if necessary and reminded participants that I may need to contact them again to make sure that I was representing their intended information. I took the following day to prescribe the interviews. After the transcription process, I used the follow-up interviews to ensure clarity and accuracy. Once transcribed, participants

received a copy of their individual interview transcription to review for accuracy and were told that they could speak with me if they desired to add comments or clarity. All participants confirmed that their voices were accurately depicted.

At the conclusion of the data collection process, each study participant took part in a debriefing session. During the session, study participants were reminded of the intent of the study for which they provided information. Debriefing sessions were used in ethical consideration for ensuring that participants were fully informed, that all participants had the opportunity to ask questions regarding the research process and understood the intent for the information gathered. Questions regarding participants feelings, challenges faced, and final thoughts were also asked. The research question and motivation behind the study were discussed. I explained how the data would be analyzed. Finally, participants were reminded of their option to withdraw from the research study, even at this late point. Should any participant have opted to withdraw information provided to my study, their request would have been honored. Participants were thanked for their time and contributions. I reminded participants that they may be contacted for unclarities in their information within the next 7 days.

Data Analysis Plan

Analyzing data helps researchers to form meaning from gathered information. For this study, I analyzed the data via coding. Qualitative coding aided me in defining acquired research by helping me to compare, find similar themes, and identify relations between one concept and another (see Basit, 2003; Saldaña, 2015). Coding gives research meaning. According to Saldaña (2015), a researchers' choice to code manually or with

the use of a qualitative data analysis software (QDAS) depends on the size of the study. The "choice will be dependent on the size of the study, the funds and time available, and the inclination and expertise of the researcher" (Basit, 2003 p. 143). I used thematic analysis and inductive coding, along with both manual and QDAS coding, reflection, review, follow up, and transcribed interviews to inform the study.

I used thematic analysis to assess data collected for meaning. Thematic analysis served as a map for analyzing my research study and reviewing commonalities and reoccurrences in research to help to derive a theme. According to Aronson (1994) "thematic analysis serves to identify all information that relates to a classified pattern" (p. 3). Using inductive coding, I outlined patterns from raw data (see Saldaña, 2015). With these patterns and reoccurrences, I created the codes, which I developed into themes in my study. If any questions or uncertainties arose, study participants were contacted for clarity. With this plan I explored responses to my research questions. I explored the need to alter or edit any questions to draw richer and more elaborate responses. I also explored comparisons and contrasts in responses from research participants.

After obtaining data from study participants, the information was analyzed using a two-part process. The first of process was thematic analysis. Using thematic analysis, I manually explored data acquired from the interview process. I searched the data for commonalities, differences, and patterns. According to Braun and Clarke (2012), thematic analysis is "a is a method for systematically identifying, organizing, and offering insight into patterns of meaning (themes) across a data set" (p. 57). I examined data in this way to discover meaning molded directly from the data acquired during the

interview process. Through analysis of data I answered the research questions. Braun and Clarke identified six steps to thematic analysis, which included: (a) familiarizing yourself with the data, (b) generating initial codes, (c) searching for themes, (d) reviewing potential themes, (e) defining and naming themes, and (f) producing the report. During the process of analysis, I followed each of these steps to extract meaning from the data collected.

After analyzing data thematically, I examined the data for additional means of analysis referred to as grounded theory analysis. Grounded theory is a general method of analysis that works by reviewing continuous interplay between the analysis of data and an existing data collection (Strauss & Corbin, 1994). In grounded theory analysis, which has also been known as the constant comparative method, theory may be generated from the information, or the existing grounded theory may be explained or elaborated with the use of existing theories (Strauss & Corbin, 1994). I used Rogers's (2003) DOI theory and Hoover-Dempsey and Sandler's (1995) model of parental involvement to help explore and examine data that was acquired. In this form of study, it is imperative that the voice of the studied population be heard (Strauss & Corbin, 1994). Grounded theory analysis includes: (a) coding of data, (b) customizing or elaborating on the grounded theory, (c) categorizing the data, and (d) constructing theory. Thus, through grounded theory analysis, I explored data acquired from research participants for meaning relevant to existing research and theory.

Transcription is the first step in research analysis and involves writing information gathered during research processes and acquired from interviewees

verbalizations and reactions (Bengtsson, 2016). I followed this step by assessing and comparing acquired information. Due to the volume of information to be acquired, as well as a desire to gain in-depth understanding of information received, I also analyzed data with the use of a QDAS. Bengtsson (2016) stated "The process of analysis reduces the volume of text collected, identifies and groups categories together and seeks some understanding of it" (p. 9).

Both transcribing and analyzing data can be tedious. Yet, it is important to truly represent case participants to maintain trustworthiness during the analysis process. Whether a researcher chooses manual analysis and/or electronic coding, it is important that the researcher ensures validity and accuracy as information transforms from raw data into coded analysis. Incorrect or incomplete data may jeopardize the validity of a researcher's study. During this study I used mostly manual analysis techniques. I incorporated the use of electronic coding to decipher the most frequently used words and responses.

Conceptual theories that I used to analyze data in my study were Rogers's (2003) DOI theory in conjunction with Hoover-Dempsey and Sandler's (1997) theoretical model on parental involvement. Using these theories, I explored parental perception on the use of mobile device learning for students in special education. Using Rogers's (2003) DOI theory, I explored the spread of the mlearning innovation. I did so by aligning my instrumentation specifically to explore communication channels, social systems, and overall acceptance of this mlearning in a specified population based on perception. I then used Hoover-Dempsey and Sandler's (1997) Theory of Parental Perception to explore

how the diffusion of mlearning with parents has influenced their children within special education classes. I did so by aligning my instrumentation tool to asses parent involvement with their children in special education. I started analyzing data by first transcribing the interviews. I compared responses to each question from each of the participants for exploratory analysis on commonalities, contrasts, and repetition.

This was repeated for each question to compile data. I also incorporated the use of notes that I took during the interview process to help increase my understanding of the interviews. I highlighted and made note of repetitive ideas, information that stood out, and charted similarities and contrasts during the process of coding. Yin (2016) indicated that open coding includes the development of themes, which includes categorizing concepts. Incorporating the principles of Rogers's (2003) DOI theory and Hoover-Dempsey and Sandler's (1997) theory of parental involvement, I continued use of open coding until themes begin to emerge. These themes were categorized based on ideas relative to the conceptual theories guiding the study.

I continued to organize themes to create meaning by grouping and placing together ties and connections extracted from the data. I created a table to simplify interconnectedness in the data and provide a visual. Creating a visual for data expression aided me in further analysis by helping me to connect information that I was unable to see prior. These steps helped me to interpret the data collected from case participants. Interpretation of data creates a new narrative with the support of the information collected and hence addresses the research questions (Yin, 2016). Cohesively, the use of data analysis steps allowed me to use data collected to draft a conclusion, which unveiled

a discovery relative to mobile device learning for students in special education by parents and informal workspaces. This information, in turn, helped me to determine subsequent steps in research.

Issues of Trustworthiness

Credibility within qualitative research ensures the presence of valued characteristics within a study. Shenton (2004) highlighted that research should paint a true picture, reflect enough detail, display transferability, and be justifiable across common circumstances. Creditability refers to whether researchers have tested what they intended to address, and sifted through research to ensure such (Shenton, 2004). Transferability refers to including enough detail to allow readers to gather whether the research could go across fieldwork, or how applicable the research may be in varied context (Shenton, 2004). Trustworthiness in qualitative research refers to the validity and reliability of the information being presented. Research being confirmable, credible, dependable, and transferable can all weigh upon a researchers' ability to ensure trustworthiness in research (Shenton, 2004; Yin, 2016). I employed methods, techniques, and practices that heightened trustworthiness in my research.

Trustworthiness was established through confirmability and dependability. With confirmability, I sought to ensure that the research constructed was not biased and that it reflected findings of the study and not the thoughts and opinions of myself as the researcher. Dependability reflects the chance that another researcher could conduct similar research and yield similar results. Ravitch and Riggan (2016) indicated that to achieve credibility in research, researchers using qualitative methods for acquiring

information, such as individual or group interviews, must be done with transparency and absent of any manipulation.

Ensuring credibility, transferability, dependability, and confirmability in research practice can ensure trustworthiness in a research study (Lincoln & Guba, 1986). Remaining objective and eliminating bias, extracting my own opinion, utilizing well established research methods, the development of early familiarity with the culture that I researched, random sampling, triangulation, tactics that helped to ensure honesty in case participants, frequent debriefing sessions, peer feedback and scrutiny, and reflective commentary were all methods that I employed to promote trustworthiness in my research.

Trustworthiness can be established throughout the research process in a multitude of ways. I heightened trustworthiness throughout my research by being transparent, exhibiting directness in questioning, being orderly, avoiding errors, being professional with study participants, and remaining objective throughout the research process. I also made use of rich text and content directly from the interview transcripts, which heightened the voice of case participants and lessened my interpretation, ensuring that information was used in an appropriate context. By digitally recording interviews, I ensured that my transcripts were accurate and decreased errors in analysis. I also transcribed interviews promptly to ensure that enough detail, including mannerisms and exact verbiage, were recorded.

Use of research and theory, relevant information from similar research studies, case participants, and analysis ensured triangulation in my research, which heightened trustworthiness. Assessing and analyzing available research imparted transferability also

known as external validity into this study. Hence, I used a plethora of strategies concurrently to help dispel research bias and to ensure confirmability. This results in findings that are shaped by study participants and not by the researcher (Shenton, 2004).

I considered reflexivity and my relation to this social issue constantly and used methods of debriefing, which include reflective journaling. As a special education teacher in an urban school district located in the Northeastern United States, I understood that I had formed ideas and possible biases relative to students in special education and their use of mobile devices, that could play no role in this research. Remaining conscious of my ideas allowed me to impart preventive methods. Reflective journaling allowed me to focus on the interviewees, considering their perspectives, while simultaneously allowing me to exhaust ideas into a journal.

Ethical Procedures

As a method of ensuring that research was performed and carried out with the utmost regards for human life, Walden University requires that all researchers successfully study and complete training issued by The National Institutes of Health (NIH) Office of Extramural Research, which certifies the successfully completion of the NIH Web-based training course, Protecting Human Research Participants. During this rigorous training, I was able to learn content, which included obtaining informed consent from research participants, avoiding deception in practice, minimizing risk and harm, protecting identity, ensuring confidentiality, understanding who are protected populations, and highlighting the participants' right to withdraw from my study at any time. As per Walden University practice, and by my own desire, I ensured that my

research was conducted in a manner that applied all rules and standards of my profession, and that I did my diligence to protect human rights.

According to Yin (2016), research integrity ensures that the information presented must be able to be trusted by the research community as true, and notes that trust is paramount in qualitative research. In addition to understanding ethical guidelines of research, researchers must understand respect and integrity for research in practice. One sure way to display bias in research, for example, is to omit information provided from research participants. In doing so, a researcher may unintentionally carve out information that they disagree with. A way to avoid this display of unethical practice is to "start research by setting clear rules to define the circumstances under which any data are later to be excluded (Yin, 2016, p. 39). Yin also discussed the importance of a researcher being able to self-reflect and self-correct, "You will need to monitor your own work and to have the willpower to follow your own rules" (p. 39). Therefore, I was sure to use recordings of my interviews to discuss all the information obtained during interviews. I also employed practices to govern myself, which include consciousness, competence, and the discipline to self-monitor and follow my own rules.

My oath towards professionalism was employed by ensuring that I did not falsify or fabricate information, disclose findings to stakeholders, remained transparent in intent and procedure, disclosed intellectual ownership of resources referenced, and ensured understanding of this study in American Psychological Association format. One method of ensuring that I did not misrepresent research participants was to incorporate as much direct language as possible into my analysis and transcription of findings. Lastly,

stakeholders remained a continuous part of the process and were asked to review analysis of their input to limit and prevent misinterpretation. All stakeholders received the study findings.

I represented myself as a researcher with respect, competence, dignity, and self-worth on behalf of myself, stakeholders involved in the study, the public, and Walden University. I accounted for diversity within my study by approaching potential study participants who represented a range of people. I ensured a display of competence by both becoming familiar with the population that I intended to study and by familiarizing myself with a plethora of recent and relevant research on my topic of study. I displayed honesty and fairness by being transparent in study intent and throughout the research process. I issued participants respect by being sure to accurately represent the information that they were providing. I respected each participants' rights by consistently reminding them that they could cease participation at any point. I objectively sought truth on my research topic by remaining as unbiased as possible and utilizing tools to expel the potential of researcher bias. My responsibility to avoid risk and harm, issue and reciprocate respect, be direct, avoid misrepresentation, and expect and plan for issues or dilemma was all methodically placed into my technique and practice.

Under Walden University protocol, I was not permitted to commence research, nor contact study participants until the time that the university IRB committee approved and cleared me to do so. Following the approval, I ensured that I had all protocol paperwork in my possession prior to contact with potential study participants. I also ensured that I had familiarized myself with the population to be studied. Once all

components were secured, I sent out informed consent forms to study participants either face-to-face or electronically through email. Telephone contacts helped me to determine the participants' preferences. Following the receipt of informed consent, during each meeting with a study participant, I confidentiality discussed the study purpose. Participants were allotted the opportunity to ask questions prior to affirming their desire to participate in the study. Participants were informed that their participation in the study was voluntary despite signing forms and were also informed that they could opt out of the study at any time.

As a special education teacher in an urban school district located in the Northeastern United States, I strove not to use my position to elicit study participants. I do not serve in administration, nor do I play a role within my school or any school system that would permit or grant me the permission or authority to elicit case participants. My study did not require permission from a school system as I sought to gather information from parents. However, I did hope to use my knowledge related to parent services and resources to draw from cooperating agencies for my study. I did not include parents of students that I teach in my study, nor anyone who may have seen me as having influence over them or their children.

I explained in-depth to participants the measures that would be taken to keep study participants confidential. Participants were informed that information they provided would be kept under lock and key, including both physical papers and electronic data, which required passwords to access. Post analysis, I presented participants' information using pseudonyms and concealed any identifying information. I continued to maintain

professional relationships by ensuring that all methods of ethical guidelines were met. I made sure that case participants understood that these meetings were not conversational, as they were not about my thoughts, but instead I made sure that each participant understood that I needed their contributions. I was conscious of both my verbal and nonverbal gestures. I thanked participants and allowed them to review their responses to ensure that their true intentions were represented. I thanked them for their time and strategically ended interactions after providing each participant with research findings. To ensure the following of ethical procedures during the data collection process, I (a) digitally recorded all interviews, (b) uploaded the digital recordings into my login protected home computer, (c) created an alphanumeric pseudonym for each participant, (d) created a master list with the participant's name and the alphanumeric pseudonym and stored this document in a separate file in my home computer, (e) transcribed the recordings myself, (f) uploaded these transcribed interviews into QDAS for data structuring in my login protected home computer, (g) after analysis I downloaded all research data onto a USB drive, (h) locked the USB drive into a locked cabinet in my home office, (i) locked all access to informed consent forms in the locked cabinet in my home office and placed electronic copies under password requirements, and (j) after the required 5 years pass I will destroy the paper documents by shredding them and destroyed the USB drive by smashing it.

