

**The Impact of Virtual Teacher Home Visits on Student Academic Achievement:
A Quasi-Experimental Study**

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Abstract

The research presented in this dissertation used a quasi-experimental quantitative strategy to examine the impact of the virtual teacher home-visit program in a Texas-based charter school system. The research problem was to determine if the virtual teacher home-visit program had any influence on student academic growth and achievement of K–12 students in the Texas public charter school network. There was a gap in the literature about educational virtual home visits. Motivational theory and transformational leadership theory best suited the virtual teacher home visits for the purpose of studying the program. Quasi-experimental research design was consistent with research questions where two groups' Northwest Evaluation Association (NWEA) Measures of Academic Progress (MAP) growth assessment scores were used to analyze if there were any systematic differences between them. Multiple ANOVAs were conducted to determine whether there was a statistically significant difference in NWEA MAP scores between virtually visited student groups on each dependent variable. Kindergarten through 10th-grade students' math and reading NWEA MAP scores were analyzed. With the large sample size ($n = 24,075$), an effect size with a 0.05 α level of confidence was used to determine the significance of all statistical inference tests.

Keywords: Virtual home visits, academic achievement, NWEA, COVID-19

Dedication

First and foremost, I would like to thank my God, The Almighty, for providing me with this opportunity and letting me complete it successfully. “My God! Enrich me with knowledge.”

To my wife, Fatima: You accepted a big challenge when I started the doctorate program. While you were working at the same time, not only did you take care of our three wonderful kids and myself, but you also encouraged me every time I felt overwhelmed. Your sacrificed days, nights, and weekends for us have not been forgotten. Thank you, and we love you!

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Chapter 1: Introduction

Parents are the first teachers who play a vital role in their children's education. The benefit of parental involvement in student education is well-presented in academia, and the teacher home visit is a central parental involvement practice implemented by public school administrators (Baker et al., 2016; Faber, 2015; Ilhan et al., 2019; Wherry, 2009). The teacher home-visit program can be a crucial communication tool that may bond families and schools (Kronholz, 2016). During the COVID-19 global pandemic, a record number of schools moved their instruction and parent activities to virtual settings, which created daunting challenges to school administrators (Anonymous, 2021; Bailey, 2020; Huber & Helm, 2020).

Meeting with parents and students after school hours can send a meaningful message of care and concern for students' future opportunities to their parents (Lin & Bates, 2010). However, little is known about the impact of virtual teacher home-visit programs on student academic growth and achievement in the United States during the COVID-19 global pandemic. Current literature describing the virtual model process is unclear and not accurate (Anonymous, 2021). If student academic growth and achievement are essential for school organizations, and virtual home visits shifted during the COVID-19, school organizations need accurate data to reflect these changes. Chapter 1 is organized into the following sections: background of the problem, problem statement, purpose of the study, significance of the study, research questions, research hypotheses, theoretical framework, definitions of the terms, assumptions, scope and delimitations, limitations, and summary.

Background of the Problem

Teacher home visits have been used as a tool to increase parental involvement in public schools (Protacio et al., 2020; Wherry, 2009). Home visiting can be an initial step to build

connections between students' homes and schools. Researchers have identified several benefits of in-person teacher home visits (Baker et al., 2016; Iruka et al., 2018; Lin & Bates, 2010; Topcu & Dogan, 2020). Those benefits generally focused on outcomes such as increased student attendance, academic success, family engagement, and parent-teacher and student-teacher relationships. Although in-person teacher home visits were used mainly in elementary school settings, the virtual teacher home-visit program was new and has not been cited in existing literature. The background of the problem was there is no study that has examined the impact of virtual teacher home visits on student academic growth in a public school setting, despite the ample sources available, such as journals, periodicals, journals, books, abstracts, and public records. There was a dearth of research exploring the potential of virtual teacher home visits to support student achievement and growth, thereby warranting this study.

Statement of the Problem

The problem was to determine if the virtual teacher home-visit program has any influence on student academic growth and achievement. Researchers have stated parent involvement in school activities enhances student learning; however, teachers are impacted by the difficulties of connecting with families (Oswald et al., 2018). Studies on in-person teacher home visits have mainly occurred at the elementary level and employed a qualitative research design (Cornett et al., 2020; Iruka et al., 2018; Kronholz, 2016). The school districts conducting virtual teacher home visits did not have any data measuring the effect of these visits on students' academic growth. The problem was there was no study on the virtual teacher home-visit program and its impact on student academic growth during the COVID-19 global pandemic. The importance of the problem was whether the students who received a virtual teacher home visit had higher Northwest Evaluation Association (NWEA) Measures of Academic Progress (MAP) assessment

scores (NWEA, n.d.-a). Multiple qualitative research and small-scale experimental studies reported positive effects of in-person teacher home-visit programs on students' classroom behavior, academic achievement, and parent involvement. There was a gap in the literature examining the impact of virtual teacher home visits on student academic achievement using the NWEA MAP assessment measure during the COVID-19 global pandemic, particularly on a larger scale (Wright et al., 2018). Besides, much existing research on in-person teacher home-visit programs has been qualitative, using small sample sizes or focusing primarily on teachers' perceptions gathered through interviews and surveys rather than including comparison groups (Baker et al., 2016; Iruka et al., 2018; Lin & Bates, 2010; Topcu & Dogan, 2020; Wright et al., 2018).

Purpose of the Study

The purpose of the quasi-experimental research study was to determine the effect of virtual teacher home visits (i.e., the independent variable) of 12,022 K–12 students in a Texas-based school district on academic growth and achievement, the dependent variable, using NWEA MAP data during the COVID-19 global pandemic. The research was necessary to address whether the school system's virtual teacher home-visit program resulted in student academic achievement and growth differences. Conducting this study was essential, as without these findings, school district administrators and policymakers would not know if the virtual teacher home-visit program could help student academic success and growth.

Significance of the Study

Research conducted about virtual teacher home visits was limited. Existing literature appeared to largely include qualitative, anecdotal, case studies, or perception surveys without statistical support (Ilhan et al., 2019; Topcu & Dogan, 2020). This study aimed to determine the

impact of virtual teacher home visits on student academic achievement and growth. The charter school system set aside thousands of dollars to conduct home visits; thus, there was a need for a study to evaluate the effectiveness of virtual teacher home visits.

The district and campus administrators at the studied school district viewed in-person teacher home visitation as a tool to close the student achievement gap and a bridge to improve parent–school connection (Baker et al., 2016; Topcu & Dogan, 2020). School leaders and teachers spent hours scheduling and conducting in-person home visits and attending and providing training. The quasi-experimental, large-scale study presented accurate data on whether or not the virtual teacher home-visit program had any effect on student success. There was a need for a study to evaluate the effectiveness of virtual teacher home visits. The results showed minimal or negligible impact and benefits of virtual home visit program, which may pose questions regarding the need for implementation, educator training, and the public funds allocations.

Research Questions

The following research questions grounded this study:

Research Question 1: What significant differences, if any, exist in the academic achievement of the school system’s K–12 students who received a virtual teacher home visit compared to similar students who did not receive a virtual teacher home visit during the COVID-19 global pandemic?

Research Question 2: What significant differences, if any, exist in the academic growth of the school system’s K–12 students who received a virtual teacher home visit compared to similar students who did not receive a virtual teacher home visit during the COVID-19 global pandemic?

Research Hypotheses

Null Hypothesis 1 (H01): No statistically significant difference exists between the academic achievement of the school system's K–12 students who received a virtual teacher home visit, the independent variable, and the similar students who did not receive a virtual home visit, the dependent variable, during the COVID-19 global pandemic.

Hypothesis 1 (Ha1): A statistically significant difference exists between the academic achievement of the school system's K–12 students who received a virtual teacher home visit, the independent variable, and the similar students who did not receive a virtual home visit, the dependent variable, during the COVID-19 global pandemic.

Null Hypothesis 2 (H02): No statistically significant difference exists between the academic growth of the school system's K–12 students who received a virtual teacher home visit, the independent variable, and the similar students who did not receive a virtual home visit, the dependent variable, during the COVID-19 global pandemic.

Hypothesis 2 (Ha2): A statistically significant difference exists between the academic growth of the school system's K–12 students who received a virtual teacher home visit, the independent variable, and the similar students who did not receive a virtual home visit, the dependent variable, during the COVID-19 global pandemic.

Theoretical Framework

One essential objective of scientific work in education is applying theory to practice (Kaplan et al., 2012). Motivational theory studies the understanding of what drives a person to reach a particular goal or outcome. Motivational theory related to the purpose of this study because the theory involves methods and rationales hidden in people's actions and behaviors. Motivational theory could apply to virtual teacher home visits. When meeting with teachers after

school hours, students and parents may feel cared for and more connected to school, which could increase the motivation of the students (Khurana & Joshi, 2017).

Transformational leadership theory can also be applied to change parental involvement in the school system and remodel the family–school relationship. When parents participate in school events and programs, they gain new skills and knowledge through the alliance. The connection could increase parents’ and students’ social capital and self-efficacy and develop leadership skills (Levesque & McGregor, 2019). A detailed description of the theoretical framework is discussed in Chapter 2.

Definitions of Terms

Understanding common terms used in peer-reviewed literature about parent engagement and home visits was essential. Clarity around the definitions of the terminology used in the study was vital, because parents and teachers may have different interpretations of terms. For the purpose of the study, the following terms are defined:

Achievement growth is defined as a student’s achievement progress made over a year-long period as a measurement comparing current NWEA MAP assessment performance with previous NWEA MAP assessment performance (Wright et al., 2018).

Asynchronous instruction is defined as a type of online course that does not occur in the same place nor at the same time. Asynchronous instruction is provided through the internet, and the students work independently. An instructor is available for feedback and to help with completing independent work (Borup et al., 2019).

At-risk is defined as a term used to describe students or groups of students who have a high probability of failing academically or dropping out of school (National Center for Education Statistics, 2012).

Charter school is defined as a type of public school with the freedom to design instruction that meets its students' needs. All charter schools are independently operated, free to attend, and receive government funding (Icel, 2018).

COVID-19 is defined as a disease caused by a new strain of coronavirus. CO stands for corona, VI stands for the virus, and D stands for disease (Huber & Helm, 2020).

Discipline referral is defined as when a teacher refers a student to an administrator to be disciplined for violating the school's code of conduct (Ilhan et al., 2019).

Diversity is defined as the range of identities of individuals based on ethnicity, race, socioeconomic status, gender, language, religion, sexual orientation, and geographic area (Lin & Bates, 2010).

Economically disadvantaged is defined as a student whose household income is below the average (National Center for Education Statistics, 2012).

Ethnicity is defined as a group of people who identify with each other based on shared racial status, language, history, culture, religion, or distinctiveness (Lin & Bates, 2010).

Family is defined as a group of one or more parents and their child(ren) living together and related by blood, marriage, adoption, or cohabitation (Baker et al., 2016; Kronholz, 2016; Wherry, 2009).

Home visits are defined as teachers visiting students at their homes to build relationships with families and increase student success in school (Keilty & Kosaraju, 2018; Topcu & Dogan, 2020; Wright et al., 2018).

MAP assessments stand for Measures of Academic Progress and is defined as a group of tests prepared by NWEA and given to K–12 students multiple times throughout a school year to measure a student's academic growth in various subjects and languages (NWEA, n.d.-b).

NWEA stands for Northwest Evaluation Association and is defined as a global not-for-profit K–12 organization serving 9,500 schools and districts in 145 countries (NWEA, n.d.-a).

Online/Virtual schools are defined as schools that provide all instruction entirely or primarily online or through the internet. The teacher provides instruction and feedback through the learning management system (LMS) or in virtual meetings. Online schools can deliver synchronous and asynchronous instruction (Borup et al., 2019).

Parental involvement is defined as the parents' support of their child at home and school. Involved parents are checking with their children about their learning and attending school activities both in-person or virtually (Wherry, 2009).

Schools are defined as institutions where instruction is provided in person to students (Borup et al., 2019).

School districts are defined as local administrative units that operate schools or contracts for school services in specific geographic areas (Borup et al., 2019).

Socioeconomic status (SES) is defined in this study as the parents of a student's social and economic circumstances and denotes individuals or groups in society concerning others (National Center for Education Statistics, 2012).

Stakeholders are defined as the campus principal, teachers, parents, and students participating in the teacher home-visit program (Wherry, 2009).

Student engagement is defined as when students participate, have interest and attention to instruction, and show passion and curiosity for teaching (Levesque & McGregor, 2019).

Superintendents are defined as the highest-ranking administrators of a public or charter school system (Bailey, 2020).

Synchronous instruction is defined as the method of learning in real time and is scheduled face-to-face instruction with the teacher in an online classroom via the internet (Borup et al., 2019).

Teacher perceptions are defined as the thoughts and ideas of teachers about their students and/or parents (Borup et al., 2019).

Title I is defined as a federal program that provides funds through state and local educational organizations and supports schools with high numbers of low-income students (National Center for Education Statistics, 2012).

Virtual home visits are defined as scheduled video calls between a teacher or a group of teachers and the student's parents to build relationships between the families and schools (Keilty & Kosaraju, 2018).

Assumptions

A few assumptions were made regarding the study. One assumption was the study relied on teachers' proper virtual home visit data entry. Without teachers recording pertinent information and without software functioning correctly, results would not be accurate. Another assumption was the NWEA MAP assessment's reliability and validity. The study's instrument was collected in both reading and math subjects. The sample was normally distributed, and the test assumptions were checked using a two-tailed test in both directions. When using the test for homogeneity of variance, no violation of the homogeneity of variance assumption was violated, and the parametric measure continued to be used due to the robust nature of the tests.

Scope and Delimitations

The target population for the study comprised students and teachers from a Texas-based public charter school system, mostly centered in a major metropolitan area and its surrounding

areas, serving students in Grades PreK–12. The name of the school district was kept anonymous. The studied school system operated 58 schools across seven independent school districts in 17 cities across Texas and serves approximately 36,000+ students, most of whom were economically disadvantaged and identify with an underrepresented group. The charter school operator had a 100% college acceptance rate among graduating seniors, and 64% of their alumni were first-generation college students. The school system conducted in-person teacher home visits to increase student academic achievement, facilitate parent involvement, and motivate students to demonstrate more positive behavior in the classroom. During the COVID-19 global pandemic, the teacher home-visit program converted to virtual visits. The study consisted of students who received a virtual teacher home visit ($n = 12,022$) and was measured to a comparison group randomly drawn from students who did not receive a virtual home visit ($n = 12,053$). The study was delimited to only the virtual teacher home-visit program participants and students who did not receive a virtual teacher home visit within the same demographics and grade levels (Wright et al., 2018). Another delimitation of the study included students' NWEA MAP Fall 2020 and Spring 2021 scores (Rogers, 2020). NWEA MAP Spring 2021 reading and math RIT scores were used and compared for the achievement and growth measure (NWEA, n.d.-b).

The school-system teachers scheduled virtual meetings with their students' parents after school hours, in pairs. These meetings occurred through the Zoom web platform. The sessions endeavored to build relationships between the teacher, guardians, and student. The virtual visits developed a partnership between the parents and the school (Kronholz, 2016) and took 20–30 minutes, depending on the parents' questions. Virtual teacher visits were not mandatory but encouraged by the charter operator. After filling out the feedback form, teachers who

participated in the virtual home-visit program received a stipend per visit. The study can be transferable to other school districts that implement virtual teacher home visits in the United States.

Limitations

Limitations of the research study can be the unavailability of resources, inadequate sample size, unreliable methodology, or generalizability (Tauginienė & Jurkevičius, 2017). Limitations needed to be determined before making meaningful recommendations for further research. No study is completely flawless (Castelló et al., 2017; Tauginienė & Jurkevičius, 2017). One consideration was the study focused on virtual home visits rather than traditional in-person teacher home visits. Another limitation was the target population included students and teachers from a Texas-based public charter school system, and the results may not be applicable to other school networks. Finally, the study used the NWEA MAP assessments and scores to measure growth, may limit the results' generalizability.

Chapter Summary

Early childhood education and elementary schools have gradually implemented teacher home-visit programs (Edwards, 2020; Keilty & Kosaraju, 2018). Even in the absence of a standard definition of home visits, many school district teachers and leaders conducted home visitations to increase student success and behavior (Coll et al., 2018; Jung & Sheldon, 2020; Walsh, Montersen, Edwards et al., 2020). During the COVID-19 global pandemic, similar to most schools, the charter school system started to offer online classes and converted the teacher home visit to a virtual setting (Anonymous, 2021). There was a gap in the literature about educational virtual home visits. The purpose of the study was to examine the impact of virtual

teacher home visits on student academic achievement and growth through NWEA MAP assessments during the COVID-19 global pandemic in the United States.

The literature review focused on both traditional and virtual teacher home visits, NWEA MAP assessments, student achievement, parent engagement, and the COVID-19 global pandemic is presented in Chapter 2. Moreover, Chapter 2 provides a detailed study of the literature on the impact of teacher home visits on student behavior and success within U.S. public schools. Lastly, an extensive review of literature related to motivational theory and transformational leadership theory is presented.

Chapter 2: Literature Review

Parents are the first teachers who plays a vital role in their children's education. The benefit of parental involvement in student education is well presented in academia (Baker et al., 2016; Faber, 2015; Ilhan et al., 2019; Iruka et al., 2018). The family and community structure of millennials differs from the previous generations due to enhanced technology and growth and the mobilization of society. Teachers need to reorganize and update teaching strategies to meet the needs of changing student demographics and home environments. The in-person teacher home-visit program is implemented by many school districts and can be a crucial communication tool to bond families and schools (Kronholz, 2016). During the COVID-19 global pandemic, a record number of schools moved their instruction and parent activities to virtual settings, which created daunting challenges for school administrators (Anonymous, 2021; Bailey, 2020; Huber & Helm, 2020). However, little was known about the impact of virtual teacher home-visit programs on student academic growth and achievement in the United States during COVID-19, and to what extent current virtual models accurately evaluates the process was unclear. Student academic growth and achievement are essential goals for school organizations, and virtual home visits expanded these efforts during the COVID-19 global pandemic. The school organizations needed accurate data to reflect these changes.

The purpose of the quantitative quasi-experimental study was to determine the difference in the academic achievement and growth of K–12 students who received a virtual home visit compared to similar students who did not receive a virtual home visit during the COVID-19 global pandemic. The Northwest Evaluation Association (NWEA) Measures of Academic Progress (MAP) assessments were used as an instrument to measure any differences. Research studies on in-person teacher home visits have been mainly situated at the elementary school level

and used qualitative research design (Cornett et al., 2020; Iruka et al., 2018). There was no study analyzing the impact of the virtual teacher home-visit program on student academic growth. A gap in the literature examining the effects of virtual teacher home visits on student academic achievement existed; no research using the NWEA MAP assessment measure as an instrument for virtual teacher home visits was found.