Summary

In this section, I justified my generic qualitative study by providing the foundation on which I outlined my research. I explained my methodology by discussing

my research design via participant selection logic, instrumentation, procedure for recruitment, procedure for participations, procedure for data collection, data analysis plans, issues of trustworthiness, and ethical procedures. In this generic qualitative research study, I used both face-to-face and digital live video to conduct semistructured interviews to collect data from voluntary participants who met study criteria. Open-ended questions served as the instrumentation to acquire information. I digitally recorded all interviews, transcribed all interviews, and analyzed the data collected from these interviews.

Through data collected, I developed categories and themes. During the drafting of findings, I ensured that direct language from study participants was used abundantly to represent participant voices. Study participants also reviewed my analysis to assure that they were being represented correctly. I ensured that ethical guidelines served as a primary component in this study. The results of my study may provide insight and new perspective on parental perceptions of mobile device learning for students in special education. In Chapter 4, I present research results in correlation to Rogers's (2003) DOI theory and Hoover-Dempsey and Sandler's (2005) theory of parental involvement.

Chapter 4: Results

Introduction

The purpose of conducting this generic qualitative study was to explore the perceptions of mlearning of parents with children in special education elementary grades. Another objective of this study was to explore parents perceived benefits of mlearning for students in special education. The study centered around gaining answers to the question:

RQ: What are parents' perceptions of mobile device learning for students in special education?

Through this study, I sought to gather information that might close gaps in existing research and serve as the basis for new and more specific research, which might enhance mlearning experiences for students in special education. I interviewed parents of elementary school students who were implementing mlearning in informal educational settings. I did not intend this research to reflect studies in formal education. Instead, I sought to explore mlearning practices of parents with students in special education in at-home and personal learning spaces. Yin (2016) indicated that researchers using qualitative research seek to gain in-depth insight about a social phenomenon for the betterment of society. Through this study, I sought to gain a detailed understanding of parent perceptions of mlearning for students in special education with optimism that this information might lead to the betterment of mlearning experiences.

Chapter 4 includes a brief summary of the purpose of the study and research questions, as well as a preview of the chapter's contents, and any alterations in instrumentation and data analysis strategies. Additionally, I discuss the setting of the

study, which includes discussions regarding any conditions that may have influenced participants during data collection. Potential issues related to setting may also include budgets, access to devices, and trauma as I conducted research for this study during the 2020 Covid-19 pandemic. The Covid-19 pandemic influenced my study as all public-schools converted to distance or remote learning during the time of data collection and all students participated in some form of mlearning during the pandemic. In this chapter, I include information on the demographics of case participants, data collection and analysis, trustworthiness, and interview results. The chapter concludes with a summary of the information received while conducting research to address the research questions.

Setting

For this study I contacted two programs that serve parents of students in special education. The first program was in an urban area in Northeastern United States that services primarily parents of students with special needs in New York City and areas throughout New York State. The second program was in the same urban area in Northeastern United States. Balland et al. (2020) suggested targeting large urban areas with hopes of attracting a diverse group of case participants. To recruit self-selected case participants who fit the study criteria I formed a closed Facebook page geared to parents of elementary school students in special education.

Due to Covid-19, during the spring portion of the 2020 school year students in the urban area in Northeastern United States where this study took place learned remotely and received devices for mlearning from the local department of education (see Lipomi, 2020; Setiawan, 2020). Blended, remote, and distanced learning programs began. Tens of

thousands of students were issued mobile devices from school systems (see Lipomi, 2020; Setiawan, 2020). Both synchronous and asynchronous learning began with use of these devices.

Upon starting my research, one component, the communication channel, was largely questionable in mlearning. Rogers (2003) indicated that one of the most important components of innovative diffusion is the communication channel. Communication channels largely revolve around individuals learning to use devices in specific ways (Rogers, 2003). In my initial research plan, I hoped to gain understanding of where and how parents were learning about mlearning prior to efforts implemented to contain Covid-19. When asked about learning with the incorporation of a mobile device, all the parents mentioned the use of one application designed to cater to preschool children.

Relevant to elementary school aged students, parents discussed many gaming applications and some applications associated with the remote and distance learning applications used by the school districts located in an urban area in Northeastern United States. With the efforts of remote or distance learning from school districts, many parents indicated that they received their first official attempt at mlearning from the local Department of Education. There was some evidence of communication channels between parents and mlearning practices. This was mainly because several parents indicated being self-taught and learning via exploration of the device until they began to discuss distant and remote learning programs. Parents stated that they learned to use devices for learning from three main places, including themselves (trial and error), teachers of their children

in special education, and directly from their children. I address these communication channels in this chapter.

Demographics

The participants who self-selected to participate in this research study were parents of students in special education in elementary grades. This group of case participants represented an array of parents in an urban area in Northeastern United States. Parent participants represented different ethnic groups. The participants also represented various income brackets and educational levels (see Table 2).

Information was collected from eight participants in total. During the data collection process, I interviewed 10 parents of students in special education using semistructured interviews and documented eight of the 10 interviews. The initial intention was to interview and transcribe eight parent participants. However, during the first two interviews, the recording device failed. Unable to transcribe these two interviews, I could not accurately code them. Therefore, with permission of each of the case participants, I placed them back into the participant pool to contact in the instance that I was unable to locate additional parent participants who fit the study criteria. I then restarted the interview process with the following eight individuals on my participant list. Three of the eight case participants whose interviews were documented indicated being involved with one of the programs that displayed my recruitment invitation. Two of the case participants stated that they were made aware of the study from the Facebook page that I created for participant recruitment. The remaining case participants were collected

via snowballing. Case participants in many instances indicated that they knew others who fit the research study participant criteria.

Demographics for each participant varied slightly, though many of the participants shared similarities, which included residing in an urban area in Northeastern United States. Populations recruited from the programs included families from multiple nationalities. Participant families included those who self-identified as Afro-Latino (37.5%), African American (37.5%), Native American (12.5%), and Guyanese (12.5%). The participant group also included an equal distribution of males and females (see Table 3). Four of the participants were women and four were men. Three parents identified as being in relationships and five of the parents identified as being single. Two of the parents indicated having been educated beyond high school, and though they had not expressed having a college degree, they did express having taken some college classes, while the three others ended their education at the high school level to begin working. The final three case participants indicated that they had bachelors or masters level college degrees. Participants indicated yearly earnings from less than $25,000 to over $50,000. Most of the parents indicated that their children attended public schools located in the urban area in the Northeastern United States and three confirmed their child's eligibility for free lunch due to household income.

Table 2

Parent Participant Demographics

Pseudonym	Net family income	Ethnicity	Age (years)	Education level	Marital status	Gender
Parent 1	Less than $25,000	Afro-Latino	26-33	Highschool	Single	Female
Parent 2	Over $50,000	African American	41-47	Master's degree	Single	Female
Parent 3	Less than $25,000	Afro-Latino	34-41	High school	Married	Female
Parent 4	Less than $25,000	Guyanese American	41-47	High school	Single	Female
Parent 5	Over $50,000	African American	34-41	Bachelor's degree	Single	Male
Parent 6	Over $50,000	Native American	34-41	Some college	Married	Male
Parent 7	Over $50,000	Afro-Latino	26-33	Master's degree	Married	Male
Parent 8	Over $50,000	African American	41-47	Bachelor's degree	Married	Male

I first collected data regarding participant demographics and then I asked participants questions from the research instrument to address the research questions. To adhere to social distancing recommendations during the Covid-19 pandemic, I conducted all interviews via telephone. Participants were able to complete the interviews from their homes. Although participants were given the option of interviewing via live video call, all eight participants expressed comfort with traditional telephone voice calls.

The interviews were scheduled ahead of time and were expected to be completed within 1 week. However, a regional storm resulted in the loss of power for thousands and interviews had to be rescheduled. After scheduling the first four case interviews, the recruitment process slowed down somewhat. During that time, I noticed that all the case

participants were female. I made a conscious decision to ask the current participants if they knew any fathers who fit the study criteria that they could refer to my study. After an additional 2 weeks, I was able to add four males to my interview schedule.

Table 3

Research Participant Population

	Total population	African America	Native American	Hispanic or Latino	Guyanese American	Two-parent family household	Free or reduced-fee lunch
Female	4	25%	0%	50%	25%	10%	50%
Male	4	50%	25%	25%	0%	20%	0%

Note. Data calculated from informaiton provided by case participants.

During each interview session I provided a minimum of 30 minutes and a maximum of 60 minutes for participants to address all the questions on the research instrument. Participants were informed that they would be contacted for follow-up questioning if it was necessary. However, I did not employ follow-up interview sessions as it was not necessary. Instead, after participants answered each interview question, I paraphrased their responses and asked parents if my understanding of their statements was accurate. I then allowed parents time to confirm and elaborate on their responses to heighten my understanding.

Thus, I did not need to follow up with any of the participants during or prior to the coding process, as I was sure that I had a thorough understanding of information each case participant provided. I recorded the interviews on a digital voice recorder with permission from each participant. After completing each interview, I transferred the

recordings to my personal computer, which required a password for access. I then transcribed each interview.

One variation that occurred during my interview process was that although I interviewed 10 case participants, I was only able to use eight of the interviews. This variation occurred due to errors in my attempt to use telephone applications to record my interviews instead of a viable voice recorder. Due to technical issues with the chosen recording application, I lost two interview recordings. When I played the recordings back, I could hear only my voice and not the voices of the two case participants. As such, I implemented minor variations from the initial data collection plan. Instead of using a telephone and digital recorder alone, I also employed the use of Zoom for the program's voice recording capabilities.

Although from diverse backgrounds, all case participants spoke and understood the English language fluently. Parents were able to provide a wealth of information, which allowed me insight into parents' perceptions of mlearning for students in special education. Following the interview process, participants were thanked for their time and reminded that the purpose of this study was to gather information that may potentially aid in the betterment of mlearning for students in special education.

Data Collection

According to Yin (2016), there are five steps in the data collection and analysis process. These five steps include compiling data, disassembling data, reassembling data, interpreting data, and concluding data (Yin, 2016). During the process of data collection, as means of self-checking biases, I kept a reflexive journal. Data was gathered by

interviewing eight participants. Participants were asked questions using instrumentation created for the interviews, data obtained during these interviews was recorded and then transcribed.

Recruitment

After identifying a research problem, reviewing literature, and specifying a purpose I received IRB approval from Walden University and then began the data collection process. I sent out emails to agency contacts to attain permission to provide information on my study via either posting my flyer in physical buildings or in an online environment. I was directed to the appropriate people who permitted me to email my flyer to them, which they then posted. I did not speak to potential participants during virtual or in person meetings at the organizations, but all my contact information was on the flyer. I then proceeded to create a Facebook page containing the information from my flyer to recruit case participants using the social media platform.

I encountered multiple unexpected conditions that may have influenced participants or their experiences during the time of the data collection process. The first unusual circumstance was that I conducted research during the Covid-19 pandemic. This affected my research in that face-to-face interviewing was not an option. Instead, prior to approval of my research design I was able to alter my means of acquiring information to a safer method that fit the recommendations put forth during the pandemic. Another unusual circumstance, which had less impact regarding influence and more to do with procedure, was that a week after being approved to conduct research, a hurricane hit the urban area in Northeastern United States. This occurrence knocked out power for tens of

thousands. Due to the hurricane, I reached out to participants who had inquired and informed them that because of the current circumstances, we could alter the interview dates and times.

The final unexpected circumstance that I encountered was that all initial phone calls and emails I received regarding possible participation in this study were females. To address this circumstance and acquire additional participants I used a snowballing technique. Snowballing involved inquiring as to whether any of the female participants knew any males that may fit the study criteria. Using snowballing I was this able to attract five males to my study, which added an additional two weeks to my recruitment process. During the study participants provided all requested information and received information about the study prior to and throughout the interview process. Study participants were informed that measures would be taken to keep all information confidential, which included (a) each participant being issued a pseudonym, (b) documentation being locked away, and (c) the disposal of documentation after 5 years as required by Walden University.

I recruited parents by providing a digital flyer containing information into a virtual common place (Appendix C). Parents who were interested and identified with the provided criteria were asked to email or call me directly. Sixteen parents self-selected and reached out to me via telephone or email. Potential case participants indicated to me that they had seen the flyer posted or heard about the study from a friend. From the potential participants who reached out, I selected participants by willingness to participate in the study and based on whether they met the study criteria.

In addition to interviewing individuals from different ethnic backgrounds, I was also conscious of my desire to include both fathers and mothers to acquire diverse perspectives. It was imperative that all parents who expressed interest fit the research criteria. I questioned potential participants to ensure that each met the research criteria, which included having a child in kindergarten through fifth grade who were in a special education setting and that the child used some type of device for mlearning. Each potential participant was questioned to determine whether they fit the selection criteria, which also included being over the age of 18 and confirming receipt and understanding of my informed consent form.

Each participant was made aware that all interactions would be electronic due to safety guidelines designed to limit the spread of the Covid-19 pandemic. Participants were also informed of my plans to ensure the privacy and confidentiality of information provided by each parent participant. Participants were informed that sessions would be audio recorded and transcribed for analysis purposes. Participants were also informed that no one else would see or have access to my notes or audio recordings containing their identifying information.

It was my expectation that the timeframe to recruit parents would last about 10 days. The time frame lasted 2 weeks beyond my expectation due to additional unexpected occurrences, bringing the total timeframe for recruiting and interviewing to nearly a month. It is not my belief that this 3-week recruitment period or the implementation of distance and remote learning programs affected my ability to gather quality data. Instead, I believe that the additional weeks beyond my initially expected 10-day period for

recruitment allowed for me to ensure that case participants were more diverse. The implementation of distance or remote learning served to increase the use of mlearning devices.

During the recruitment and interview process, one concern that I had regarding possible unexpected occurrences was that some of my case participants would opt out. If that were to have occurred, the grave issue of concern would be not having sufficient information to fully answer my research questions. To offset this concern, I recruited 16 participants, which was double the amount required to reach data saturation.

Interviews

Each case participant fit the criteria of the study and provided a wealth of information during their interview and over the course of the 3 weeks. During interviews, participants were reminded that they could stop at any time if they decided to change their minds. I conducted a 30-minute to 60-minute one-on-one telephone interviews with each parent.

I collected demographic information, then began to use my instrumentation to gather information that would address the research questions. I conducted all the interviews by phone and audio recorded each interview with permission. Twenty-minute follow up interviews were planned in the case that any of the information provided was unclear and further understanding was needed. However, I did not need to follow up with any of the participants as responses were clear and I was able to restate responses to check for understanding during some of the initial interviews when necessary.

All eight of the participants who were interviewed were able to share their experiences openly. It was my determination that these eight participants were adequate to obtain data saturation. The data that I was able to collect in combination with data from literature resources provided me enough information to identify patterns. Using multiple resources on the same topic allowed me the ability to triangulate. I was able to identify similarities and differences in the information provided.

Follow-Up Interviews

I respected the time of each participant and made sure to alert participants using time warnings so that they were not stopped while speaking. None of the participants expressed a desire to complete their thoughts later, and none of the participants used all 60 of the minutes allotted for the interviews. I agreed that if participants could offer further information that could help me to gain a clearer understanding of parental perception of mlearning for students in special education, that we could arrange for a follow up interview. All parent participants agreed that they said as much as they could think of saying on the topic.