The literature review is organized into the following sections: literature search strategy, theoretical framework, research literature review, and summary and conclusions. The first section of the literature review outlines the home-visit programs under the following subheadings: defining home visits, home visit models in research, the purpose of home visits, the impact of home visits, and the challenging parts of home visits. The second section provides a historical overview of virtual home visits. The literature reviewed in the third section discusses parental involvement in public schools. The fourth section reviews literature about students' academic achievement and growth. The fifth section highlights an overview of NWEA MAP assessments and how the NWEA MAP assessments have been used in existing literature as an instrument. The following section presents the school's responses to the COVID-19 global pandemic. The final section presents the summary of the literature review.

Literature Search Strategy

The literature review section builds background on historical in-person teacher home visit practices in the United States. The investigation into the literature concerning virtual teacher home visits revealed little research had been conducted in the virtual teacher home-visit program area. The research was found to be minimal, and the most supportive literature was anecdotal and reported the results of case studies or perception surveys. The literature examined made a strong case for home-school collaboration where virtual teacher home visits were implemented.

Effectively searching scholarly literature database is iterative and requires strategies, helpful tips, and guides (Spurlock, 2019). Searches were performed with a variety of databases, including ERIC; Google Scholar; and university library databases, such as OpenAthens, ProQuest, EBSCOHOST periodicals, journals, abstracts, dissertations, and books. Peer-reviewed articles were mainly used, and articles that were not peer reviewed were used sparingly. Google searches were used only to locate journal links or digital object identifier (DOI) codes. A systematic review approach was used to conduct a literature review on the topics in the field of education. Relevant investigations to the research questions and purpose of the study were analyzed and included in an electronic citation tracking spreadsheet, which helped to identify, categorize, and group the sources and articles to review.

Some keywords used either individually or in combination were: home visits, teacher home visits, virtual home visits, parent involvement, family engagement, student achievement, student academic growth, family involvement, NWEA, NWEA MAP, and COVID-19. The searched sources were examined from the last 5 years (between 2017 and 2021), last 10 years (between 2012 and 2021), had to be available in full text, and included articles both peer reviewed and non-peer reviewed. Of the primary and secondary sources made available through searches, publications were grouped into a Microsoft Excel spreadsheet, and listed publication years, references, authors, titles, research methodology, key terms, publication name, and the relevance of the research to the study. The peer-reviewed and non-peer-reviewed periodical information was reviewed and entered into a reference calculator to ensure use of the most current resources. The articles cited in the other relevant articles' references were also used and reviewed, providing a wide range of articles for selection (Spurlock, 2019).

Theoretical Framework

Little to no research existed on virtual home visits and student academic achievement and growth. However, the literature review found much literature supporting the need for home visits in schools. A limited amount of information on virtual home visits made it challenging to connect their theories with the application. Motivational theory and transformational leadership theory best suited studying virtual teacher home visits for the purpose of the home visit program. Both theories will be defined, the origins will be revealed, and an analysis of how the theories have been applied to other studies similar to the virtual home visit study will be presented in the next section. The theoretical frameworks will be then further described—particularly to explain why motivational theory and transformational leadership theory related to the teacher virtual home visit study and the grounding research questions.

Motivational Theory

Motivational theory has been defined as the understanding of what drives a person to work toward reaching a particular goal or outcome; one essential objective of scientific work in education is applying theory to practice (Kaplan et al., 2012). In this study, motivational theory was applied to virtual teacher home-visit programs. McClelland (as cited by Khurana & Joshi, 2017) took a unique approach to motivational theory that conceptualized the needs and claimed the needs could be developed and learned. McClelland also introduced the concept of only one dominant motivation being present in individuals' behaviors at a certain time. Motivations and needs were categorized into three groups: (a) the need for achievement, (b) the need for affiliation, and (c) the need for power. Motivation drivers were divided into external and internal drivers (Khurana & Joshi, 2017).

Seeing teachers out of school hours can be a great motivation for students and families. In-person teacher home visits build a connection between family and school, giving parents more investment in their children's instruction. Drive and need for achievement are central elements of McClelland's achievement motivation theory. Students succeed if they are motivated and engaged in learning (Baker et al., 2016; Faber, 2015). Furthermore, teachers who know their students' home environments and parents can communicate educational goals to them more easily. Teachers can use the relationship as a motivational strategy in the classroom. In return, students' need for satisfaction positively impacts their learning (Beese & Martin, 2019; Liu et al., 2020). The home-visiting practice can be a strong motivation for both teachers, students, and parents. Motivation plays a vital role in helping students to increase their academic grades and develop knowledge. Research has shown intrinsic motivation to be a potent stimulant of student learning and success (Beese & Martin, 2019; Liu et al., 2020). In addition, teachers and school leaders can be motivated by students' academic success (Akdemir, 2020; Zeid et al., 2017). Motivational theory associated to the goal for this study was involved with the methods and reasons in students' and teachers' actions and behaviors. Motivational theory was applied to virtual teacher home visits for the purpose of this study.

Transformational Leadership

The transformational leadership model was presented by Downton in 1973 and was extended by Burns in 1978 (Brown et al., 2019). Transformational leadership is the center and most powerful leadership model in education management (Berkovich, 2016). In transformational leadership theory, school leaders exhibit authentic leadership and inspire employees to follow them. By motivating followers, leaders and followers support each other to a higher level of ethics and purpose. The four main parts of transformational leadership are

idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration. When instructional leaders practice transformational leadership theory, they have a more significant impact on student learning and outcomes (Kwan, 2020; Nandedkar et al., 2020).

A transformational leader encourages others to find ways to grow and improve. These leaders help educators, students, and parents motivate each other to develop academically and find innovative ways to improve learning. Transformational leaders are not only principals or administrators, but also can be teacher leaders and stakeholders. In a transformational leadership mindset culture, administrators and teachers lead by example, creating community bonds and encouraging students and their peers to achieve a high level of achievement. Berkovich (2016) stated both campus and teacher leaders are more effective when they practice transformational behaviors; however, this finding was not supported by empirical exploration.

Transformational leadership theory can be applied to change parental involvement in school systems and remodel family–school relationships. When parents participate in school events and programs, they gain new skills and knowledge through this alliance (Kronholz, 2016). The connection between school and parents increases parents’ and students’ social capital and self-efficacy and develops students’ leadership skills (Levesque & McGregor, 2019). Because some degree of in-person teacher home-visit programs existed in the United States before the COVID-19 global pandemic, traditional home visits transformed into virtual home visits that can empower educators, enabling them to achieve willingly. The changes that home visits facilitate can still increase family engagement and higher student academic achievement and growth. By offering virtual parent meetings, leaders and educators can lead by example and inspire and engage families. Teachers could be more effective in the classroom by using transformational

leadership techniques and conducting virtual home visits (Munir & Aboidullah, 2018). Teacher and principal leadership, school vision, and organizational learning are key components to school improvement.

Connection of Theories

Both motivational theory and transformational leadership theory suited the purpose of the research and the associated problem statements. Virtual teacher home visits can establish a connection between families and schools. When parents and students feel supported by teachers, students have an increased motivation to succeed in the classroom (Bak-Srednicka, 2018). Highly motivated students with an achievement focus are hardworking, enthusiastic, engaged, curious in nature, and ready to take risks to accomplish what is expected (Khurana & Joshi, 2017; Liu et al., 2020). When students are more engaged and motivated in learning, increased academic achievement is anticipated. Campus principals are expected to improve teaching quality through building teacher and student capacity rather than monitoring and managing the schools (Kwan, 2020). School leaders can adopt transformational leadership theory to motivate teachers to conduct virtual home visits. Principals can shift campus family involvement approaches with the virtual home-visit program. Transformational leaders rely on intrinsic motivations and produce a fundamental change in school practices and parental engagement through virtual home-visit programs (Berkovich, 2018; Kwan, 2020).

Research Literature Review

Teacher home visits have been used as a tool to increase parental involvement in public schools (Protacio et al., 2020). The literature review of teacher home-visit programs takes a deeper look into how the program impacts student success and highlights best practices of home

visitations. The review of literature is organized into five sections: home visits, virtual home visits, parental involvement, student academic achievement and growth, and NWEA.

In-Person Home Visits

For decades, elementary schools have used in-person teacher home visits to learn more about families and develop relationships. Teachers can connect with students and parents where much of family life occurs. Home visiting is an initial step in building connections between students' homes and schools (Baker et al., 2016; Iruka et al., 2018; Lin & Bates, 2010; Topcu & Dogan, 2020). Because school and home connection and cooperation have traditionally been greater in early childhood education than in secondary schools, researchers have identified several benefits of teacher home visits for elementary school students. Those benefits generally focused on outcomes such as increased student attendance, academic success, family engagement, parent–teacher relationships, and student–teacher relationships. Reviewed research also cited improvements in student behavior and academic growth when an in-person teacher home visit was conducted (Ilhan et al., 2019; Kronholz, 2016; Wright et al., 2018).