Parent 1, recruited via Facebook, decided that instead of a follow-up interview she would clear up any questions I had and then refer the father of her children to the study because they have three elementary school aged children receiving special education services and participating in mlearning. This was a beneficial arrangement as I wanted to gain additional insight and confirm patterns from the information collected during the interview and I also wanted to gain information from the male perspective.

I did request a follow-up interview with Parent 2 who identified as being served by one of the agencies that reached out to. This was because she was continually interrupted during the interview. When I spoke with her again, we agreed that I would place her in my participant pool in the case that I was unable to meet my goal of interviewing eight parents. The participant initially referred to as Participant 2 expressed feeling overwhelmed due to behaviors associated with her children's conditions. I provided her with information on a local community-based program that could potentially aid her in services.

My goal was to make sure that I gathered as much authentic information as possible without disrupting household on goings. My plan was to ensure that follow up questions were like those used originally to confirm my research. However, due to the circumstances, no follow-up interviews were necessary.

Unexpected Occurrences

The largest of all unexpected occurrences during this research was the 2020 pandemic known as Covid-19. During the planning stages of this study, societal functionality was unrestricted and perceivably normal. I elected to discuss mlearning adaptability in accordance to Rogers's DOI (2003) theory of diffusion. I anticipated discussion of the innovators, early adopters, early majority, late majority, and laggards as they pertain to mlearning. It was also my expectation to possibly explore mlearning for its components of adaptability and individual learning.

However, as a measure of safety, in February 2020, school districts across America opted to employ remote and distance learning programs. Mlearning became the

primary method by which students were being educated. Due to the pandemic, which occurred after my planning stage, I was aware that public school systems had all been engaged in distance or remote learning programs, and thus many devices had been incorporated into everyday learning.

Thus, all parents were expected to utilize mlearning and had been doing so with connectivity to their school districts for several months prior my data collection process. With this occurrence, I continued use of Rogers's DOI (2003) theory to explore parents' perceptions. I was thus prompted to focus less on adoptor rates and more on communication channels, knowledge, persuasion, implementation, and relative advantage. In doing so, I was able to explore parents' perception of mlearning for acceptance or rejection based on relative advantage.

Limited unexpected results occurred during my interviewing process and none during my follow-up process as it was not necessary to conduct follow-up interviews with any participants. I was able to collect emails, documents, which had to be signed electronically, and any other necessary documentation including informed consent forms. I kept interactions between myself and the agencies who provided me the opportunity to post my virtual invitation for documentation purposes confidential. Each parent who participated in the study had a child using either a department of education device or a personal device.

Although there were four unexpected circumstances in my research process, which included the Covid-19 pandemic, a hurricane, a regional power outage, and the loss of two recorded interviews, I was able to obtain the information needed to move

forward. There were no discrepancies in my initial plans for data collection noted in Chapter 3 and I did not encounter any unusual circumstances that prohibited me from following my initial data collection plans. The data collection plan, detailed in Chapter 3, was carefully addressed and carried out. Plan creation was important to adhere to in case of potentially unusual circumstances. I was able to follow my plans for participant recruitment, data collection, and data analysis.

Data Analysis

In generic qualitative research, the researcher collects data and seeks to interpret the data via a process of coding, and then analyzes data collected as a method of exploring a specific phenomenon (Percy et al., 2015). To collect rich and meaningful data, I used in-depth interviews in conjunction with a literature foundation. Though I was able to identify concepts in older grounded literature, I incorporated a large collection of information from newer relevant studies.

After obtaining substantial information from literature on my topic, I began the process of research design, which included recruitment and interviews. After recruitment, self-selected potential participants were screened to ensure that they met study criteria, then interview times and dates were set. Once the interview process was completed responses were immediately transcribed so that no connotations or moods were lost during the transition of information. The information was then coded for revolving concepts, repetitive ideas, and patterns, which I used to form categories and then themes.

During the coding process I manually developed codes. As I carefully transcribed information collected during the interviews, I watched for reoccurring words, phrases,

and ideas. After highlighting patterns of repetition, I reviewed the information to gain an understanding that would inform my data analysis. I explored words and responses to make meaningful and original connections. I used this process to move inductively from coded unites to larger representations of data including categories and themes.

Qualitative coding helps researchers define acquired information. Comparing, finding similar themes, and identifying relationships between one concept and another helps researchers extract meaning from collected data (Basit, 2003; Saldaña, 2015). I made sure to use exact wording from each research participant to reflect the true voices of the parents' perspectives. Doing so enabled me to draw conclusions directly from the data.

I used thematic analysis to interpret patterns of meaning within the data collected. "Thematic analysis is to identify all data that relates to the already classified pattern" (Aronson, 1994, p. 3). Researchers use inductive coding to identify and outline patterns from raw data (Saldaña. 2015). Once I identified and outlined patterns and reoccurrences, I created the codes, which in turn helped me to create categories and themes. I rigorously read each transcript while listening to the corresponding audio. Using thematic analysis, I formulated themes from data. I applied word phrases to their relative categories. During the data analysis process themes continued to emerge until I was able to categorize all repetitive ideas. In some cases, I altered the names of coding categories so that related information could be compartmentalized. The process was tedious but allowed me to create meaning from the information collected.

To ensure that the data was aligned with grounded theory while coding, I used the columns which incorporated tentative ideas of how I thought the information would break down. For example, I titled one column connection to frameworks as a starting point for possible themes. Inductive coding was used, and themes were created from the raw data acquired. The theories used to analyze this data were Rogers' (2003) DOI theory in conjunction with Hoover-Dempsey and Sandler's (1997) theoretical model on parental involvement. Using these theories, I sought to explore parental perception on the use of mobile devices for learning for students in special education.

I analyzed information from the interviews using conceptual frameworks chosen for this study. The codes tentatively included (a) time, (b) innovation, (c) communication (channels), and (d) social system as discussed in Rogers' (2003) DOI theory. Information relative to Hoover-Dempsey and Sandler's (1997) theoretical model of parental involvement also had tentative columns. Those columns tentatively included (a) parental motivation, (b) knowledge, (c) values, and (d) modeling. Throughout the process, however, more effective categories were established. Tentative codes that I thought that I might encounter included perceived benefit (PB), negative perceptions (NP), reasons for positive perception (PP), and channels of commutation (CC). Additional codes that I thought I might encounter were educational uses of mobile devices (mL), concerns for harmful effects (HE), and training/information (TI). Finally, I thought that I might encounter a need for a code which represented noneducational use of a device (NE).

Coding with Use of a Qualitative Data Analysis Software

Qualitative data analysis software was used in conjunction with manual coding. I used this data analysis system simply to check for repetition of words or phrases that I may have missed so that I could investigate meaning. I was sure to omit words that held no meaning, such as *the*, *to*, and *and*. One thing that is important to understand regarding CAQDAS or QDA software is that these are electronic tools are meant to help speed up the analysis process. It is important to understand that "these systems do not code the data for you" (Saldaña, 2015, p. 28).

Additionally, I used technology to produce information on word frequency. The QDA software programs that I chose to use to code my data were QDA Miner Lite and Zoho Analytics. I initially also chose to investigate NVivo but I found the use of this electronic coding program difficult. Though I am aware of the electronic ability to cypher through information at a faster pace, setting the parameters for the use of these software programs was challenging for me. I did find that Zoho Analytics provided prompts and had a newer layout than that provided by QDA Miner Lite. This discovery awakened the idea that some of these programs are more user friendly than others and thus, like any other product, must be shopped for. This process in of itself was somewhat time consuming.

Using QDA Minor Lite, the initial output I received confirmed that I was unsure of how to set the parameters. However, I continued my experience with Zoho Analytics and this software provided prompts on what to do. I quickly took notice that this program appeared to cypher data from Excel and other grid-like programs, which included data

tables. I continued to read and manipulate the software to see whether I could produce information from the format in which my documents were created, which were data rich paragraphs. However, the complexities in the newer and fancier software led me back to QDA. One component that I liked about QDA was that I could immediately see how it could be used to analyze information in word processed format, unlike some of the other programs that required information be pulled from graphs and charts. With time, I also became fond of one feature of QDA Minor Lite. The text retrieval tab allowed me to pull up specific words or word phrases, which made for an easy comparison across multiple interviews.

The experience of using a CAQDAS or QDA at the start was time consuming and could be overwhelming. Sandala (2015) indicated that often more time is used as researchers attempt to understand and use the software, than in gaining profound new understanding in which to find coding connectiveness and meaning. However, this was a small barrier, which I was able to overcome with time, patience, and practice. Even with knowledge of what I stood to gain from the use of such tools, my comfort remained in manual coding. I decided to use QDA Minor for the strict purpose of word counting.

I used QD Minor Lite to analyze my research by inputting data rich documents in hopes of highlighting repetitive information for inductive coding. I used this process to move inductively from coded units to larger representations including categories and themes. In doing so, I hoped to derive understanding of the words that were said by parents continually. I also hoped to explore alignment between my interpretation of the data collected, and words and ideas that were continually expressed.

I placed responses from all eight case participants' responses into a field for data rich information. The most frequently stated words from the responses of all eight interviews were the following words: questions (stated 233 times), school (stated 141 times), teachers (stated 61 times), information (stated 70 times), and YouTube (stated 43 times).

All eight parents connected the terms mlearning and mobile device learning to remote learning experiences put in place by local school districts. Although many of the parents expressed preschool learning via mobile device using the ABC Mouse application, parents appeared not to have solid learning apps or go-to websites or applications on which their children could learn adequate information relative to their children's developmental age and learning standards.

The most stated word was the word questions. Parents repeatedly informed me that if they had questions that they would go to teachers. It appeared that the use of remote learning has opened a line of communication between students' families and schools, which has in essence opened a communication channel that I will discuss further in the study results. The most similarly stated words were school and teachers. Combined the two words were stated 202 times. I found that the codes that I derived from my data were somewhat like my tentative expectations with minor exceptions (see Table 4).

Table 4

List of Codes

Code	Description
Overall acceptance (OA)	Acceptance and overall positive experience mLearning.
Perceived benefit (PB)	Regarded mLearning as beneficial.
Negative expression of perception (NO)	Regarded mLearning as in a negative manner.
Positive expression of perception (PO)	Regarded mLearning as in a positive manner
Educational use of mobile device (ML)	Parent believed their child to be learning on their device
Non educational use of m-device (N)	Parents did not believe their child to be learning with a device.
Harm/concerns/fears (HCF)	Parents expressed fear or concern for their child mLearning.
Monitored mLearning (MM)	Parent is involved in child's mlearning/device use process.
Unmonitored use of device (UM)	Parents allowances of child's independent use of the device.
Entertainment (E)	Parent expressed that children were gaming/YouTubing/etc.
Supportive network/communication channels (SN)	Parents contacts for trouble shooting, support, or for questioning.
Training/information/knowledge (TI)	Where/How parents were trained on device use for mlearning.
Motivation	Parents perceived incentive, drive, or inspiration.

Table 4 reflects a final list of codes derived from the data that I used explore the data further. The codes were like what I believed that I might see but varied slightly. I found that opinions were generally positive. Still, parents mostly felt that for best learning students needed to be in school buildings, and viewed mLearning as a supplementary and fun-styled learning. None of the eight participants opted to leave any question unanswered or neutral. I learned that training information (TI) and support needs (SN) were very close, and essentially could have been merged. Still, I do not think that leaving them separate hurt or took away from my research and findings.

Harm and concern were grouped together with fear (HCF). Though the words have different definitions, my initial thought was that parents would list potential harms as screen time or eye strain. Instead, parents listed concerns that "children with special needs need to be taught that not all information provided on the internet is true." They expressed fears that their children would believe information that is false. Parent 2 stated that she had to "teach her child that people can put anything on the internet." Additional parents added concerns for internet safety. Thus, harm and concerns were grouped together. I also added *fear* as it was a word that I saw repeatedly during the coding process. Parents referred to fear on more than one occasion. One parent sated, "I fear that sometimes with internet learning, that children think that they're speaking to other children, but they may be speaking to adults." Many parents expressed mistrust of the internet.

Amongst my emergent codes was overall acceptance (OA). Many parents used phrases indicating that overall they do or do not accept mlearning processes. Many of the parents were straight to the point. Some parents expressed liking mlearning for support, while some were frank about not believing that mlearning was appropriate for their children, due to their child's inability to remain focused on tasks without one-on-one assistance. Codes seem to emerge effortlessly from inductive coding and sifting through data. I was not surprised that the codes that emerged did not meet my assumptions, as I expected to be guided by data. I did have preconceived thoughts of what some of these codes might be, but I was conscious to check any biases relative to my own thoughts and expectations.

I shared my codes with colleagues and my chair and documented notations in my reflexive journal to ask about any alignment or repetition that I may have missed. I also did so to seek advice on whether any of my codes should be merged or separated. The sharing of information excluded identifying information. I shared codes, categories and themes that characterized the findings of my data analysis.

I reviewed my transcribed interviews several times while listening to the corresponding audio. I aligned the information with codes to ensure that I had categorized the information as best I could. I sifted through the information to find commonalities in participant responses. Convergence from raw data to codes, categories, and themes began. All participant data appeared to have congruence. None of the data received appeared discrepant. Even with differences in background and opinions, there were no discrepancies in the information collected. My chosen research design allowed for triangulation of data and increased validity of research results.

Evidence of Trustworthiness

Trustworthiness in qualitative research refers to the validity and reliability of the information being presented. Thus, research must be confirmable, credible, dependable, and transferable. Generally, when writing dissertations, researchers seek to explore, highlight, compare, analyze, and report study findings and documented theories within the existing body of research. In doing so, researchers steadily gather what is known, and chart similarities and differences to reflect on what is acknowledged about a specific topic (Krathwohl & Smith, 2005). During the research process, new questions relevant to social betterment are posed, addressed, and added to the existing body of known research.

Themes and similarities become observable and notable. In qualitative research, researchers seek to acquire depth of knowledge on social phenomena and many common themes throughout research studies can be identified. Throughout the research process, I was able to systemize methodology and analysis plans to ensure measurability in my research. The following sections explain how I was able to ensure the accurateness of the findings and quality of my research analysis.

Credibility

Many characteristics within qualitative research help to ensure quality. Credibility within qualitative research ensures the presence of valued characteristics. Shenton (2004) indicated that research should paint a true picture, reflect sufficient detail, display transferability, and be justifiable across common circumstances. Additionally, creditability refers to whether research has tested what it intended to address, and sifts through studies to ensure such (Shenton, 2004). Throughout my research efforts, I searched for commonalities and patterns which contributed to the creation of themes as a method of establishing triangulation (see Stake, 1995; Yin, 2013). I was able to collect information using precise instrumentation. I established understanding of information by asking questions to explore true meaning when interviewing case participants. I used methods of checking bias, such as conversing with colleagues and reflexive journaling. I was also sure to use several sources and resources so that information came from many places. Lastly, I followed any lingering questions and understandings by allowing study participants to confirm my understanding of information that they provided.

Transferability

Transferability occurs when sufficient detail has been cited, which allows for readers to gather whether research can go across fieldwork, or how applicable this research may be in varied context (Shenton, 2004). Yin (2016) indicated that assessing a researchers' ability to generalize their study shows transferability. Transferability may also be known as external validity. Knowing whether research findings can transfer to different contexts makes it transferable. To enhance transferability in my study, I included case participants that differed in culture, gender, socioeconomic backgrounds, relationship status, and location. Each participant brought forth different experiences, widening the reach of my study across demographics. These distinctive individuals provided overlapping information even with very different circumstances.

Conceptual frameworks are another basis on which my research can be deemed transferable. Similar research studies may prove frameworks repeatedly (Yin, 2016). For example, Hoover-Dempsey and Sandler's (1997) theory on parental involvement consistently outlines that the more parents are involved with student learning, the more likely students are to attain learning goals. In my study, parents who showed more interest in their student's mlearning, had students with higher quality mlearning experiences.

Thus, this groundwork has the capacity to make connections outside of my direct study. According to Hoover-Dempsey and Sandler (1997), parental involvement enhances children's in school educational attainment. I used these grounded works to explore whether parent perception and involvement also enhanced mlearning for students

in my target population. I also sought to explore how the diffusion of devices with mlearning capabilities were being utilized in households of parents who have students with special learning needs. Regarding Rogers' (2003) DOI theory, relative advantage influences an individuals' acceptance of a particular innovation.

In my study, parents who saw mlearning as beneficial used mlearning more frequently. Also, parents who expressed connectivity to a school system to show them how to use devices for learning expressed more use of these devices for learning and less for entertainment or communicative purposes. Parents who used devices for the purpose of learning used devices for learning. One true example of this pattern is that all eight parents cited using ABC Mouse for preschool children to learn numbers and letters as preschoolers. When asked, parents indicated having seen that they could do so from putting on educational programs for their children on the Disney Channel. Other parents indicated that they were told or shown the application from people who used and approved of it. Nevertheless, due to the nature of uniqueness found in qualitative research, it is my understanding that my research may not fully be transferable.

Dependability

Dependability is the characteristic that helps ensure that another researcher could conduct similar research and yield similar results (Yin, 2016). To conduct this research, I used multiple sources of data. All interviews were conducted one-on-one, which prevented influence sometimes seen in focus group studies. Participants were probed to ensure full understanding of their input. I used techniques such as paraphrasing and asked parents to confirm that my understanding aligned with the information, they provided me.

These methods were used throughout my research to heighten dependability. I was also able to use existing literature, which incorporated both aged and new research. Combining literature review findings with information from study participants allowed for triangulation of data.

I followed my research design carefully. I made sure to alter anything that would confuse my research approach and methodology. I sought feedback from peers and mentors whenever necessary, being sure to maintain confidentiality always. I rewrote my proposal several times to ensure alignment. I was able to make sure that my research questions, instrumentation, and methodology were all set to answer my research question. An example of this alignment alteration was being sure that I used exact terms so as not to confuse readers regarding the intent of my research. Peers and faculty observed and provided feedback on how to align my study further.

The data that I collected from individual interviews provided rich responses. All the questions were aligned to answer the question: What are parents' perceptions of mlearning for students in special education? The wealth of information obtained during the interview process allowed me analyze data from authentic responses to my research question. Records were kept ensuring detailed records of my research procedures. All information will be stored for 5 years in accordance with Walden University requirements. After the 5 years elapsed all data will be destroyed.

Confirmability

Confirmability is a characteristic within a study, which allows for researchers to ensure that research is constructed in a nonbiased manner and reflects the findings of the

study and not the thoughts and opinions of the researcher(s). With confirmability, researchers ensure that findings are shaped by study participants and not by the researcher (Shenton, 2004). During this process, I remained conscious of any biases. I kept a reflexive journal to record the progress of my learning, as noted in Chapter 3, as a method to maintain confirmability. I notated personal feelings or thoughts and made sure to remain conscious of any biases that could affect my study. During the research, I was in constant contact with my professional colleagues, which included professional peers and mentors. In discussions about my research, I left out all identifying information. These discussions with peers and mentors helped me to process information and separate data from sentiments, which allowed for objectivity. Throughout this study, triangulation was a major strategy and I collected data from multiple sources. All these strategies and techniques led to heightening confirmability, credibility, dependability, and transferability in my study.

Results

With this study, I sought to obtain the answer to the research question: What are the parents' perceptions of mlearning for children in elementary school special education programs? Additional research questions were: (a) What are parents perceived benefits of mobile device learning for students in special education? and (b) What are parents' perceptions of the disadvantages of using mobile devices as tools for teaching students in special education? The purpose of this study was to explore parents' perceptions of mlearning for elementary grade students with special education learning needs who have IEPs. With this study, I took an in-depth look at the way mobile devices were being used

to learn at home in informal learning spaces. The target population was parents of children in elementary school special education programs in an urban Northeastern United States.

During my data analysis process, I found codes, categories, and themes which emerged from raw data. I used inductive coding to extract themes from repetition and patterns in the data. The sections that follow include a discussion of the themes that emerged during data analysis: (a) parents' approval of mlearning (OA); (b) parents' concerns with mlearning (HCF); (c) parents' negative perceptions of mlearning (NO); (d) parents' expressed needs for the success of mlearning, which included training, information, and knowledge (TI); and, (e) parents' perceived benefits (PB) of mlearning. Table 5 illustrates codes derived from the instrumentation tool which cohesively revealed parents' perception of mlearning for their children.

The results of the information obtained during this study may aid in closing gaps in research for more effective implementation of remote learning for elementary students in special education. With this study, I might enhance at-home mlearning for students in special education leading to parents feeling more prepared to support their student's learning.

Themes

Table 5 displays research questions alongside themes derived from the information gathered during the data collection process. The instrumentation tool was used to explore specific area of perception relative to Rogers's (2003) DOI Theory and

Hoover-Dempsey and Sandler's (1997) Theory of Parental Involvement. Analysis of these codes lead the themes that can be observed below in Table 6.

Table 5

List of Codes Derived from Instrumentation Questions

Code	Instrumentation tool question
Overall acceptance (OA)	What is your overall perception of mobile device learning (mlearning/remote learning)?
Perceived benefit (PB)	Do you feel that your child could learn as much using a device as they can from books? Brick and mortar School?
Motivation (M)	How would you describe your child's experiences with their devices? If the experiences are described as positive, why. If the experience is described as negative, why?
Negative expression of perception (NO)	In what ways do you feel that the way you use your device helps your child learn?
Positive expression of perception (PO)	How does your child interact with their device usually? What does he/she normally do with it if you don't instruct them?
Educational use of mobile device (ML)	What (if any) learning applications do you have on your child's device?
Non educational use of m-device (N)	How did your child use a device to learn prior to remote learning?
Entertainment (E)	When do you generally allow your child to use their device?
Monitored mlearning (MM)	What ways do you limit or monitor your child's time and activities on their device?
Unmonitored use of device (UM)	What do you do while your child interacts with his/her device?
Supportive network/communication channels (SN)	Where do you learn about new programs to show him or her?
Training/information/knowledge (TI)	What can you recall teaching your child how to do with their device?
Harm/concerns/fears (HCF)	How were you taught to use a device (including applications and programs) for your child? When your child began to maneuver the device independently, how did he/she use the program that you showed them?
	What do you think could improve your perception of learning?

Table 6

Research Questions Aligned with Themes

Research questions	Themes
What are parents' perceptions of mlearning for elementary aged students in special education?	Parents' approval of mlearning Parents' concerns with mlearning Parents' negative perception of mlearning Parents' expressed needs for the success of mlearning (including training and knowledge)
What are parents' perceptions of perceived benefit of mlearning for students in elementary school special education?	Parents' perceived benefits (PB) of mlearning

Theme 1: Parents Approval of mLearning

The first theme encompasses parents expressed acceptance of mobile device learning. Parents enthusiastically shared emotional components of either liking or disliking mlearning. During the collected interviews, participants used the phrase "I think that" a total of 27 times. Cohesively, even with some parents indicating that students could learn as much on a mobile device as they could in school, parents still viewed mlearning as a support. Specific to special education, parents expressed overall acceptance of mlearning as a supplement to classroom learning.

Five out of eight parents indicated that devices contain features that engage their children in learning. It was then that the concept for overall acceptance arose. One parent stated, "It's cool for students to use until they return to school." Five parents indicated that children continue to need socialization. Parent 7 stated, "Learning using devices is alright, but learning is about experiences, these kids need to go out into the world, play, and make mistakes." Other parents supported the idea that devices were good for

entertainment-styled learning. In this section, I discuss the properties of mlearning, and parents' perceived thoughts regarding how those properties have driven them to accepting or rejecting the idea of mlearning.

Mobile Devices as Learning Tools

Parents affirmed their approval of mobile device use overall, but not necessarily for their primary source of learning. Parent 1 indicated,

> I guess it all depends on the child. It all depends on the child because some kids can. For them, the learning from the remote device might work, and for others, they need that in-person instruction. And then you've got other kids that work with both, they need both. So, as far as mine, mine need both. One hundred percent mlearning, they'll get it, but it's just that I don't want to feel like they're not learning as much as they need to because they're home allof the time.

Parent 2 said,

> I think it's useful. Like it can keep children engaged because they get to learn a different skill. They get to learn typing how to use and process Windows and other programs on a computer, way ahead of time. Like before I did . . . Because, I learned in high school. I think it's a great experience for them, and I think that it prepares them for the future. Still, I think they need to be in their physical schools because they still need to learn how to socialize.

Parent 7 expressed his sentiments by stating, "I feel like device learning is helpful during this pandemic, but I think they learn more going into a brick and mortar school honestly." Overall, these statements indicated approval, but they also provided information relative

to parent buy-in, and parents' approval of mobile devices learning for supplemental learning, but not necessarily for primary means of learning. Prior to remote learning, parents cited YouTube as the site that their children would go to most for learning.

Two out of the eight parents identified having children on the Autistic spectrum and believed that mlearning would suffice as their children's primary means of learning so long as they had adequate instruction. Parent 4 stated that she believed that her child could learn as much in an mlearning program as he could in a brick and mortar school. She stated,

> The thing with him, is that everything distracts him. So, when he is home, here by himself, there's nobody to distract him. When he sits. He sits and does the work at the computer. If he was at school, something would have distracted him.

I discuss this comment in Chapter 5, as it was indicative of a potential concentrated area for future studies. Many of the parents discussed the differences in student learning styles and agreed that mlearning might be sufficient for certain students due to characteristics of their learning conditions.

According to four of the eight parent participants, tablets and phones were more so for entertainment while laptops were compartmentalized for learning. The only time that iPads were compartmentalized for learning use was when they were devices that came from the children's school for remote learning. When asked about device functionality, Parent 4 stated that "for the desktop, he does his work, and for his iPad, He tends to go on YouTube." Parent 7 stated that a phone is primarily for communication, a

laptop would be educational and would be used "more to search for things," and that with a tablet his son would "use a tablet like . . . to play games."

Parent 2 stated her children's devices were used "for research and school projects . . . and for entertainment." When probed further she indicated that her children used their laptops primarily for work and their phones primarily for entertainment. When asked how she learned to use each of those devices, she stated, "I learned to use the computer to type in a class in high school." When asked about how and where she learned to use a tablet or phone in follow up questioning, she indicated that she was self-taught. In providing this information, Parent 2 reaffirmed that value of communication channels.

Parent 2 indicated that she taught her daughters to use laptops the same way she was taught. She further stated that she taught them how to place their fingers on the home keys, search the web, and maneuver between tabs as she was taught in high school. When asked where she learns about new applications or programs for mlearning, Parent 2 expressed,

> I actually speak to the teachers about different programs, different learning tools, and different options so that my children do not get bored because they can become bored and stagnated when they're using the same things. So, I find that when I speak to the teachers, I get different resources and switch things up and so they stay entertained while learning.

Parent Experiences with Mlearning

Participant 2 further stated that she recently taught her daughters that they can learn using their cellular phones. When I asked what led to that, Parent 2 informed me

that while in a higher education learning program not long ago, she used to use her phone to look up information for papers. She stated that the phone was the only thing that she had at the time and indicated that she was desperate to get her work done. She stated that a friend of hers told her about the use of speech to text technology on notepad and that she could then copy the text to a document from an email when she got near a computer. Parent 4 also stated that she learned to use a laptop in school and stated, "back then, I took a few computer classes."

Parents expressed having their own professional learning experiences with laptops which led to their overall acceptance of laptops as learning tools. Both Parent 2 and Parent 6 stated that they themselves were enrolled in online learning programs. Both parents expressed high levels of belief in mlearning.

ABC Mouse. All parents also discussed using ABC Mouse as a means of allowing their children to learn at preschool ages. Parent 6 stated that his son, who functions at a preschool age, "uses the ABC Mouse application to learn how to count, and to do ABC's and 123's." Participants admitted to seeing devices as entertainment prior to remote learning with the exception of preschool aged children watching programs to learn how to count and helping them to memorize their alphabet.

YouTube. YouTube was also cited as a major tool for learning. Though parents did admit to noneducational use of the tool. Some parents stated that they sometimes used YouTube to help them to learn, and therefore have transcended the idea of looking up how-to videos on YouTube. Parent 7 stated "I would learn from like a book where you can learn how to do something, but nowadays, if you want to learn something, you just

go to YouTube." Parents who used specific devices for learning expressed teaching their children that they could also use those devices for learning.

Parent Approval of Mlearning

Parents expressed variations in their levels of approval for mlearning. Even when parents approved mlearning it was most often not as a primary means of education. Other parents approved of mlearning as a primary means of education with the support of some type of live instructor.

Source of Technology. One interesting finding was that parents who received devices from the department of education were more accepting of devices as tools for learning. Parents who had their own devices for their children expressed acceptance for devices as being for entertainment and occasionally for learning.

Specific Use of Technology for Learning. Parents did not express key components of mlearning technology that could be used to enhance learning for students in special education. Read-to technology, text-to-speech technology, speech-to-text technology, spellcheck, autocorrections, grammar check, and other features meant to create for autonomous learning experiences were left unmentioned by all the parents in this study.

Still, parents accepted mlearning as a solid form of learning for their children. Parents did point to the needs of their children who engage in mlearning, which is discussed in another section. Parents also collectively agreed that because of the Covid-19 pandemic mlearning would become more prevalent regardless of how they felt.

It was my expectation that autonomy, easy correction of errors, self-correction features, read-to features, undoing features, and text-to-speech features would be amongst parents' primary reasons for accepting mlearning for students in special education; however, these features were not. This created within me, a question of whether parents have ever been taught or told of such features. I noted these questions in a reflexive journal and discussed them with university faculty as means to remain unbiased and remain aligned with my intended research questions. I used inductive coding and allowed the flow of information to indicate parents' primary reasons for approval, which were access and engagement.

Access

Parents truly appreciated the idea of being able to access their children's work online. Remote learning came up as a topic repeatedly. Parent 7 expressed "During this time, that we have right now, mlearning is helpful because the kids are still able to learn. And they're still able to take that next step to a better education." Parents expressed feeling overwhelmed with mlearning as a core means of education at this time, but loved the idea that students could still see peers via mlearning devices.

Parent Training

The primary source of frustration seemed to be the parents' lack of understanding about how to teach their children. In fact, all parents used the terms "someone to show me," which was indicative of the idea that requiring modeling or live instruction in conjunction with online access would be helpful for both parents and children. Parents

expressed contentment with the idea that they could see teachers and ask questions without leaving their homes.