Defining Home Visits

Although teacher home visits are mainly used in early childhood education, healthcare, and social work, they have been practiced in education generally at the elementary school level (Cornett et al., 2020; Kilburn & Cannon, 2019). The literature review revealed no common definition of home visitations. Many organizations and researchers tried home-visit programs in school systems differently. In certain cases, teacher home visits occur after school hours and conducted by educators either individually or in pairs (Coll et al., 2018; Jung & Sheldon, 2020; Keilty & Kosaraju, 2018; Walsh, Moretensen, Peterson et al., 2020).

Peterson et al. (2018) described in-person home visits as a time when school personnel and child caregivers sit down together and discuss the child's learning and goal achievement in an informal atmosphere outside the school environment. Either district or school administrators provide training on how to conduct home visits, or a third-party company or an external presenter provides instructions and guidance (Kronholz, 2016). School leaders who initiate home-visit programs are committed to supporting teachers, and only teachers who are willing to participate conduct home visits. Educators call the parents and schedule the visits in advance. Occasionally, the visits take place in a different location, such as at a restaurant or coffee shop other than the student's home. The purpose of the visit is to become familiar with the parents; the child's home environment; and the family's interests, expectations, and school experiences (Kronholz, 2016). Some school systems pay teachers for the visit from Title I funds or use other funding sources for parent-engagement activities. Some school or district administrators conduct parent and teacher surveys after the visitations to evaluate the outcomes (Siqueira et al., 2019; Stetson et al., 2012; Wherry, 2009).

Home Visit Models in Research

In a single-case, holistic, design research, Cornett et al. (2020) studied how one elementary teacher designed differentiated literacy instruction using the knowledge obtained through visiting students at home. When teachers can see the home environments, they gain a better understanding of the student's needs. Cornett et al. found the particular teacher translated what she learned from her home visits into the classroom context via a few distinct methods to support each visited child so the student could learn better and more quickly (Cornett et al., 2020). In a similar study, Harji et al. (2017) studied an English storybook reading project in Malaysia called the Smart Partnership in Reading in English, where a teacher scaffolded the

student's reading development by reading storybooks at the child's home with extended family members. Harji et al. determined the student's reading progress improved and the parent involvement also improved. Participants in the study included family members in children's reading literacy by visiting students at home and stated the "outcome of the project was the clear link between the levels of parental involvement in the partnership and the children's reading development" (Harji et al., 2017, p. 158). In a comparable secondary analysis, researchers studied 5,046 early age children and their caregivers who participated in the Early Steps to School Success (ESSS) program from 2006–2014 in 14 states (Iruka et al., 2018). According to Iruka et al. (2018), the early childhood home visiting program had preliminary evidence of children's impacting language skills and literacy practices in the home environment.

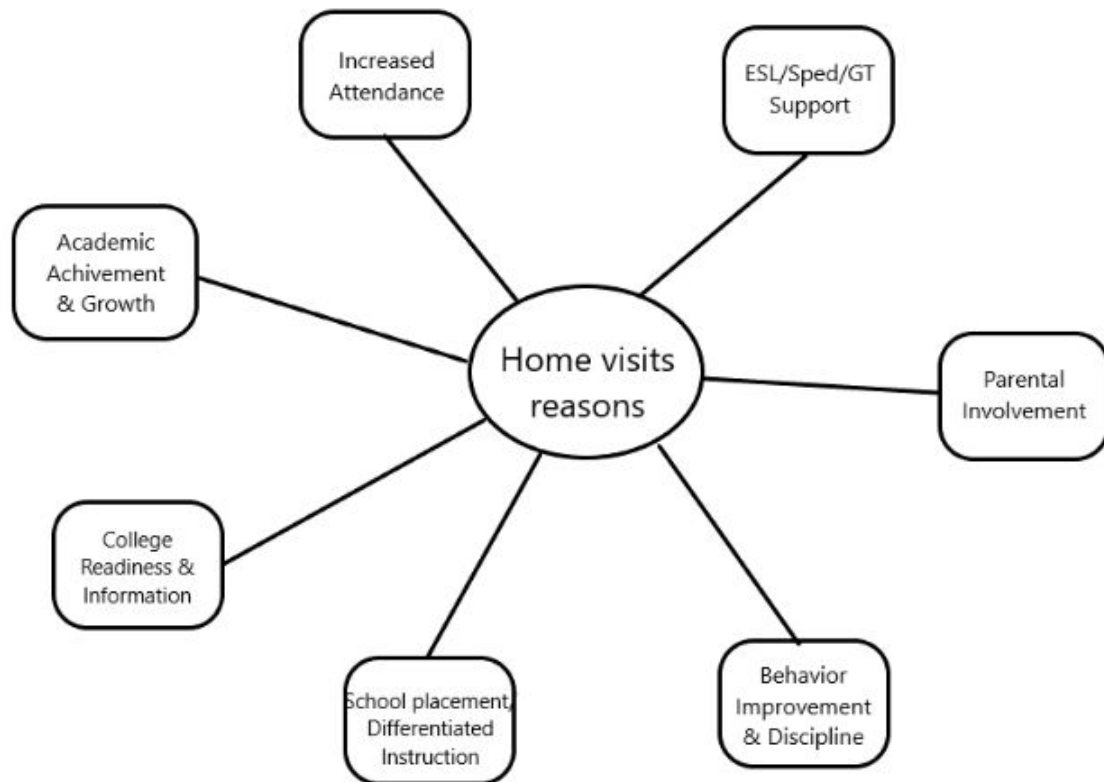
According to Topcu and Dogan (2020), in-person teacher home visits impacted school and parent cooperation and student outcomes. Teacher home visits require dedication and personal efforts because the activity is often conducted after regular school hours (Topcu & Dogan, 2020). The survey, which was distributed to the 102 primary and secondary teachers and 42 principals, showed "both principals and teachers believe in the positive effects of home visits, and they find home visits necessary to build an effective school environment" (Topcu & Dogan, 2020, p. 205). In a part of a similar study result, Kiral and Gidis (2019) suggested organizing family-home visits and reaching out to parents through phone calls and text messages increased parent participation in school parent association activities, according to the 10 volunteer teachers' views. The 60 elementary teachers within the same urban school district in northern Texas who were enrolled in a master's degree program arranged and visited the "most problematic" (Stetson et al., 2012, p. 22) students in the classroom. Even if teachers were

concerned about these in-person home visits in the beginning, results were above expectations and significantly improved relationships with parents and students (Stetson et al., 2012).

Although a universal understanding of the expected benefit of home visits exists, how and who should conduct the home visits is still unknown (Siqueira et al., 2019; Stetson et al., 2012). The concept of conducting teacher home visit is simple for experienced educators and school systems. The visits employ a get-to-know-you and upbeat style, and can be academically focused. The home visit is voluntary for teachers and parents. The school and district leaders support teachers and even provide monetary stipends in literature (Faber, 2015; Kilburn & Cannon, 2019; Kronholz, 2016; Stetson et al., 2012). The scope and sequence of teacher home visits, clear duty distribution of the program, and continuity of the visits are not evident in the literature.

Purpose of Home Visits

Although in-person home visits are widely used in social work and the medical field, more early childhood education and elementary schools have implemented home visitations (Edwards, 2020; Keilty & Kosaraju, 2018). Many school districts use in-person home visit practice to improve student achievement by building relationships; other school systems aim to increase family engagement (Akasha, 2020; Kirmaci, 2019; McWayne et al., 2020; Walsh, Mortensen, Edwards et al., 2020). Although the goal of teacher home visits varies, the purpose of home visits in literature can be grouped into seven major categories. Figure 1 illustrates the main seven reasons for teacher home visits in literature. A few of the essential home visit goals are outlined in detail.

Figure 1*The Purpose of Home Visits in the Literature*

Note. Figure 1 is an illustration of the home visits reasons in the literature. Unpublished, Copyright 2021, Samuel Beyhan.

Some researchers have studied the effects of in-person teacher home visits on student behavior and discipline; for example, some institutions conduct in-person home visits to help struggling learners, either by helping them improve in literacy or by reading or supporting English learners (Akasha, 2020; McWayne et al., 2020; Protacio et al., 2020; Walsh, Mortensen, Edwards et al., 2020; Walsh, Mortensen, Peterson et al., 2020). In a recent study, Bak-Srednicka (2018) presented the study results of home visitation as a source of school placement with

knowledge about the parents as partners in the educational process. In a Johns Hopkins University study, 2,469 students who received an in-person teacher home visit were absent 2.7 fewer days compared to a similar group of 2,239 students (Kronholz, 2016). Cornett et al. (2020) provided insight into the benefits of in-person home visits to support differentiated instruction in elementary schools, especially literacy instruction. To improve student academic success, to develop student behavior, and to support parents with literacy instructions, home visits have been practiced in schools for a long time.

Impact of Home Visits

For all in-person home visit reasons, there was a positive impact on the expected outcome. From increased attendance rates to higher academic success, and from positive classroom behavior to higher family engagement, home-visit programs yielded better academic results. Because in-person home visitation has been used for various reasons, the impact of home visits has been measured mainly with perception surveys and qualitative data. According to Stetson et al. (2012), 45 of 50 teachers who practiced home visits thought home visits had a moderate-to-extremely positive effect on students' behavior, work habits, and academic achievement. In similar research, of 269 coded responses, 70% of teacher survey respondents reported visiting students at home positively affected student's classroom behavior. Only 21% of the respondents stated there was no change in students' classroom behavior (Wright et al., 2018).