Parents who deemed themselves technologically savvy expressed that they liked that they could access online materials if they did not understand a particular topic. Many parents indicated that they loved that that could look up the topics on YouTube. Some parents expressed delight in access to mobile devices for learning because they felt that this type of learning would prepare students for the future. Parent 2 stated,

> I think access to this type of learning is useful. Like it can keep children engaged because they get learn different skills. They get to learn typing, how to use and process, Windows and other programs on a computer, way ahead of time, before I did. I learned in high school. I didn't really know about computers before then. I think it's a great experience for them.

Other parents expressed access as feeling like being more involved in their child's learning. One parent admitted disliking remote or mlearning at the start. However, due to access and involvement, Parent went on to say that "I was really uncomfortable with device learning, but had no choice. Now, I enjoy it now." This same parent brought up the idea that parents of students with limited-mobility may be positively impacted by access to mlearning. She appeared to recognized the value of equity in mlearning. Thus, access and the ability to learn from personal learning spaces was a component that all parents expressed as a positive aspect of mobile device learning for students in special education.

Mlearning for the Future

Device learning or mlearning peaked in 2020 because of social distancing efforts to reduce the spread of Covid-19 (Lipomi, 2020). Parent 2 and Parent 6 both expressed the need for their children to learn to used devices adequately, and that doing so would aid in preparation for their future. Parent 2 explained, "I think that it prepares them for the future." She further explained that she herself is involved in an online learning program. She expressed being grateful that her children had the opportunity to learn these devices sooner than she did. Parents expressed acknowledgement of feeling that technology use is the way of the future.

All parent participants acknowledged that they believe that mlearning through remote and distance learning programs has changed education forever. Such expressions were noted as perceived benefits (PB). Parents of students in special education expressed accepting device use as beneficial to their child in the future, as devices often have features that engage learners and can be played repetitively. Parents expressed seeing teachers use mlearning in ways that they could then use to help their children learn.

Non-Educational Device Use

Parents expressed that overall they have accepted the use of mobile devices in their homes. As per parent participants of this study, device use in the home includes television, computers, tablets, and phones. Participants expressed that mlearning had not been a primary use of their devices until they received devices geared towards learning from the department of education, or until they began to use personal devices for distance learning programs.

Noneducational uses of mobile devices (N) were discussed often during my interview process. Parents stated that they do feel that laptops are more likely to be used for looking up information, while other devices suffice primarily for communication or entertainment. Parents collectively stated that they perceive mobile devices as entertainment devices that can, at times, be used to learn. When asked about the most common uses for devices, parents listed apps which included YouTube, Netflix, Tik Tok, Hulu, gaming (Roblox), and listening to music (Spotify).

Parents admitted using these devices as reward systems. Parent 4 stated, "I allow my child to use his device to play games after he finishes his work." Thus, parents expressed using their children's devices as rewards for desired behaviors. Parent 3 stated, "If my child misbehaves, I do not allow him to use his tablet." While Parent 7 stated,

> Television was the only device that had growing up, we studied books, and communicated on phones. Tablets were not a thing when I was a child, maybe that's why I do not view them as a go to for education.

Characteristics of Mobile Devices

Still, parents of students in special education expressed acceptance of devices because of other components related to noneducational use. Parents stated that mobile devices can keep their children's attention and keep them engaged during learning. Parents' perceptions were a large factor in what each device was being used for. Features and characteristics of mobile devices that kept students engaged included animations, music, dancing, and other features, which added to parent acceptance and therefore use of mlearning. The largest factor for rejection of mlearning, and mobile device use

altogether, was a parent's lack of knowledge on apps, functionalities, features, or how use the devices in an effective manner to help their children learn. Parents also identified fears, which is discussed later in this chapter.

Parent 5, Parent 6, Parent 7, and Parent 8 all expressed that shows, short videos, and films can serve as educational tools and be simultaneously engaging. I should highlight that all these case participants were male. Parent 7 indicated that particularly for children in special educational, depending on their condition, technology helps significantly. He further indicated that simply watching a show with his child, or playing a game with his child on the device can provide the child with a learning experience, and create for parent-child bonding. Male participants cited bonding with children as a positive feature of mobile device use. All the study participants affirmed that their children learning to use mobile devices to obtain information is vital to future schooling.

Parents were honest in saying that at this time, devices such as cell phones and tablets are mostly used for enjoyment (N) outside of remote or distance learning programs set up by the department of education. Vittrup et al. (2016) suggested that despite possible distractions of students desiring to use devices for entertainment, technology should be considered a viable component for teaching students. However, Vittrup et al.'s research article did not involve students in special education but did involve students in primary grades. The research reaffirmed the important role that technology plays in learning today.

Rogers' (2003) indicated that parent acceptance (OA) of an innovation is based upon their perceived relative advantage. Most people will continue use of an innovation

that they deem as beneficial or helpful (Rogers, 2003). A new idea which facilitates ease or higher efficiency presents a relative advantage (Rogers, 2003). Most of the parents in this study found relative advantage in mlearning during a worldwide pandemic.

I identified relative advantage as a perceived benefit (PB). Many of the parents recalled having to go the library and look up things in an encyclopedia, or even waiting for the evening news for information. Parent 7 stated, "these children have everything they need at their fingertips." Parents expressed desires for continued use and excitement about their children learning how to use devices. These positive attitudes were indicative of relative advantage. Parents expressed an understanding that mlearning is a new way of learning, and as such expressed understanding that it would come with components that they both liked and disliked.

Theme 2: Parents Concerns with Mlearning

While parents expressed an overall approval (OA) of mobile device learning for students in elementary school special education programs, frustrations with technology and lack of understanding on how to use devices, or negative expressions (NO) were discussed. These negative expressions were shared as harms, concerns, and fears (HCF) are the foundation for Theme 2. Sentiments related to HCF ranged from issues with connectivity to fear of internet predators and exposure to explicit content. Some of the concerns identified in this section are relative to overall device use, while some parents discussed their frustration related to distance or remote learning experiences with teachers and school districts.

Learning at Home

Other reoccurring concerns identified by parents relative to mlearning for their elementary school aged students in special education were compartmentalization and distractibility. Parents expressed that they do not feel that their children have the capacity to learn as much using mlearning as they do in brick and mortar schools, simply because they are at home. Parent 1 stated,

> It's just that it's different, the live instruction from home on the laptop versus it being in school. My kids, when they are home, they get too comfortable. They are not really paying attention as much as they need to. I kind of have to check on them and give them reminders like; Are you paying attention? Can you explain what she just said? With them being in school, it is like they are more active. They are more alert. You know?

Her statements were like those made by other parents. Parent 2 mentioned other realms of compartmentalizing between school and home, such as her children's needs for personalization of their space and more school-like schedules. Parent 2 stated,

> Yeah, maybe they can start earlier, because it starts so late, the kids want to stay up late. And then they get up late. So, it just sets them back, so I think if they could start it earlier in the day and end it early. That would be good.

Parent 2 also suggested that perhaps multicolored devices and other personalization tactics could help her children to engage further. Her interview prompted my thoughts on how teachers prepare and personalize spaces for student learning. Existing research supports that physical classroom environment has the potential to affect children's

behaviors, academic performance, and cognitive development (Barrett et al., 2015; Maxwell & Chmielewski, 2008). Similarly, Parent 3 stated,

> Going to school is better because they are more active than not because they just leave the house. So, they are more active. They are more focused. I feel like when they are home, they feel like they can slack off. They are like okay we are home. We don't have to get dressed. We don't have to do much. We can do our homework at uncertain times. No! See, I feel like you need to be focused! As you were focused at school, be focused at home. The same exact way!

Here, this parent also highlights an issue with compartmentalizing between work and school.

Parents expressed fears of mlearning for their students regarding online etiquette, which included identifying viable information and online interactions with others. Parent 2 expressed feeling that her daughters were vulnerable to misinformation due to their learning conditions. She stated, "I had to let them know that they can't believe everything that they see on the internet. That things (information) have to be from a from a reliable source. I taught them about reliable sources and stuff like that."

Online Content

Other parents expressed fear of online content but in a different manner. Parent 3 and Parent 8 expressed a fear of their children being exposed to explicit content. Parent 3 stated,

> When they use the device, they learn a little too much and I don't like it. For example, on YouTube, they can see girls kissing girls, or boys kissing girls. With

> my kids I don't want them to know anything about that. If they see mommy kissing daddy, it's a peck and that is it. We love each other. They should know that it is only for people that you love and that love you. They show too much on the devices and I don't want my kids to know so much because they are still young. This world is moving too fast for them.

In alignment with concerns for mature content, Parent 8 stated,

> The videos are not filtered. So, they might be watching something and the next video will have curses or bad words. So, where it is not their fault that it came on, you know, it's still inappropriate and they didn't know, things like that are concerning.

Thus, parents were concerned with the unlimited exposure to mature content that may be available on mobile devices.

One parent expressed an overall concern for safety beyond online exposure. Parent 8 discussed concerns with both mlearning and with remote or distance learning programs from schools going long-term. Parent 8 stated that when children are in classrooms,

> They can ask you certain questions privately. Whereas when they are not, they might not have the chance to ask certain questions when they are on the remote learning platforms because they everybody to hear them. They might be a little scared to ask something when asking a more personal question.

In an article, Blitz et al. (2020) discussed schools as sanctuaries for urban children, "People who live in financially poor communities are frequently exposed to a range of

traumas and losses that affect individuals, families, and schools" (p. 1). Parent 8 expressed a need for students to learn to incorporate mobile device learning into schools but also articulated a need for children to go into school buildings for social learning and safety purposes.

Technology Reliability

Other collective concerns of parents included device functionality, internet reliability, and live instruction. Parent 3 and Parent 4 both expressed having broken devices that did not work, and issues with connectivity for long-term learning. Four of the eight participants interviewed discussed their negative experiences with attempting to log into different platforms until they were able to contact teachers.

All eight parents interviewed used terms to indicate that their children learn best when someone models the skill for them. Parent 3 expressed that parents often do not understand the new methods being used to teach their children, thus leading to a need to ask questions. Parent 3 stated,

> Back then when in school, they would give examples. They would give you a math book, you would get examples. Besides them showing it to us, they would write on the blackboard. They would give it to us on paper. Examples of how to do a certain assignment would be shown. When we were doing remote learning, they just left assignments, and sometimes they would leave an example in writing. In words only, but they don't show examples of how to do it on your own. So, you would have to get in touch with the teacher. Lots of times, they still don't understand, and I still don't understand.

Parent 4 expressed similar confusion when her son engaged in mlearning. Thus, another prevalent concern of mlearning from parents, is that they may not understand lessons and therefore may not have anyone to support learning for elementary aged students in special education.

Theme 3: Parents Expressed Need for Support in Mlearning

Parents expressed a need for support with mlearning. It is important to note that almost all the parents connected the idea of mobile device learning to remote and distance learning plans set up by school districts, with one exception. When asked about learning prior to the 2020 pandemic, parents reverted to applications synonymous with preschool learning such as ABC Mouse.

ABC Mouse is an award-winning learning application that caters to young learners (Ponciano, 2014). Parent 1 stated "I showed them a few apps, ABC Mouse was one that I can remember." Parent 3 stated, "She has the ABC Mouse app." Parent 5 stated, "Yes, he usually watches the ABC Mouse app." Participants who mentioned the app discussed their children learning to count, and learning alphabet and letter sounds from the application. Parent 5 stated, "ABC's and 123's that's the main thing, and he likes to watch on the app."

Even parents who had fifth graders who functioned at a higher cognitive level mentioned the ABC Mouse application up until the mention of remote learning. Collectively, an analysis of this information highlights that parents may require help with knowing what applications to use to address the learning needs of elementary school aged students.

Additionally, parents reported needing help with understanding elementary school content. Parent 3 indicated that she does not understand the current way that math is being done. She stated,

> I think that we just have to find something that they can relate to as far as these devices are concerned because if you just give it to them work, and say you have to do this work, keeping it basic! Some don't even explain how they are supposed to use it, or what is supposed to be done. So, it's going to be a little hard for us to get what's going on.

Regarding student learning, Parent 3 further stated, "They just leave assignments and leave an example in writing. So, you would have to get in touch with the teacher."

Modeling

The need for modeling was one of the most prevalent themes to surface across all interviews. I decided that because modeling is a way to teach or train that it should be grouped within parent's needs for support. Parent 1 stated, "for the educational devices, the teachers come onto Zoom and do a demonstration for the parents." Parent 3 continuously referenced a need to see the teacher do the math problems. When asked about concerns Parent 4 stated,

> The teacher wasn't doing visuals. With the ELA, my son could see the teachers. The teachers would give them the work, they see him (modeling). They talk to him about the work and everything and about what he was doing. So that we enjoy that. The first teacher, she just puts the work on the website and he just goes and does it. Sometimes he does not understand. So, we have to email it to her.

Parent 1 stated, “It’s just that it’s different, the live instruction from home on the laptop.” Modeling also came up continuously in phrases, such as “watching YouTube videos,” “learning how to do it on YouTube,” “someone showing him how to do it,” and “visual learner.” Parent 7 stated, “Nowadays, you want to learn something, you just go to YouTube and watch a video.” He further elaborated on how videos could be watched multiple times and paused for convenience. Parent 1 stated, “For the educational devices, the teachers come on to Zoom and do a demonstration for the parents. From there I show my kids.” Thus, this demographic - that is parents of students in elementary school special education programs - have all cited modeling as a learning need for their children.

Feedback from Teachers

Parents expressed a need for feedback for more effective mlearning and in association with positive mlearning experiences for their students. Parents repetitively used words and phrases such as “I need to ask questions,” “reaching out to teachers,” and “emailed teachers.” Parent’s expressed needs for modeling in conjunction with the need for timely feedback leading to parents expressing a desire for primarily live learning. Parent 3 stated, “I would have to get in touch with the teacher when they still don’t understand.”

Parent 2 stated, “So, I find that when I speak to the teachers, I get different resources.” Parent 1 stated, “We do facetime conversations, but it’s not a guarantee that their teachers are going to pick up.” She further stated, “Well I mean online learning helps him, but I think he needs that ‘in person’ instruction more because he can ask as many questions as he wants to.” And Parent 5 stated,

> I like the on like online programs, but I'm from a time where you sat down and the teacher taught in front of you. So, I think that would be a good way to go. That would also take a little bit of pressure off of the parents.

Parent 6 stated,

> I just feel like there should be more interaction with the teachers. I see that there's a lot of programs like Zoom meetings. I think that just like how a classroom is set, and the kids sit down. I think it should be the same exact way but on a device.

All eight participants discussed asking educators questions and receiving responses. All eight participants also discussed the need for modeling for their students to learn.

Technology Support and Training for Parents

All the study participants explained understanding different uses for mobile devices. Parents who expressed being more tech savvy reported more positive experiences with mlearning. All parents reported being self-taught when asked how they were taught to use their devices with the exceptions of Parent 2 and Parent 4 who explained that they had taken computer classes to learn how to type and function on a computer while in high school. Parent 2 stated, "They get to learn typing how to use and process Windows and other programs on a computer, way ahead of time, because, I learned in high school." Parent 4 stated, "Back then I took a few computer classes." Both reported teaching their children to use computers to look up information, and even how to write school documents prior to distance learning programs.

When asked how she taught her children how to use a device, Parent 2 stated,

> I taught them how to search the web, how to search names, how to make logins and passwords, and how to use Zoom. I taught them Google Classroom, how to go back and forth from one window or tab to the next one.

For many parent participants mobile devices, which include tablets, laptops, and cell phones, were not identified as learning devices. Parent 7 stated, "A Tablet? Uh, I'd use a tablet like . . . to play games." When asked about what their children would do with personal mobile devices without being instructed, parents explained that their children would play games. Regarding department of education issued devices, parents stated that the children would log on or play on educational apps due to device restrictions. Parents appeared unaware that they could create their own restrictions on personal devices.

Summary, training, knowledge, and information are important components in mlearning. When discussing parent involvement, parental efficacy, knowledge, and skills lead to higher-leveled involvement. According to Hoover-Dempsey and Sandler (1997), basic life content skills, personal motivation, and invitation from schools and teachers for involvement lead to higher leveled learning and goal attainment in students.

In instances of very high parental involvement, parents can encourage, model, and reinforce student learning. Hence, students' intrinsic motivations, strategies, and self-efficacy heightens. According to information collected during this study, parents feel unable to model use or reinforce student learning. Instead, parents report contacting teachers or searching for YouTube tutorials on how to both use devices and learn content so that they can teach their children. In some cases, parental involvement in mlearning is

limited to watching. Parent 4 expressed learning lots from her children and seldom being the one to teach them, but instead learning from them.

Other parents expressed reaching out to teachers and hoping that they called back. Some parents limited themselves to helping students to simply log in. One parent discussed being aware that his children needed more support from parents with mlearning. When asked about how mlearning could be improved, Parent 7 stated, "Honestly what could make it better is if more parents gave the time to sit down with their kids and learn with them." He highlighted a need for parent learning to reinforce student learning and support.

Self-Taught. Regarding teaching or training on the uses and features of mobile devices, parents in this study identified as being self-taught. Parent 2 stated, "I guess you can say that I'm self-taught." While parent 7 stated, "I would say that I was self-taught." Parent 3 stated,

> If somebody else does not already know how to use it, and it's new to us, I will just pick it up and just go along with to see what we come up with. But other than that, I learned all stuff from me doing childcare.

She reported, much like the other parents, that she tinkers with the device as a method of exploration to see how the device works. None of the parents reported having experiences with trainings or tutorials that could aid them in exploring the functionalities of the device that could potentially help their children. According to the data collected, parents are versed in informal functionalities of device use, which are geared more towards entertainment and communication.

Lack of Support from District. While parents reported not being trained to use personal devices and expressed being self-taught, they also highlighted that there was no support issued from departments of education surrounding the implementation of mlearning. Throughout the study, besides immediate family, only teachers were named as supports. While teachers may be able to aid in learning content, it is unknown how many teachers were able to troubleshoot tech support.

Parents reported a positive perception with the help that they received from the teachers. Still, even when parents deemed themselves "technologically savvy," such as Parent 2 and Parent 7, very little was mentioned about the features that make mlearning an effective tool for students with special learning needs. Soykan and Ozdamli (2016) named mlearning as an essential tool for students with special needs. Still, these features of learning personalization to enhance autonomy and capitalize on differentiation and accommodation are not being used, "Teachers in the field of special education have the lowest level of capability in using the technology comparing to the other fields" (Soykan & Ozdamli, 2016, p. 268).

Yet, according to data collected during this study, teachers are the parents' greatest point of contact outside of immediate family. Parents have identified that they are not always able to provide support for the understanding of lessons or device functionality, which is why they contact teachers. In fact, an unexpected code emerged from the data collected, which is discussed in the next section.

Communication Channels and Diffusion

Communication channels differed after the implementing of distance and remote learning programs set in place by schools during the Covid-19 pandemic. According to Rogers (2003), a communication channel is time plus a social system that aids in the acceptance and overall use of an innovation. Data collected during this study indicated that parents are mostly self-taught. Parents also expressed learning how to use mobile devices from friends or family. Parents expressed that they mostly viewed mobile devices as tools for communication and entertainment but could not really say were they learned how to use devices besides expressing trial and error exploration. Parents drew no connections to learning from media. None of the parents discussed trainings or tutorials on device usages. Regarding learning from family, Parent 3 stated,

> My husband, he will teach me. If somebody else does not already know how to use it, and it is new to us, we will just pick it up and just go along with it to see what we come up with.

Parent 4 stated, "If anything they teach me," referring to her children. Parent 6 and Parent 8 explained that they either learn on their own or ask their wives for information on how to use devices and apps. Parent 1 stated, "I kind of learned from being young and growing up kind of grew up messing around with different devices. If I didn't know how to do something, I would just ask a tech geek." Each parent explained their method of learning from trail an error exploration.

As a result of distance learning programs, parents reported reaching out to schools and teachers using mobile devices strictly for learning purposes at some points during the

2019-2020 school year. Still, parents primarily indicated learning how to use devices on their own. Parent 2 stated, “I guess you can say that I’m self-taught.” While parent 7 stated, “I would say that I was self-taught.” Other participants, such as Parent 3, indicated exploring on their own, or learning from family. A notable number of parents stated that children are simply natural to device users. Parent 4 stated, “They’re more likely to teach me, than I teach them.” She also stated that her sons learn from one another, and further indicated,

> For some reason, I just think these kids are born like that. I don’t think that they learn. They just know because I will get a new phone and they won’t know anything about my phone. Still, they will know how to operate. He’ll know how to do everything on.

Other parents suggested the idea of being perhaps born with evolved technological intelligence abilities. Parent 7 stated, “Our generation was all about being outside. Going out, playing, going to the park. This generation is all about technology. Xbox, or video games, things of that sort.” Other parents agreed using words such as “technology generation,” “naturals,” “they teach me,” and “they just know.” Parent 3 stated, “These children just know, I sign them in and they do the rest.”

Though autonomy within self-guided learning is a positive aspect of mlearning, instruction and guidance to enhance learning would ensure more effective learning. In alignment with Hoover-Dempsey and Sandler (1997), parent involvement with student learning enhances learning experiences by way of motivation. Hoover-Dempsey and Sandler’s research outlines the way parent involvement in student work leads to goal

attainment. Parents who expressed showing their children how to function on mobile devices for learning described having children that viewed mobile devices as tools for learning. Parent 2 and Parent 4 who expressed having taken computer classes in high school both shared that they took time with their student to teach them basics of computer functionality. Both Parent 2 and Parent 4 expressed approval of mlearning programs as a means for their children to learn effectively.

The start of remote and distance learning programs as a response to the Covid-19 pandemic, required parent involvement in mlearning on a massive scale. At the basic level of Hoover-Dempsey and Sandler's (1997) model is that learning from both schools and from teachers helps student learning and goal attainment if perceived as positive. During my interview process, parents often expressed feeling propelled to learn so that they could then teach their children. This desire to help led many parents to communicate with their children's teacher.

Three of the eight parents expressed being in constant contact with teachers prior to distance and remote learning programs. Parent 1 discussed teachers providing emails, telephone numbers, and office hours for mlearning guidance. According to information collected in this study, communicative channels being formed with schools and teachers were strengthened and redefined. Though many parents indicated allowing their children to use educational apps, some expressed that mlearning became less playful and more serious when the pandemic hit.

Indications of Rogers' DOI Theory were clear as parents expressed acceptance of mlearning through distance and remote learning programs due to the Covid-19 pandemic.

All eight study participants expressed that they called and reached out to teachers as means of support for mlearning during the 2019-2020 school year, which is indicative of the forming of a communication channel.

This differed greatly from pre-Covid-19 discussions when parents reported being self-taught or learning from immediate family. Only three of the eight case participants reported consistent communication with teachers prior to distance learning programs. School systems have also opened a communication channel for parents to both request devices for mlearning and for troubleshooting. Overall, parents reported contentment with their support systems. Though parents expressed connectivity to teachers for the completion of work and lessons they still relied on self-exploration as a means of understanding device functionality. The lack of a communication channel to support device functionality may hinder parents understanding key features that may help to accommodate and personalize learning for their children. Parent 1 expressed liking the capacity that mobile devices have for individualization; however, training may be necessary to tap into such components.

Theme 4: Parents' Perceived Benefits of Mlearning

The most perceived benefit of mlearning expressed by the study participants was convenience. Parents also expressed an acceptance of mobile device use for engaging students and keeping their interest. However, such use can be looked upon as entertainment and not educational use at all. Features that I suspected might be mentioned, such as mobile devices "read-to" capability or talk-to-text features, were not mentioned by any of the study participants.

The parents who expressed a higher appreciation of mlearning were more aware of the variety of features and applications available for devices. These parents also deemed themselves technologically savvy and voiced connectivity to their students' schools prior to the implementation of remote and distance learning programs. Parents did not express the use of devices for autonomous activities for students, such as sitting with their devices and being able to complete a story using read to text technology. Instead, with the term mlearning explained, all parents mentioned remote or distance learning programs brought about by the 2020 Covid-19 pandemic. Parents also expressed very separate ideas regarding functionality between devices.

Usefulness

Parents believed mlearning to be a useful tool for a multitude of reasons, which ranged from being prepared for the future to bonding with their children. Parent 2 stated, "I think it's useful. I think it's a great experience for them, and I think that it prepares them for the future." Parent 7 stated, "I can say it's positive because it lets us bond even more." Parent 4 expressed that she approves of remote learning because it allowed her son to compete work without social distraction. Parent 4 further stated,

> My son does more work at home than he did at school. The thing with him is that everything distracts him. So, he's home. He is here by himself. There's nobody to distract him. When he sits. He sits and does the work at the computer. If he was at school, something would have distracted him.

Each parent highlighted differences based on the unique learning needs of their child. Parent 1 expressed a major benefit of mlearning as individualization. She stated,

> Individualization! In the beginning, they played with their tablets but it was always something educational. Especially since my oldest, at that time had just started elementary, and he was beginning to get his IEP services in order. So, I had to make sure that he had the proper apps for his style of learning.

Though all parents expressed positive perception of mlearning characteristics, and cited mlearning as being beneficial, each still solidified the need for a return to brick and mortar institutions for learning, with the exception of Parent 4 who agreed that her child could learn as much through mlearning as he could in school and expressed that her child benefited from the limited distractions at home.

Accessibility and appealing to learning styles were overwhelmingly identified as the most beneficial components of mlearning. Parents collectively agreed that they were confident that their children could learn from home. Parent 7 stated, "I know that during the pandemic, he used his laptop to do his homework and to communicate with his teachers. He loved it!" Parent 8 stated,

> I know my kids they function better in the classroom; they like to be on a one to one level. They like to have that attention, but also, I have a sister who teaches special education, and she has kids on the spectrum. Device learning is easier for them because they don't have to be around people. They are home; they are comfortable. So now they can focus at home.

Parent 5 stated, "I would say the experience is positive. But yes, he is very engaged by the tablet when he decides to sit down and use it." All in all, with limited to moderate

expression regarding knowledge of device functionality, parents perceived mlearning as beneficial for helping their children to learn.

Using different words all eight parents concluded that if they do not understand how to use their child's device for learning, their first step is to explore on their own. All eight parents further stated that if they were unable to figure out how use their children's devices for mlearning, they would contact the child's teacher. The word *information*, which was stated 70 times, was a result of parents expressing two ideas. One of the uses involved parents stating who they call for information on how to use devices. The other expression of the word *information* were parents stating how they use the devices. When asked about mlearning parents more often explained processes used to acquire information, such as use of search engines to acquire knowledge needed in the moment.

Though none of the information appeared discrepant one of the responses to a question stood out as different from the others. When asked what she thought could improve her perception of mlearning, one parent responded by saying that devices should come in different colors. After probing for clarity, it became clear that this parent was speaking to the concept of personalization which was discussed earlier in this chapter. Aside from that response, most of the data collected aligned and showed similarities.

The word *YouTube*, and subsequent explanation regarding the use of the mega site, was the fifth most frequently stated word during my interview process. After listening to all eight parents, I began to understand why YouTube was so popular. Although parents said the word to express to me sites that their children go to for leisure, the site held additional significance. Many of the parents stated that if they did not

understand something that they would go to YouTube and watch how-to videos. One parent even stated that by watching videos on YouTube he both learned how to do schoolwork and how to build a wall.

The frequent use of the word *YouTube* soon began to represent both parents and children's desires for modeling in learning. The desire for modeling during the teaching process arose continuously during the interviews through the mentioning of YouTube and via parent's expressing their desires for live instruction. Thus, the word count appeared to accurately depict parent's perceptions by outlining needs, communication channels, and by illustrating how parents seek information to aid their children in device learning.

Summary

With this study I sought to answer the research question: What are parents' perceptions on the use of mobile devices as tools for learning for students in special education? The purpose of this generic qualitative study was to explore parents' perceptions of the use of mobile devices as tools for learning for students in elementary especial education. The following themes were found in the analysis: (a) parents' approval of mlearning (OA); (b) parents' concerns with mlearning (HCF); (c) parents' expressed needs for the success of mlearning, which included training, information, and knowledge (TI); and (d) parents' perceived benefits (PB) of mlearning.

Results of my research confirmed that parents saw a relative advantage regarding mlearning for students in special education and held a mostly positive perception of mlearning for their children. According to Rogers' (2003) DOI Theory, relative advantage is indicative of overall acceptance and diffusion of an innovation. Though

parents expressed an overall acceptance for mlearning, most continue to view mobile device learning as supplemental styled learning that is useful during times such as the Covid-19 pandemic.

Additionally, the research indicated that communication channels are being reinforced between schools and parents, which is changing the way that parents are viewing mobile device learning. Distance learning programs put in place by school districts for remote learning during the pandemic are taking the place of more gamified app learning and propelling students more towards serious curriculum learning. Parents are no longer relying on self-exploration or family help to learn device functionality, but instead are reaching out to teachers and educational departments to learn device use.

Parent involvement is a crucial component in mlearning, both in and out of a Covid-19 learning environment. Hoover-Dempsey and Sandler's (1997) model of parental involvement has been reaffirmed not only in brick and mortar schools, but now more so in mobile learning programs. Children with parents who are heavily involved in their schooling are learning and thriving. Whereas a lack of parental involvement in mlearning can be devastating to young children as they may be unable to maneuver and access their learning content. Data from this study concludes that device use unrelated to distance learning programs is still primarily for entertainment and communication.

The findings of this research study have unveiled new information on parental perceptions of mobile device learning for students in special education. I found that even with novice experience in device functionality parents were widely accepting of mlearning and becoming more involved in their children's education. Parents of students

in special education have a positive outlook on mlearning due to differences in their children's learning styles. Parents expressed no intention to seek training to aid their children with mlearning needs, and many parents remained unaware of invaluable features that could both protect their children while online and accommodate mlearning. Parents expressed contentment with being able to contact teachers to ensure that their children were learning necessary content. Parents also highlighted modeling and feedback as necessities for positive mlearning experiences.