Based on their research, Cornett et al. (2020) stated elementary teachers who participated in the home-visit programs did adjust their classroom instructional practices to meet students' needs (Cornett et al., 2020). In a study conducted on 12 secondary and 10 elementary school teachers and principals, 68% of principals (out of 38 principals in the study) and 54% of teachers (out of 94 teachers in the study) stated positive opinions about home visits (Topcu & Dogan,

2020). In a different study, 95% of the surveyed 12 online school teachers and facilitators believed students would be more motivated and organized if their parents engaged with school activities. In the study, home visits were offered as one of the most effective parent-engagement tools for the online high school (Borup et al., 2019). The reviewed literature showed home visits were widely used in education, either used to increase family involvement or improve student behavior.

Challenging Parts of Home Visits

Several studies presented benefits of in-person teacher home visits, but only a few studies affirmed home-visit program challenges. Teachers can be hesitant or unwilling to conduct in-person home visits for safety reasons (Ilhan et al., 2019; Kilburn & Cannon, 2019). Many young or new teachers are not trained on how to interact effectively with families. They may not realize the importance of parental involvement in the academic and behavioral well-being of the students. Some educators have stated they feel intimidated and occasionally threatened by the problem students' guardians, and they do not want to spend extra time with them (Stetson et al., 2012). Scheduling the visit and language barriers can pose other challenges of the home visitations (Keilty & Kosaraju, 2018; Lockhart & Mun, 2020; Protacio et al., 2020; Stetson et al., 2012; Topcu & Dogan, 2020; Wright et al., 2018).

Virtual Home Visits

Available sources, such as journals, periodicals, books, abstracts, and public records were researched. No information was found on virtual teacher home visits in a public school setting. Although virtual home visits are commonly practiced in the medical field and with social work, in-person teacher home visits have traditionally been used in education, mainly with younger

students. There is also a dearth of research exploring the potential of virtual teacher home visits to support student achievement and growth.

Because of the COVID-19 global pandemic, in-person outpatient care has transitioned to telemedicine, clinical instruction, and virtual learning. Whether occupational therapists conduct virtual home visits of the patients when discharging them from the hospital (Bishop & Brott, 2020), or provide telemedicine to Parkinson's disease patients at home (Eisenberg et al., 2018), virtual home visits have gradually replaced traditional visits and treatments. Delivering efficient, high-quality, safe health care while staying at home to minimize transmission of COVID-19 is the new primary goal of health care organizations (Modic & Neuendorf, 2020). Virtual home visits, telemedicine, and services have become critical elements of delivering care to the patients, bringing teachers and school leaders an opportunity to transform instruction and other school activities.

Another method of virtual home visits was implemented during an online clinic teaching course. He et al. (2020) adapted an online platform when matching medical fellows with attending physicians to different patient cases similar to the traditional teaching clinic setting. Virtual home-visit programs for outpatient clinics and departments ensured similar in-person patient care. In akin research, nursing students received distance teaching education and visited patients virtually in an innovative way (Avelino et al., 2017).

Family Engagement

The benefits of family engagement on children's education at all levels has been well documented (Oswald et al., 2018). As Stetson et al. (2012) explained, parents are more likely to involve themselves in their children's learning if schools view parents as partners. Recent studies on teachers' or principal's perceptions have reported strong connections between in-person

teacher home-visit programs and increased parent involvement (Baker et al., 2016; Faber, 2015; Kiral & Gidis, 2019; Kronholz, 2016; Lin & Bates, 2010; Oswald et al., 2018; Topcu & Dogan, 2020; Wherry, 2009; Wright et al., 2018). Student academic achievement increases when parents are engaged.

Reasons for low parent and guardian involvement mostly include parents' complicated personal lives and daily responsibilities. Other analyses have stated parents and guardians have negative experiences with education or feel intimidated. Language barriers or cultural differences may hinder parental engagement (Baker et al., 2016; Bak-Srednicka, 2018; Harji et al., 2016). Improving the home environment and parenting practices to support students' education and learning is key for school leaders and educators. Teachers play a vital role in determining whether families are involved or not. Visiting children at home is one potential strategy to improve the home environment and parental involvement; however, more research about virtual home-visit programs is needed, especially for students living in low-income neighborhoods and students who are English language learners (Bak-Srednicka, 2018; Iruka et al., 2018).

Student Academic Success

The literature reviewed in the student academic achievement and growth section found benefits for both students and parents when in-person teacher home-visit programs have been conducted; yet, fewer studies have specifically examined the impact teacher home-visit programs have on students' classroom academic success and growth (Ilhan et al., 2019; Wright et al., 2018). The studies examined revealed in-person teacher home visits provide educators more insight into students' academic strengths and parents' opportunities to share their concerns. The educational in-person home visits increase educators' level of understanding and respect for students and parents (Coll et al., 2018; Cornett et al., 2020; Lin & Bates, 2010).

According to Wright et al. (2018), students who received in-person teacher home visits had a significant positive difference in academic achievement than the students who did not receive teacher home visits within the same school system. Furthermore, Stetson et al. (2012) revealed a similar result; in their study, 47 teachers out of 50 who conducted one in-person home visit to the most problematic student reported the home visit had a moderate-to-highly positive effect on student academic achievement. Studies have also shown a positive relationship between educator in-person home-visit programs and pupils' instructional achievement (Stetson et al., 2012; Wright et al., 2018).

NWEA MAP

NWEA MAP assessments have been used widely as an instrument in the research for educational settings. The NWEA MAP growth is a computer-adaptive test. The assessment starts with a question at each student's grade level and adjusts the level of difficulty based on individual performance (NWEA, n.d.-b). MAP growth tests use an RIT scale ("RIT" stands for Rasch Unit and is $200 + 10 \times \theta$, where θ refers to the logit scale units of the Rasch model) to accurately measure what students know regardless of grade level (Andrich & Marais, 2019; Thum & Hauser, 2015). NWEA MAP also measures growth over time, allowing for tracking students' progress throughout the school year and across multiple years. Once the student completes a MAP growth test, they receive an RIT score (NWEA, n.d.-b). Although the test does not have a time limit, the test takes 40–60 minutes to complete. Due to wide usage in primary and secondary schools, numerous researchers adopted NWEA MAP assessments as an instrument (Amrein-Beardsley et al., 2016; Klingbeil et al., 2019; Kuhfeld et al., 2019; VanDerHeyden & Burns, 2018). MAP tests and training were used in nearly 9,500 PreK–12 school districts nationwide and in 145 countries in 2021 (NWEA, n.d.-a).

The technical merits and popularity of MAP assessments have been widely referenced in research articles and journals (Cordray et al., 2012). The main categories of NWEA MAP assessment usage in research can be grouped into five categories:

- Instructional practice, software evaluation, and validation;
- state assessment result predictions and correlations;
- teacher observation or professional development evaluation and efficiency;
- predictive for curriculum-based measurement (CBM) assessments or formative and alternative testing results; and
- high school graduation or drop-out rate or college enrollment prediction.

NWEA RIT scores have an equal-interval growth scale that accurately gauges academic growth. The growth measure allows for individual students' development in addition to the achievement compared to other students. Teachers can use the RIT scale to assess and analyze individual student growth and measure instructional practices. NWEA MAP RIT scores also provide specific student competency information. Teachers can pinpoint the areas in which students need improvement (Kuhfeld et al., 2019). NWEA MAP assessments also produce longitudinal data, class breakdown by overall RIT, class breakdown by goals, and school reports. NWEA claims the tests are a valuable predictor of state assessments (NWEA, n.d.-b).

Formative Assessments: CBM

NWEA MAP assessments are used as a control group to evaluate the efficiency of the alternative formative assessments or screenings. Both Callan and Cleary (2019) and Klingbeil et al. (2019) used the NWEA MAP assessment as an instrument to validate middle school math screening. In both studies, middle school math students' performance in the self-reflection process and common universal screening methods were examined by NWEA MAP results. The

Forward Exam, STAR Math exam, Maryland Comprehensive Assessment, Mathematics Computation Administration and Scoring, and NWEA MAP scores were compared to determine which one is a better middle school math screening. These CBM assessment results supported the diagnostic accuracy of the NWEA MAP scores (Klingbeil et al., 2019). Similarly, NWEA MAP assessment scores have a strong link with the self-regulated learning (SRL) process and strategy, which strengthened the precision of the NWEA MAP instrument (Callan & Cleary, 2019).

Kuhfeld et al. (2019) adopted the NWEA MAP assessment to validate the Stanford Educational Data Archive (SEDA) data set to compare the districts' academic achievement and growth from third grade to eighth grade in math and English language arts (ELA) subjects. They found precision-adjusted solid correlations between SEDA and MAP Growth measures, 90% in math and 82% in ELA. Furthermore, in a 2-year longitudinal study, VanDerHeyden and Burns (2018) examined the accuracy of the reading screening measures validating with the NWEA MAP assessments. In conclusion, at-risk students benefited most from frequent screening. Both studies applied NWEA MAP assessments in the correlation calculations and validations.

Instructional Practice or Program Evaluation

NWEA MAP assessments were widely used to evaluate the efficiency of instructional practices and/or programs. From inquiry-based instruction to self-paced learning platforms, and from intervention programs to computer-assisted instruction, NWEA MAP scores were selected as a comparison data and identification point for many instructional strategies, software platforms, or instructional practice studies (Goodwin et al., 2020; Jacobs, 2017; Jones, 2018; Klingbeil et al., 2019; Macaruso et al., 2020; McVancel et al., 2018). The NWEA MAP assessment is one of the most used measurement tools in the United States. Nationwide, 20% of

the public school systems adopted NWEA MAP resources as of 2021; however, the popularity of the NWEA MAP assessments had been referenced in academic research and journals, and a few studies investigated the impact of NWEA MAP assessments on student outcomes (Cordray et al., 2012). The U.S. Department of Education conducted a survey in five Midwestern school districts to address questions about which benchmark assessment influences teachers' differentiated instructional practices and student achievement most. According to study results, there was no statistically significant impact on the reading achievement of fourth- or fifth-grade students as measured by MAP reading results. Although the NWEA MAP assessments were used with modest accuracy, the results did not predict expected differences in teaching strategies (Cordray et al., 2012).

Teacher Observation or Professional Development Evaluation

Either as a teacher evaluation system or professional development effectiveness, NWEA MAP assessments are used as an alternative achievement measure. One school district in Arizona inquired about using NWEA MAP scores as a merit-pay system for K–2 teachers; however, researchers noted misalignment between growth estimates from alternative test measures for math, but not for reading and ELA (Amrein-Beardsley et al., 2016). Zambak et al. (2017) investigated the effects of Guskey's 1-year science professional development model in middle school with the help of NWEA MAP assessments. The inquiry-based instruction has grown over the years, and the effectiveness of the professional development program was examined. In a quasi-experimental study on the recruited 70 middle school science teachers, participating teachers changed their practice in instruction. The increase in the mean value of the pre- and post-surveys was significant (Zambak et al., 2017). Similarly, teachers and administrators were surveyed to examine the effect of implementing the "Keeping Learning on Track" training on

student learning by using the NWEA MAP assessments. Study results indicated educators felt the Keeping Learning on Track training improved the teaching practice and increased student learning (Dobish et al., 2017). The NWEA MAP assessment was widely used in research for its accuracy and dependability.

State Testing Prediction or School Evaluation

NWEA MAP assessments have been implemented to predict students' state test scores or school evaluation indicators. Hwang et al. (2020) examined the relationship between English as a second language (ESL) acquisition students and reading comprehension in second and fourth grades. The results revealed vocabulary scores were predictive of ESL students' academic proficiency and reading comprehension in state testing (Hwang et al., 2020). Likewise, the gender achievement gap in math and ELA NWEA MAP assessments was examined and used to predict the school's state accountability tests (Reardon et al., 2018). NWEA MAP assessments were also used to examine the success of the Catalyst Public Charter's schools and the potential neighborhood impact on school climate and academic achievement (Proehl et al., 2015; Ruiz et al., 2018). NWEA MAP assessments were implemented to find the similarities in each content area for the state tests to school accountability ratings. The design and available resources of the NWEA MAP test made the predictions at the discretion of the school and district leaders.

COVID-19 Global Pandemic School Responses

The COVID-19 global pandemic shook the education system in March 2020. Most schools started to offer online classes in the United States (Anonymous, 2021). Teachers and school administrators faced daunting challenges to provide quality education during the COVID-19 crisis. Policymakers and district administrators provided flexibility and resources to continue

education (Anonymous, 2021). A few articles detailed the COVID-19 global pandemic impact on school operations.

Since switching to remote instruction, school reopening or offering in-person instruction in K–12 schools has been a discussion in the United States and worldwide. The uncertainty of the COVID-19 transmission through children and the still unknown variables of COVID-19 and its variants made school reopening a risky decision (Bailey, 2020; Huber & Helm, 2020; Viner et al., 2021). Public schools remained closed in many countries as well as some states or counties in the United States to control COVID-19 transmission in 2021. Even if children more than likely do not have severe illnesses or die, there is no evidence that children will transmit COVID-19 differently than adults (Viner et al., 2021). Conversely, school children’s learning loss due to the prolonged school closure has also been well documented, especially higher learning loss in low-income neighborhoods compared to wealthy communities (Anonymous, 2021). High-income families and countries provided distance education, social–emotional support, basic protective equipment, and school meals through alternative provisions (Bailey, 2020; Huber & Helm, 2020; Viner et al., 2021). Although policymakers and district administrators debated when and how to reopen schools, the health and well-being of children, teachers, and families should have remained the focus of the decisions. Phase-by-phase reopening due to the availability of school social distancing and vaccination numbers presented a better strategy (Viner et al., 2021).

While school leaders and governmental authorities made school reopening plans, the efficiency of online teaching continued to be a hot topic of the debate. When COVID-19 impacted the United States in mid-March 2020, many countries suspended face-to-face instruction and started looking for distance learning options (Wenczenowicz, 2020). Zoom, Microsoft Teams, and Google Meets became the most preferred online lesson delivery platforms

(Noor et al., 2020). Issues and challenges school teachers experienced not only included a lack of technology knowledge or technology confidence, but also low attendance rates, uncooperative students, internet availability, limited online education resources, poor network infrastructure, and mental and financial challenges beset by the COVID-19 crisis (Noor et al., 2020; Raboca & Cotoranu, 2020). Studies conducted in Romania (Raboca & Cotoranu, 2020), Pakistan (Noor et al., 2020), and Brazil (Wenczenovicz, 2020) showed online instruction during the COVID-19 global pandemic was below the level of the traditional teaching process, and was especially harmful to students in low-income families. In addition to student learning, anxiety of the educators and school staff was substantiated and confirmed by the studies (Noor et al., 2020; Raboca & Cotoranu, 2020; Wenczenovicz, 2020). However, school district administrators and policymakers needed to plan and execute school reopening while continuing to manage the COVID-19 global pandemic.

A few studies discussed the impact of the COVID-19 global pandemic on Catholic schools and the changes in their operations. Studies on Catholic school responses to the COVID-19 crisis were examined not only in the United States, but also around the world (Giunco et al., 2020; Wodon, 2020a; 2020b; 2020c). Similar to public school teachers, private school educators (e.g., Catholic schools) experienced unprecedented challenges during the COVID-19 global pandemic. Whereas the government and states financed public schools, private schools faced additional funding issues during the school closures. Private school leaders had difficulties keeping student enrollment and maintaining financial sustainability in countries without benefits from governmental financial and resource support (Wodon, 2020a). Unplanned school closures required additional research on the closures' effects on academic decline in each core subject. A study focused on 32 urban Catholic school teachers experiencing the transition to remote

learning recommended a “comprehensive and workable plan . . . allowing faculty time to plan for digital repositories of curricula, assessments, and resources . . . training in digital instructional design” (Giunco et al., 2020, pp. 264–265). Both private or public school responses to the COVID-19 global pandemic remain preliminary and tentative since the crisis, and its effects are still unknown and may evolve differently in the future (Wodon, 2020b).

Chapter Summary

Even though social workers and medical personnel originally implemented in-person home-visit programs, many early childhood and elementary schools have steadily practiced home visitations to develop relationships with parents, increase in-school parental involvement, and improve student achievement and behavior. The problem is whether virtual teacher home visits have any impact on student academic growth and success in public school systems. The purpose of the quantitative study was to determine the academic success differences between students who received a virtual teacher home visit and similar students who did not receive a virtual teacher home visit during the COVID-19 global pandemic.

The literature reviewed for this study were mainly situated at the elementary level and largely employed qualitative research designs (Cornett et al., 2020; Faber, 2015; Ilhan et al., 2019; Iruka et al., 2018). The reviewed literature revealed major themes about home visits. As such, there remained a gap in existing literature about educational virtual home visits. NWEA MAP assessments have been popularized in research, from evaluating instructional practice effectiveness to validating the program results (Cordray et al., 2012; Kuhfeld et al., 2019). The scores have been used as a predictive tool for school accountability, state testing, teacher evaluation, or instructional practice validation (Dobish et al., 2017; Hwang et al., 2020; Klingbeil

et al., 2019). In-person teacher home visits have been used to examine levels of parent training and family engagement.

Research findings from the past 5 years have also supported the continued use of in-person teacher home visits as a tool to encourage students' academic success and family engagement, with a few studies also perceiving teacher home visits' as developing students' classroom behavior (Stetson et al., 2012; Wright et al., 2018). Although there was supporting research about in-person teacher home-visit programs, there was limited research about virtual home visits, and those studies mainly took place in the fields of healthcare and social work. In addition, most research on in-person teacher home visits has been designed to primarily focus on teachers' or principals' perceptions through surveys and interviews (Wright et al., 2018).

Even though funding and enrollment challenges during the COVID-19 global pandemic differed between public and private schools, academic challenges both types of schools faced were real and similar (Giunco et al., 2020; Wodon, 2020a). The transition to online instruction during the COVID-19 crisis heavily impacted low-income students and teachers in low-income schools (Bailey, 2020; Noor et al., 2020). While district administrators and policymakers made school reopening plans, the students' learning loss and the teachers' anxiety needed to be included in subsequent plans (Raboca & Cotoranu, 2020; Wenczenowicz, 2020). Teachers and school administrative staff need guidance and training in digital learning to succeed with distance learning practices (Wodon, 2020b).

The selected quantitative and quasi-experimental research methodology was appropriate for the impact of virtual home visits on student academic achievement and growth. The research design, rationale for the design, population, and research procedures are outlined and discussed

in Chapter 3. The data instrument and collection, data analysis, reliability and validity, and ethical guidelines are presented also presented in the following chapter.