In Chapter 5, I discuss the interpretations of my findings. I also discuss study limitations and implications for social change that might result from my study findings. Lastly, I discuss recommendations for future research that became clear but were beyond the scope of this study.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose for this generic qualitative study was to explore the perceptions of parents of students in elementary special education programs relative to mlearning. I focused predominately on parents in the urban Northeastern United States due to rich cultural and socioeconomic variety. To explore the perceptions of parents I used in-depth semistructured interviews and grounded the study in literature.

The findings of this research study may be used by educational stakeholders to heighten efficacy in at-home, remote, and distance learning practices. Findings of this study may also be used to benefit parents teaching students with special education needs in personal learning spaces. Parents play critical roles in their children's learning attainment. It is important to understand parents' perceptions of mlearning including the perceived benefits, perceived advantages, perceived disadvantages, and parent needs.

In this chapter, I discuss my interpretation of the findings from this study relative to the conceptional frameworks and review of the literature. In Chapter 5 I also discuss limitations of this study, followed by potential social implications of the findings from this study. I conclude this chapter with recommendations for future research.

Interpretation of the Findings

Benefit of Technology to Learning

Data collected in this study suggested that parents do feel that using technology to learn is beneficial for children. Collectively, parents stated that the most beneficial feature of technology is accessibility. Per the data collected, parents expressed perceived

benefits of mlearning, even with expressed needs for support. It should be noted that the perceived benefits identified by the parents did not include some of the very features that make mlearning ideal for learning differentiation and accommodation.

Parents expressed gratitude that their children could use their devices to retain contact with peers and educators. Parent also expressed contentment with being able to look up information in web searches. One of the most evident perceived benefits of mlearning came through parents' expressed love for watching YouTube. YouTube was amongst the most discussed topics for both entertainment and educational use of mlearning devices.

Related to learning, parents expressed contentment with the idea of being able to watch a person modeling tasks as they or their children followed the steps. Modeling, whether in a synchronous or an asynchronous manner was a commonexpressed benefit of parents. Parents conveyed a need for modeling, as many confirmed a lack of understanding of the work, standards, or lessons that students were expected to complete.

Additional benefits of mlearning resulting from this study were implications regarding the use of technological devices. Parents expressed gratitude related to the idea that their children would be better prepared for future learning, as well as searching for and attaining jobs. Use of technology will be a critical skill in future global markets (Greenstein, 2012). Additionally, researchers have documented that students in general benefit from one-on-one mlearning (Crook et al., 2015). Thus, the beliefs of the parents in this study aligned with research citing technology use as beneficial to their children's future for both schooling and employment.

According to Rogers's (2003) DOI theory and the concept of relative advantage, parent participants confirmed viewing mlearning devices as innovations that both increase the ease of learning and bring forth a degree of learning that has not been experienced prior. In some ways, parents believed that the components of mlearning superseded classic classroom learning. Specifically, they considered that mlearning can be accessed from anywhere, videos used for mlearning can be played repeatedly and paused at will, and that information can be looked up if there is a lack of understanding.

Additionally, indications of relative advantage that were noted during this study were spell-check capabilities on word processing software and engagement qualities of mlearning tools. Without citing capabilities, such as changing Lexile levels via reading apps, speech-to-text technology, text-to-speech technology, nor any software, applications, or programs specific to their children's learning needs that may facilitate confidence and autonomy, parents already confirmed relative advantage in mlearning. Parents also very seldomly mentioned features of technology that allowed children to socialize from home. In this chapter I discuss these components along with the possibility for future research and development of this area of study. Overall, parents expressed their perception of mlearning as beneficial and a way that their children could continue to be educated and entertained during a global pandemic.

Need for Parent Training

Parents expressed a strong desire for training related to the use of mlearning devices. According to the data acquired during this study, until the commencement of remote and distance learning programs set in place by school districts, parents were

exploring mobile device learning on their own. Parents explained that previously they received no training, introductory lessons, guidance, or education regarding using devices for educational purposes. Research from this study showed that parents are learning how to use devices for mlearning through exploratory and self-taught practices. As such, few parents are purposefully learning to use functions of these devices geared towards using technology to accommodate, differentiate, and specialize learning.

Basic functionality of mobile devices could further improve parents' perceptions of mlearning. Data collected during this study indicated that one major concern of parents regarding their children's mlearning experience was potential exposure to content that may be mature or inappropriate. However, the use of training practices for mlearning devices stands to offer parents methods to alleviate these concerns through adding parental controls, linking search engines, and implementing devices perimeters.

Additional identified needs for training included parents being able to identify educational applications and websites that adhere to the developmental ages of their learners. Parents did not appear to have familiarity with learning applications outside of ABC Mouse and applications provided to them from school districts. YouTube was largely discussed but does not possess interactive components, provide assessments for learning, or provide children the opportunity to show what they are learning.

Components that allow for autonomous and individualized learning were not highlighted by any of the parents in this study. The lack of discussion regarding components of mlearning that could enhance learning for students in special education points to a need for training that could potentially improve learning for students in special

education. Though parents confirmed belief that engagement via mlearning could have positive and lasting effects on their child's learning, parents also expressed discomfort with using devices. Parents communicated a lack of knowledge regarding the functionality of mobile devices.

In a 2016 article, Kim and Lee (2016) stated that accommodating students with disabilities and various types of learning may influence their overall academic performance. In my study, which focused on special learners and their families, participants discussed distraction frequently. However, none of the participants discussed strategies to manage behavioral distractions during mlearning. Accommodations issued by classroom pedagogues such as (a) token economy systems, (b) five-minute breaks for every 30 minutes of work, (c) groups, (d) paraphrasing for processing, and (e) various other strategies set to enhance focus were not discussed by parents although discussions on monitoring and management of mlearning did take place (Ashman & Conway, 2017).

Finally, parents discussed children lacking motivation for learning at home as an issue. Research supports that physical environment has the potential to impact children's behaviors, learning, and cognitive development (Barrett et al., 2015; Maxwell & Chmielewski, 2008). Teachers spend significant amounts of time personalizing student workspaces and organizing their classroom in a manner that is conducive for learning (Maxwell & Chmielewski, 2008). Trainings on simple modifications to spaces to enhance learning and spark children to compartmentalize between learning and leisure may aid parents in helping their children learn more effectively at home. My findings thus

confirmed a significant need for training in areas that included information on learning applications, basic device functionality, and personalizing spaces for effective mlearning.

Compartmentalization and Personalization

Technology use in learning is often valued based on a perceived usefulness by stakeholders, namely parents (Zhu et al., 2014). Modeling and showing interest, enthusiasm, and excitement for all types of learning heightens student goal attainment (Hoover-Dempsey & Sandler, 1997). In schools, teachers devote time to ensure that children feel connected to their classroom spaces (Maxwell & Chmielewski, 2008). In doing so, teachers solidify belonging and pride in their students. My findings suggest a need to impart small modifications to at-home workspaces that convey to children when and where in the home they should be their professional scholarly selves. Findings also indicate small modifications, such as the labeling of a device or the specific color of a device, may aid in a child feeling more connected to their device and thus to learning. Device cases and other small components of mlearning can create a more personalized learning experience that children can feel more connected to.

Effective Communication Channels

Due to distance learning approaches put in place by school districts during the 2020 Covid-19 pandemic, a new need to understand mlearning arose. As a result, parents explained that they contacted school districts, school buildings, and teachers for information related to mlearning. Thus, in a short amount of time, a previously unused communication channel became increasingly more utilized. For some, new communication channels were being formed. Prior to Covid-19, study findings revealed

that parents mostly identified as being self-taught with technology. According to Rogers's (2003) DOI theory, communication channels refer to a process in which individuals create and share information with one another about an innovation, as a means of gaining mutual understanding. Data collected in my study suggested that outside of exploratory self-teaching, parents solely rely on spouses, children, and siblings for information about mlearning. While that may be helpful, few parents indicated contacting manufacturers, speaking with other parents, or calling technical support to learn about the way these devices function. Furthermore, data collected during this study suggests that even with the introduction of mlearning through remote and blended learning programs, not all parents are reaching out to schools for mlearning help. Parents who do reach out reported learning less on device functionality and how to individualize learning for their children, and more on how to go about completing a specific assignment. Therefore, even parents who do interact with teachers may benefit substantially from effective communication channels that aid them in more effective device use.

Regarding effective learning applications, few parents were able to identify a person or place where they learned what applications to use, or how to use them in a manner that facilitates effective education. One participant suggested that ABC Mouse came from the Disney Channel. For the most part, parents otherwise appeared unsure of where to find information on applications they could download to meet their children's specific learning needs. Parents were aware of how to download applications, but for elementary aged children, only 25% of parents interviewed during this study identified

teachers as go-to resources for learning about applications and programs that would positively influence their child's learning.

In instances where parents reported the inclusion of teachers for mlearning guidance, it was most often related to a need to complete work for remote learning programs and not for ongoing and long-term learning in a personal workspace. Additionally, even when parents contacted teachers for guidance, the extent to which teachers understood and used devices effectively remains questionable. Effective communication channels can be pivotal in the diffusion of mlearning. Prior to the 2020 pandemic, teaching models employed technology use in classrooms but seldom outlined how to use these devices for effective learning. Per research, "The fact that such innovations and technologies are available in physical educational environments is not enough for an effective technology integration process alone" (Çalışkan & İzmirli, 2020, abstract). Communication channels are social systems that share information on innovations (Rogers, 2003). The results of this study suggest that effective communication channels may improve parents' perceptions of mlearning, while also heightening learning attainment for students in special education.

Communication channels within innovative education should be purposeful. Parents require a knowledgeable communication channel to learn device functionality, become familiar with the applications that best suit the special learning needs of their child, and improve parent perception. Data collected during this study revealed that most parents relied on their children, a spouse, or other immediate family to support them with mlearning. A much smaller percentage of the parents relied on teachers for support. None

of the parents reported connections to professional support systems. Nor did parents report accessing tutorials, webinars, or virtual or in-person trainings to increase their knowledge of device use, despite reports of feeling ill-prepared. “Many who claim there is a gap between the potential for information technology in education and the current situation, point to the important role which professional development can play as a communication channel” (Reid, 2007, p. 143).

According to Rogers’ (2003) DOI theory, interaction within a communication channel facilitates the diffusion of an innovation within a social system. Based on the data collected during this study, prior to distant and remote learning programs using mlearning, parents mostly responded that they did not have a communication channel. Instead, parents reported being self-taught and exploring when they had a desire to understand their child’s mlearning devices. The suggested use of applications such as ABC Mouse appeared to have been diffused through the Disney channel television network. Data collected did not indicate that most parents actively sought out information related to mlearning. Instead, the research collected during this study suggested that parents were likely to try methods and applications suggested to them via communication channels or media.

Reid (2014) conducted a study and highlighted that formal teacher training on the use of technology could be critical to developing a more effective implementation of mlearning for other stakeholders, which include parents and children. The findings of this study aligned with Reid’s (2014) conclusion that a broad range of stakeholders beyond the educational system stand to gain knowledge via communication channels if teachers

are properly trained. However, more innovative methods for providing parents with access to trainings could also be the answer to improving parents' perceptions of mlearning and increasing parents' understanding of device functionality. These ideas included: virtual trainings that must be accessed prior to using new devices; information modules; tutorials; and virtual classes geared towards mlearning for students in special education.

Continuation of Remote Learning as a Reality

Per the information collected during this study, parents believed that mlearning would be on going. One parent indicated that he believed that learning would never be the same due to current mlearning used by school districts in the wake of Covid-19. Existing research points to similar ideas about the role of technology in education, "The perceived ease of use, attitude, perceived behavioral control, and subjective norms are significant predictors to explain the continued use of m-learning" (Al-Emran et al., 2020, p. 1). In prior study, Rosa (2013) highlighted mlearning as critical to education and discussed the need for educational systems to modify public policy surrounding technology in education. Data collected in this study confirmed that parents believe that mlearning would remain a major part of learning. Parents also deemed that technology was pivotal to their children's futures. Parents' perceptions of mlearning validated a need for further development in this area of study, as parents have expressed certain frustrations and need for support.

Chappelear (2019) highlighted that the lack of access to digital tools and resources at home may hinder the prospective goal attainment for students. Furthermore,

Chappelear asserted that early exposure to mlearning may reduce the gap in children's digital skills at an early age. Responses from participants in this study aligned with Chappelear's assertions as parents reported having a positive outlook on their children regarding mlearning experiences. Participants expressed belief that mlearning would provide their children with skills that they could use beyond the classroom. Data from this study aligns with previous research that mlearning can aid students in high poverty areas, which are predominately minority neighborhoods, by providing both skills and access to information that there would otherwise be no access to (see Barrett et al. 2015; Chappelear, 2019). Participants from this study mostly believed that students could learn as much via mlearning as they could learn from books, but held concerns regarding device use during mlearning. Findings of this study indicate a need for parent support with the continuation of mlearning.

Limitations of the Study

There are four limitations found in this qualitative study of parent perceptions of mobile devices as learning tools for students in elementary school special education. The limitations identified in this generic qualitative study include: sample size, time of study, researcher bias, and limited access to data surrounding this topic. The first limitation arose as a result of flyer placement and the use of snowballing as a method of acquiring study participants. The second limitation, time of study arose from societal events that occurred during the conduction of the study. The third limitation, researcher bias, was a result of my own thoughts regarding the topic. In contrast, the final limitation resulted from a lack of available research on this study. In this section, I will describe limitations

along with the methods I employed to ensure quality data and trustworthiness in my study.

Small Sample Size

The sample of parents selected for this study included eight parents who self-selected and were assessed regarding whether they met study criteria. Invitations for the study were placed in locations where people who might qualify could view them, and snowballing was employed as a method of meeting data saturation. Due to the placement of flyers for the study and the use of snowballing, the participant sample may not be random as it allotted people from similar areas and lifestyles to partake in the study. Therefore, selection-bias may have occurred, which takes away from the randomness of the sample selection. To offset selection-bias, I created a page on Facebook in hopes of drawing in participants from other locations.

At the start of participant recruitment, I noticed that all potential case participants displaying interest in my study were female. As a method of limiting bias in study results, during the snowballing process I began to inquire specifically about fathers of students in special education. I also rotated potential female participants into the study's participation bank and elected to interview some of the males. To limit bias in this study, as explained by Yin (2013), I openly described and discussed study needs and intents. I did my best to ensure that I could acquire data from a variety of individuals.

Time of the Study

Time was an important factor in this study. Despite power outages and offers to reschedule interviews, all interviews were done within the timeframes documented. The

data collection stage of this study came at a time when societal events were intense. During the planning stages of this study a global pandemic was not foreseen. The Covid-19 pandemic hit New York City and surrounding regions particularly hard (Shechter et al., 2020). Therefore, requesting to speak to people for 30 to 60 minutes was particularly difficult. Additionally, the manners in which parents and children were engaging in mlearning during this time differed significantly from weeks prior before remote and distance learning from schools occurred.