Chapter 3: Methodology

The problem was to determine if the virtual teacher home-visit program has any influence on student academic growth and achievement of K–12 students in the Texas public charter school network. Research studies on in-person teacher home visits have mainly occurred at the elementary level and employed qualitative research designs (Cornett et al., 2020; Iruka et al., 2018; Kronholz, 2016). No study analyzed the effect of the virtual teacher home-visit program on student academic growth. The purpose of this quasi-experimental research study was to determine if the school system’s virtual teacher home-visit program resulted in differences in academic achievement and growth of students who received virtual teacher home visits compared to students who did not receive virtual teacher home visits, using Northwest Evaluation Association (NWEA) Measures of Academic Progress (MAP) growth measure during the COVID-19 global pandemic. The major sections of Chapter 3 are research design and rationale, the role of the researcher, research procedures, data analysis, reliability and validity, ethical procedures, and summary.

The research questions of the study are following:

Research Question 1: What significant differences, if any, exist in the academic achievement of the school system’s K–12 students who received a virtual teacher home visit compared to similar students who did not receive a virtual teacher home visit during the COVID-19 global pandemic?

Research Question 2: What significant differences, if any, exist in the academic growth of the school system’s K–12 students who received a virtual teacher home visit compared to similar students who did not receive a virtual teacher home visit during the COVID-19 global pandemic?

Null Hypothesis 1 (H01): No statistically significant difference exists between the academic achievement of the school system's K–12 students who received a virtual teacher home visit, the independent variable, and the similar students who did not receive a virtual home visit, the dependent variable, during the COVID-19 global pandemic.

Hypothesis 1 (Ha1): A statistically significant difference exists between the academic achievement of the school system's K–12 students who received a virtual teacher home visit, the independent variable, and the similar students who did not receive a virtual home visit, the dependent variable, during the COVID-19 global pandemic.

Null Hypothesis 2 (H02): No statistically significant difference exists between the academic growth of the school system's K–12 students who received a virtual teacher home visit, the independent variable, and the similar students who did not receive a virtual home visit, the dependent variable, during the COVID-19 global pandemic.

Hypothesis 2 (Ha2): A statistically significant difference exists between the academic growth of the school system's K–12 students who received a virtual teacher home visit, the independent variable, and the similar students who did not receive a virtual home visit, the dependent variable, during the COVID-19 global pandemic.

Research Methodology, Design, and Rationale

Studies on teacher home-visit programs have been mainly qualitative and based on participants' views, which can be subjective. These research studies relied upon the experiences of the researcher and participants (Mogonea & Mogonea, 2019). Qualitative research design can be difficult to replicate and can create misleading results. Furthermore, validity and reliability of qualitative methodology can be challenging to assess and have weak designs such as surveys, questionnaires, or interviews (Kyakuwa, 2019). The literature reviewed for this research lacked

large-scale studies evaluating virtual teacher home visits. In addition, previous research lacked quantitative measures.

The selected study design for this research, (i.e., quantitative quasi-experimental) is essential to discover differences between variables without influencing participants, yet allows for generalized predictions (Bloomfield & Fisher, 2019). Quasi-experimental research design includes an experimental and control group, but participant selection and assignment are not random (Barrasso & Spiliotis, 2021). Quasi-experimental research design allows use of variations and can lead to better results. In a study examining the effects of in-person teacher home visits on student grades and behavior, quasi-experimental research design was used for the quantitative method (Wright et al., 2018). All experimental design and statistical inference principles of measurement were applied in the process of constructing instruments that provide invariance of comparisons and reliable and valid measurement for this study (Andrich & Marais, 2019).

The quasi-experimental research design was appropriate with the research questions where two groups' NWEA MAP achievement and growth assessment scores were used to analyze if there are any systematic differences between them. Students who received a virtual teacher home visit and students who did not receive a virtual teacher home visit were the two groups whose NWEA MAP math and English language arts (ELA) scores were compared and examined. The 2020–2021 school year NWEA assessment scores were used. The sample was normally distributed and the test assumptions were checked using a two-tailed test in both directions at the beginning. The number of participants in each group ($n = \sim 12,000$) in this study would be adequate for a small effect size with a 0.05 α level confidence. Effect sizes were reported via the partial eta squared and presented in the ANOVA tables. Multiple ANOVAs were used to test each of the hypotheses.

Role of the Researcher

There was no identified relationship, personal or professional, between myself and participants. I did not have any power over participants, particularly involving relationships. My work environment and location differed from the research site located in Texas. No dual roles or incentives caused a conflict of interest.

Research Procedures

The present study used archival data of a charter school's NWEA MAP ELA and math assessment scores over the 2020–2021 school year. The virtual home visit data needed to conduct the analyses were provided by the district administrators. Quasi-experimental research design was most appropriate for this research because both visited and non-visited student groups have data for the same year at the same school system.

Population and Sample Selection

The target population for the study comprised students and teachers from a Texas-based public charter school system, mostly centered in a major metropolitan and its surrounding areas, serving students in Grades PreK–12. The charter school system focuses on science, technology, engineering, and mathematics (STEM) areas, reaching out to underserved communities across the state. The school system operates 58 schools across seven independent school districts in 17 cities across Texas. The school system serves approximately 36,000+ students, most of whom are economically disadvantaged and identify with an underrepresented student group. The charter operator has a 100% college acceptance rate among graduating seniors, and 64% of their alumni are first-generation college students. The school system conducted teacher home visits to increase student academic achievement, increase parent involvement, and motivate students to demonstrate more positive behavior in the classroom. During the COVID-19 global pandemic,

the teacher home-visit program converted to virtual visits. Students who received a virtual teacher home visit ($n = 12,022$) were measured to a comparison group randomly drawn from students who did not receive a home visit ($n = 12,053$). The demographic characteristics were examined. No significant differences existed between the treatment group, comparison group, and the overall population by race or socioeconomic status within the $\pm 5\%$ approximation. Site permission was requested through email and granted to complete the study.

School-system teachers scheduled virtual meetings with their students' parents after school hours, in teacher pairs. These meetings occurred through the Zoom web platform. Sessions endeavored to build a relationship between teachers, parent or guardians, and students. In-person home visits sought to develop partnerships between parents and school officials (Kronholz, 2016). Virtual meetings took 20–30 minutes, depending on parents' questions. Virtual teacher visits were not mandatory, but encouraged by the charter operator. Teachers who participated in the virtual home-visit program received a stipend per visit after filling out the feedback form.

Data Collection

The NWEA MAP is a computer-adaptive assessment formed to determine student academic success throughout the school year (NWEA, n.d.-b). The total number of items administered is based on the student's performance on previous test items. The NWEA MAP assessment consists of multiple-choice and short-answer items and reports in Rasch Units ("RIT" stands for Rasch Unit and is $200 + 10 \times \theta$, where θ refers to the logit scale units of the Rasch model). NWEA MAP growth uses an RIT scale to accurately measure what students know, regardless of their grade level (Thum & Hauser, 2015). The NWEA MAP assessment also measures growth over time, tracking students' progress throughout the school year and across

multiple years. Once the student completes a MAP growth test, they receive an RIT score (NWEA, n.d.-b). Even if the test is untimed, the testing duration per section is approximately 40–60 minutes. NWEA MAP assessments provide an overall subject score and scores for each instructional area (NWEA, n.d.-b). NWEA MAP tests and training are in use in nearly 9,500 PreK–12 school districts nationwide and 145 countries as of May 2021. Due to wide usage in primary and secondary schools, numerous research articles adopted NWEA MAP assessments as an instrument (Amrein-Beardsley et al., 2016; Klingbeil et al., 2019; Kuhfeld et al., 2019; VanDerHeyden & Burns, 2018). Table 1 shows the NWEA MAP growth test versions, grade levels, and the approximate number of questions in each section for the English version of the test (NWEA, n.d.-b).

Table 1*NWEA MAP Growth Test Subject Areas and Grade Levels*

Subject	Grade level	# of questions
Language	2–12	50–53
Mathematics	2–8	47–53
Mathematics (in two sessions)	K–2	32–34
Course-specific math (e.g., Algebra, Geometry)	Varies	40–43
Reading	2–6+	40–43
Reading (in two sessions)	K–2	43
Science	Varies	39–42

Schools can administer the tests up to four times per year. The charter operator for the research study site offers the NWEA MAP assessments three times per year, in fall, winter, and spring. All eligible kindergarten through 10th-grade students enrolled in the school system took the NWEA MAP assessments. The preexisting school system’s research department provided the virtually visited student names, demographic information, grade levels, and NWEA MAP scores

for the 2020–2021 school year in a secure electronic file. Teacher home visit data included dates and the number of school-system teachers participating in virtual teacher home visits and their assigned campus locations. The data were kept in a secure folder of a private laptop computer and will remain there for 3 years; after which they will be deleted. No one has access to the data without the university's Institutional Review Board (IRB) approval.

Data Analysis

The alpha level, or the level of significance, is the probability of rejecting the null hypothesis when it is true. The p value measures the probability of getting a more extreme value than the value received after the research. The p value is between zero and 1. When the p value is less than alpha, the null hypothesis will be rejected (Andrich & Marais, 2019; Stockemer, 2019). When the p value is smaller, typically ≤ 0.005 , rejecting the null hypothesis will be stronger.