Due to the timing of remote and distance learning programs from school systems, which were fully mlearning programs, dependability in this study may have heightened. According to Yin (2016), the stability of study findings over time, or dependability can be strengthened by using multiple sources of data to allow for triangulation. Due to the timing of this study and the presence of a global pandemic, new information regarding mlearning became available, which added to resources used for this study. Additionally, parents who may not have been using mlearning in the past suddenly began to use it. One limitation of this study relevant to timing was that knowledge ahead of time that mlearning would be employed on a mass scale could have allowed for a survey styled study that involved large numbers of participants. Another limitation was that due to the intensity of current events, study participants did not wish to use the full 60 minutes of the interview. Instead, each of the interviews was closer to 45 minutes. However, this did not hinder the participants ability to provide detailed and in-depth information regarding the use of mlearning and their special education students.

Biases of Researcher

A strong possibility of researcher bias may exist due to my professional role as a special education teacher in New York City and my own interactions with parents. I remained conscious of my role as a researcher throughout the research process. To offset possible bias, I debriefed with professional peers and my appointed chair. Another method that I employed to limit researcher bias was reflexive journaling. According to Yin (2016), reflexive journals include personal notes and recordings of a students' learning experiences. As such, I kept an account of my work along with reflective notes regarding my learning experiences. This allowed me to both debrief and to engage analytically with information collected. I also kept a journal in which I debriefed and routinely discussed materials with my advisors and peers.

Lack of Previous Research on the Study

Prior information regarding this topic was limited. Much of the literature review for this study referenced mlearning in formal learning settings. The lack of research helped me to identify the gap in research that I sought to study. However, citing, referencing, and using prior studies to provide theoretical and conceptual frameworks was limited and thus challenging. This limitation allowed for me to present the need for further development in this research area.

Recommendations

Findings of this study may be particularly interesting to parents of students in elementary school special education. This study may additionally be of interest to stakeholders desiring to enhance at-home mlearning for students in special education.

Application and website developers wishing to service families with children in special education may also be interested in this study. Education institutions may benefit from this study. Finally, major websites and technology companies looking to adhere to the needs of parents with children in special education may benefit from the findings of this study.

This study begins to address the gap in literature that exists regarding parents' perceptions of mlearning for students in elementary special education. This this study may also be of interest to school systems desiring parent involvement in student learning and both parents and researchers desiring to gain information regarding steps towards using mlearning as a tool for effective at-home learning.

Researchers interested in mlearning for elementary school students in special education may use this study as a foundation on which to build their own research. They may also use this study model to explore mlearning use related to specific special education diagnoses or conditions and chart differences in responses. As means to test study transferability and dependability, future researchers may desire to replicate this study after the Covid-19 pandemic is resolved. Others may wish to replicate this study and focus only on one demographic.

It should be noted that none of the study participants in this study identified as being White. Therefore, future researchers may desire to replicate this study in predominately White areas. Others may wish to replicate this study in rural or suburban areas as the participants of this study were primarily from urban areas. The replication of this study using various populations may help aid in developing an intricate

understanding of this topic. Findings in subsequent studies may aid in building support that stakeholders with goals related to enhancing mlearning for students in special education can adopt. Additionally, building such support may help improve the perception of mlearning for parents of special education students.

This study revealed that overall parents had a positive perspective regarding mlearning for students in special education. This was due to the relative advantages regarding ease of access, the ability to search information, and engagement qualities. Parents also viewed mlearning for students in elementary school special education programs as beneficial because of perceived beliefs that their children need to learn to use technology for their future. With confirmation of parents overall positive perceptions of mlearning for children in special education, future research should explore effective use of mlearning for children in special education.

Future researchers should also explore the best learning applications for elementary-aged students in special education. There is also a need for linking parents to effective communication channels for mlearning with students in special education as per the research collected during this study. Areas such as learning device functionality to assist special learners, creating at home environments conducive to learning, and applications for learning interventions for special education learners remain areas in need of further development.

Despite parents' overall positive perception of mlearning, parents in this study felt that children need to be in school buildings to learn effectively. Many of the participants expressed sentiments regarding this that resulted from feelings of novice device use, lack

of understanding of content, and children's distracted behaviors while at home. Therefore, furthering research in this area could provide answers and support for parents. Further research could also explore how personalizing spaces for at-home learning may enhance learning experiences for students in special education and alter distracted behaviors. Researchers may also investigate various mlearning devices and explore how to enhance diffusion of these devices for learning.

Additional research is needed to study parents' understanding of technological features and functionality to gauge what types of trainings may benefit parents and promote autonomous learning for their children. Findings of this study suggest a need for technology experts to work with community members to understand mlearning. Also, as digital learning becomes the norm, more application developers should seek to offer options for inclusive learning for various types of learners. Some major websites and application developers could even consider adding live teachers or teachers on call to address learners questions. Parents in this study expressed major contentment with asynchronous learning experiences.

The results of this study indicated that parents were open to partnering with schools and teachers to aid their children in mlearning. This study did not examine individual experiences that parents had when reaching out to teachers. Further research could explore possible connections between teachers' technological expression from novice to expert and parent perceptions towards mlearning. Other studies could explore experiences of parents who deem themselves technologically savvy and those who deem themselves novice to investigate the differences in practice. Although the participants in

this study expressed positive perception of mlearning for students in special education, additional research may be required to support parents who have expressed feeling ill-prepared to help their children.

Research relevant to mlearning inclusion in education is a social right and should become the primary focus of public policies surrounding education (Chappelear, 2019; Rosa, 2013). Thus, students with special learning needs should be a prime focus in the paradigm shift from classic to digital learning. Greenstein (2012) highlighted the need for students to learn via technology and become part of global citizenship. Further research is needed to discover ways to enhance mlearning for students' in special education and the methods that appeal to their learning needs.

This study was designed to assess parents' perceptions of mlearning, distance and remote learning programs set in place by school districts to promote safe learning was not the focus of this study. Instead, I focused on parents' perceptions of mobile devices learning for student's in special education and did not evaluate remote learning programs. This study did evaluate parents' perceptions of using mobile devices for learning at home with their children. Future researchers may seek to study the effectiveness of remote learning and blended models.

This study does confirm parent buy-in and provides insight into their involvement even when learning at home. This study corroborates Hoover-Dempsey and Sandler's (1997) model of parental involvement in that very involved parents expressed a more positive outlook and thus believed that their children enjoyed mlearning. Due to the newness of the paradigm shift from classic classroom learning to digital and mlearning

practices en masse, a multitude of various studies could be conducted to enhance mlearning overall. Specific to this study, future researchers should focus on methods of aiding parents in achieving differentiated and accommodated mlearning experiences for students in elementary school special education.

Implications of the Study

This research study explored parents' perceptions of mobile device learning for students in elementary school special education programs. In doing so, this study has yielded findings that may have implications on future at-home mlearning experiences for both parents and students in elementary special education. The greatest potential yielded by this study is the expression that parents desire to be involved and proactive but are significantly in need of support. Parents have expressed the need for support with device functionality, content understanding, and techniques to improve their children's behavior for learning. Parents have also expressed a need for applications that can provide support to their children's learning needs at the elementary school level.

Parents expressed enjoyment with using ABC Mouse during preschool years but appeared to have no knowledge of subsequent learning applications once their children transitioned into elementary school. Therefore, the potential for positive social change related to this study is the possibility to improve mlearning for a vulnerable population in need of tools that ensure equity within learning. This study might improve learning for students in special education by providing parents and students with tools that prompt autonomous and more effective learning. This study might also heighten parental involvement in student learning, which as per Hoover-Dempsey and Sandler (1997),

would in turn heighten student learning attainment. This may result from mlearning, as it often occurs at home where students will rely on parents for help instead of teachers. Another implication of this study may be that it provides a foundation for the need for parent support and training for mlearning. Findings of this study confirmed parent interest but also confirmed that many features of mlearning that can promote autonomous learning and aid in differentiated experiences are not being accessed.

In lieu of distant and remote mlearning programs set in place by school districts, more children than ever before are engaging in mlearning (Al-Emran et al., 2020). Yet, through this study, I have found that most studies relevant to mlearning were conducted in formal learning environments. This makes the need for researching at-home mlearning imperative, as blended and fully remote mlearning models were in place at the time of this study.

I used Hoover-Dempsey and Sandler's (1997) model of parental involvement as well as Rogers's (2003) DOI theory to explore and interpret data collected during this study. Using these conceptual frameworks, I was able to explore the presence of parental involvement and assess communication channels, relative advantage, and overall diffusion of mlearning in a specific population. Moreover, I was able to answer the question:

RQ: What are parents' perceptions of mobile device learning for students in special education?

I was also able to answer the following questions:

SQR1: What are parents' perceived benefits of mobile device learning for children in special education?

SRQ2: What are parents' perceptions of the disadvantages of using mobile devices as tools for teaching students in special education?

Parents of children in special education who participated in this study held a positive perception of mlearning and perceived mlearning as beneficial for their children. Such implications provide an opportunity to strengthen parental involvement in education. To do so, parents must be supported and equipped with necessary tools. Findings of this study revealed that parents who formerly relied on themselves and immediate family for mlearning support began opting to contact teachers and other school staff. Thus, parents were displaying changed behaviors as a result of changes in the educational paradigm. With newness comes the need for learning, and therefore the development of the need for support.

This research may lead to social betterment by creating a foundation for equity within mlearning, which aims to enhance at-home learning experiences for student's in special education. Supporting needs and providing tools expressed by parents in this study may lead to more successful educational attainment. This research may also create for social betterment by providing technological tools and know-how that will follow learners throughout life. As higher education and job markets turn to technology, so must education. Effective mlearning experiences may provide parents and students with confidence for future learning (Hoover-Dempsey & Sandler, 1997). Understanding parent perceptions of mlearning for students in special education is critical for the development

of supportive programs and thus more effective mlearning experiences. An implication of this study is that it may lead to more effective and equitable mlearning practices for students in special education.

Conclusion

The purpose of this generic qualitative study was to explore parents' perceptions of the use of mobile devices as tools for learning for students in special education. These devices, which were diffused primarily for communication and entertainment (Teacher et al., 2013), are now being used for education on a mass scale. A gap in literature was identified regarding how mlearning was perceived by parents and how mlearning promoted individualized and innovative learning. Research findings indicated that although parents have an overall positive perception of mlearning, more work is needed to promote effective use and enhance parents' perceptions regarding the use of mlearning.

I used Hoover-Dempsey and Sandler's (1997) model of parental involvement along with Rogers's (2003) DOI theory to explore parents' perceptions of mlearning in special education. Study findings fill gaps in the literature by providing insight into perceptions of mlearning for students in special education. Overall, research indicates that parental perception and involvement in learning are linked with positive outcomes and increased learning for students (Fan & Chen, 2001; Goldman & Burke, 2017; Hill & Tyson, 2009; Hoover-Dempsey & Sandler, 1997; Jeynes, 2005; Shilshtein & Margalit, 2019). Data in this study revealed a positive perspective on mlearning. This research created new understanding of parental needs and newly forming communication

channels, which aid in the chance to improve mlearning for students in special education. Findings of this study highlighted the acceptance of mlearning as tools for special education. Study findings may also heighten parents' involvement and effectiveness with mlearning for students in special education.

Research repeatedly supports the potential that technology holds in education (Corkett & Benevides, 2016; Kostyrka-Allchorne et al., 2017; Parsons & Adhikar, 2016). Simultaneously, research indicates the importance of parental involvement in education (Hoover-Dempsey & Sandler, 1997). Yet, in many urban and low-income environments mlearning is not being conducted in a manner which promotes cognitive stimulation and parents report feeling ill-prepared to help their children (Choi et al., 2018). Findings from this study indicate that many parents desire to be involved with mlearning but may not know how.

Parents reported helping their children log in and remaining in the vicinity as mlearning involvement. Some parents even reported issues with logging into certain programs. According to Chigona and Licker (2008) mlearning stands to enhance learning for students in special education the most. Though research outlines features of mlearning, such as digital writing which improves students' overall spelling and increases the number of ideas expressed in writing assignments, parents have not reported using such features during mlearning. Research further confirms that writing on digital devices has long-term effects on learning, including enhanced student creativity, spelling, and grammar (Corkett & Benevides, 2016).

However, beneficial features of mlearning devices are also not being discussed by parents. Research studies confirm that parents who oversaw technology use ended up providing more positive learning experiences for their children (Corkett & Benevides, 2016; Kostyrka-Allchorne et al., 2017). This study confirms that although parents show positive perceptions of mlearning, many parents feel ill-prepared in overseeing technology use as many are unsure of device functionality.

This study begins to fill a gap in research regarding learning instruction and innovation by providing foundational information on which to enhance mlearning in informal learning spaces. This research also provides understanding about parental needs for support. Through this research, mlearning initiatives for students in special education may be developed. In a 2019 study, Chappelear (2019) asserted that parents are not asking for help or support. Findings from this research study suggest that parents may be ready to ask for support as indicated by the participants in this study revealing that they were reaching out to teachers. This shift may be a result of remote and distance learning programs. Parents can no longer rely on their children to keep them up to date with the latest technology. This timing is crucial to parental involvement as schools and at-home life are more connected than in the past. Chappelear (2019) also suggested that parents should be trained in device functionality and management which my research findings corroborate.

Even with positive perception, it is imperative that parents learn how to best support their children in mlearning. Students with special learning needs stand to gain the most from mlearning and the capabilities of these devices can bridge the differences in

learning needs by providing support for autonomous learning. Parents confirmed great enthusiasm for mlearning during preschool years but seem to be unsure of what to use and where to go for effective learning in subsequent years. Feeling ill-prepared can result in parents shying away from teaching their children, leaving full responsibility on educational systems. This research study solidifies the importance of addressing parental feelings of ill-preparedness for mlearning as parents are beginning to approach schools for help.

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Appendix: Interview Questions

Research Questions

The research questions for this study will be:

RQ: What are parents' perceptions on the use of mobile devices as tools for learning for students in special education?

SRQ1: What are parents' perceptions of benefits of using mobile devices as tools for teaching students in special education?

SRQ2: What are parents' perceptions of the disadvantages of using mobile devices as tools for teaching students in special education?

1. How does your child interact with their device usually? (Understanding behavior)
    - What does he/she normally do with it if you don't instruct them? (Follow up question)
2. What do you do while your child interacts with his/her device? (Understanding behavior)
    - When do you generally allow your child to use their device? (Implementation)
    - What ways do you limit or monitor your child's time and activities on their device? (Implementation)
3. How would you describe your child's experiences with their devices? (Relative advantage)

- If the experiences are described as positive, why. If the experience is described as negative, why? (Follow up question)

4. What can you recall teaching your child how to do with their device? (understanding implementation)
    - When your child began to maneuver the device independently, how did he/she use the program that you showed them? (Follow up question)
5. How do you learn new ways to teach your child how to effectively use his or her device for learning? (Communication channels, social systems, parent perception)
6. Where do you learn about new programs to show him or her? (Communication channels, social systems, parent perception)
    - How were you taught to use a device (including applications and programs) for your child? (Communication channels)
7. How does your child's interaction with his or her device help them to learn? (Parent perception; relative advantage)
    - What (if any) learning applications do you have on your child's device? (Communication channels)
8. In what ways do you feel that the way you use your device helps your child learn. (Parent perception)
9. How did your child use a device to learn prior to remote learning?
10. Do you feel that your child could learn as much using a device as they can from books? Brick and mortar School?

11. What is your overall perception of mobile device learning (mlearning/remote learning)?
    - What do you think could improve your perception of mlearning?