Kindergarten through 10th-grade students' math and ELA NWEA MAP scores were analyzed. With the large sample size ($N = 24,000+$), a p value of .05 was used to determine the significance of all statistical inference tests. Because it was assumed data follow a normal distribution, a parametric test was more appropriate. A parametric test has a better ability to distinguish between the two arms (Orcan, 2020). One-way multivariate analysis of variance (MANOVA) was used to find any significant differences between the NWEA MAP scores of students who received a virtual home visit, to NWEA MAP scores of students who did not receive a virtual home visit during the COVID-19 global pandemic. Multiple ANOVAs produce an overall level of significance of a predictive model with multiple outcomes and predictor variables. Instead of MANOVA, multiple ANOVAs were used to assess the NWEA MAP ELA and math score effects separately (Cleophas & Zwinderman, 2016). There was no significant interaction between the demographic characteristics (i.e., gender, grade level, and subject)

included as predictor variables. For Research Question 1, students' NWEA MAP Spring 2021 ELA and math scores were entered as predictor variables. For Research Question 2, students' NWEA MAP Fall 2020 and Spring 2021 scores were entered as the predictor and imputed variables (Andrich & Marais, 2019; Stockemer, 2019). Further, ELA and math scores were not correlated, so a MANOVA would not have expressed appropriate data.

Data received in a Microsoft Excel spreadsheet were imported into Statistical Package for the Social Sciences (SPSS) worksheets, a data analysis tool used for advanced statistical analysis. The most current version of SPSS was used to conduct multiple ANOVAs for statistical analysis using raw data (Stockemer, 2019). One assumption was the study relied on the proper home visit data entry of the teachers. Without teachers recording accurate information and the software functioning properly, results would not be accurate. Another assumption was the NWEA MAP assessment's reliability and validity. The study's instrument was collected for both ELA and math subjects.

Reliability and Validity

Two possible threats to the validity of the study were external validity and internal validity (Stockemer, 2019). Achieving a high content validity can be challenging. Generalizing the settings, findings, and results can be difficult and require additional investigation. The population demographics may not clearly represent other school districts and may not provide a broader rationale for other school systems (Gopalan et al., 2020). Not having a pre-and post-test method increased reliability and findings relied solely on the NWEA MAP data. Furthermore, the research took place over 9 months of data gathering, producing significant growth data change from the beginning of the school year to the end of the school year. The student academic achievement and growth data change over a school year, ensuring the instrument's validity. The

NWEA MAP assessment instrument and the study had strong validity because the instrument is designed for the purpose of examining students' academic achievement and growth over time.

NWEA has produced numerous technical reports describing the reliability and validity of its portfolio of MAP assessments. The NWEA also incorporates procedures to align MAP test items and maintain the test's high reliability and validity for predicting student achievement test performance (Cordray et al., 2012). The virtual home visit data provided by the school system depend on the trustworthiness of teacher submission. Due to the large sample size ($n = 24,000+$), the results provided more accurate and reliable results with greater precision and power, but the work cost more time and effort. The reliability levels of the two tests used were not directly examined. Few studies reported the growth model does not affect another growth model when using the same data, as similar data are produced despite the model and model specifications (Amrein-Beardsley et al., 2016).

Ethical Procedures

In her study, Tangen (2014) divided research ethics into three domains: (a) ethics related to the research community, (b) ethics of the connections between people and groups influenced by the research, and (c) ethics compared to the external condition and research function for multiple groups and the quality of education (Tangen, 2014). No direct or indirect contact with students, teachers, or parents of the school system occurred. Because the research was done by collecting and analyzing archival data, there was no legal requirement for human subjects' protection and related ethical guidelines. The research did not have any requirements for data collection. No personal data of the students and teachers were used. Data were secured in a password-protected computer and kept anonymous as much as possible. The risks in the study were minimal due to established confidentiality and privacy protocols.

Chapter Summary

The differences between the academic achievement of the school system students who received a virtual teacher home visit and the similar students who did not receive a virtual home visit were examined. The quantitative quasi-experimental research design was appropriate for the study topic of the impact of virtual teacher home visits on student academic achievement and growth. The rationale for selecting the quasi-experimental design was to determine the differences between the variables without manipulating the participants and constructing generalized predictions. Implementing a quasi-experimental research design to test the hypotheses of two comparable variables, which differ regarding growth between the previous and new data, has been suggested by experts (Kluge et al., 2019; Kyakuwa, 2019; Strickler et al., 2018).

Many research studies adopted NWEA MAP assessments as an instrument due to MAP's wide usage in public schools (Amrein-Beardsley et al., 2016; Klingbeil et al., 2019; Kuhfeld et al., 2019; VanDerHeyden & Burns, 2018). The 2020–2021 school year NWEA MAP math and reading assessment scores were used as the predictor variables. Effect size with a 0.05 α level confidence was used to determine significance for all statistical inference tests. The study was expected to have a strong validity because the instrument was designed for the purpose of examining the students' academic achievement and growth over time. The legal and ethical requirements for protecting human participants were none to minimal because the study was conducted with archival data. In Chapter 4, the findings of the data analysis are presented and discussed.

Chapter 4: Research Findings and Data Analysis Results

The teacher home-visit program has been used to increase parent involvement and student academic success in school districts (Kronholz, 2016; Protacio et al., 2020; Wherry, 2009). The benefits of teacher home visits have been well documented in the literature (Baker et al., 2016; Iruka et al., 2018; Lin & Bates, 2010; Topcu & Dogan, 2020). Although the teacher home-visit program has been mainly used in early childhood education and elementary schools, the virtual teacher home-visit concept is new to school districts and became popular after the COVID-19 global pandemic.

The background of the problem was that no studies have examined the impact of virtual teacher home visits on student academic growth. There remained a shortage of research exploring the potential of virtual teacher home visits to support student achievement and growth. The problem was to determine if the virtual teacher home-visit program had any influence on student academic growth and achievement.

The research findings and data analysis results are organized into the following sections: data collection, data analysis and results, reliability and validity, and chapter summary. The first section of the research findings and data analysis results outlines the data collection, merging, and cleaning of the datasets. The second section provides the samples and variable details and information, findings and results, under the following subheadings: description of the sample, description of the variables, first hypothesis test results, Northwest Evaluation Association (NWEA) Measures of Academic Progress (MAP; NWEA, n.d.-b) English language arts (ELA) and mathematics (math) percentiles, NWEA MAP ELA and math success results, Hypothesis 1 findings, test results of the second hypothesis, grade level, gender, and Hypothesis 2 findings. The reliability and validity of the research are presented, followed by the results of the study as

they relate to each of the research questions posed. The last section concludes the chapter and summarizes the findings compared to the literature and previous studies.

Data Collection

The target population for the study comprised students and teachers from a Texas-based public charter school system, mostly centered in a major metropolitan and its surrounding areas, serving students in grades PreK–12. The school system operates 58 schools across seven independent school districts in 17 major cities across the state. The school system serves approximately 36,000 students, most of whom are economically disadvantaged and are identified with an underrepresented student group. To obtain permission to conduct the study, the proposal was presented to the American College of Education (ACE) Institutional Review Board (IRB). After receiving the approval from ACE IRB in December 2021, the data were requested from the point of contact at the target school site. Due to winter break, the data were received in mid-January 2022 after a few courtesy emails.

The point of contact provided three different data sets. The first data set had the virtual home visit data of the school system for the 2020–2021 school year. The data were cleaned by removing 121 other activities (i.e., mentoring and expedition) and 369 in-person home visits because the study only focused on virtual home visits. The second data set had the NWEA MAP results. The 2020–2021 spreadsheet has the valid NWEA MAP ELA tests, math tests, Rasch Unit (RIT) scores, grade level, test dates, test duration, previous year's fall and winter RIT scores, Lexile scores, fall-to-spring projected growth, fall-to-spring observed growth, winter-to-spring projected growth, and winter-to-spring observed growth. The third file had students' unique identification numbers (ID), grade levels, campus information, enrollment and withdrawal dates, gender, and ethnicity data. The PreK, kindergarten, 11th- and 12th-grade

classes are excluded from the data sets because those grade levels did not have NWEA MAP test data. The three spreadsheets were merged into one single file with the Microsoft Office Excel VLOOKUP formula, and multiple data rows were checked for the accuracy of the merging (Guerrero, 2019). The IDs were the common denominator in all three files. The data sets were kept in a personal laptop computer.

Description of the Sample

The first set of analyses (see Table 2) generated a demographic comparison between the groups. Description of the group differences is essential because the impacts of factors (e.g., gender, ethnicity, and grade levels) must be controlled to isolate the effect of the virtual teacher home-visit program. Half of the sample of students received a virtual teacher home visit (49.9%). Half of the sample was female (49%), and slightly more than half were Hispanic (53.1%). Table 2 has the breakdown of students per grade level.

Table 2

Frequencies and Percentages for the Variables Describing the Sample of Students (N = 24075)

Variables	N	%
Virtual teacher home visit		
No virtual home visit	12053	50.1
Virtual home visit	12022	49.9
Gender		
Female	11794	49.0
Male	12281	51.0
Ethnicity		
Asian	3203	13.3
Black	5009	20.8
Hispanic	12777	53.1
Native American	40	0.1
Pacific Islander	15	0.1
White	2604	10.8
Multiracial	427	1.8

Variables	<i>N</i>	%
Grade level		
First	2441	10.1
Second	2340	9.7
Third	2346	9.7
Fourth	2340	9.7
Fifth	2412	10.0
Sixth	2910	12.1
Seventh	2844	11.8
Eight	2833	11.8
Ninth	1975	8.2
10 th	1634	6.8

Note. Percentages reported are within the school enrollment spreadsheet.

Data Analysis and Results

The NWEA MAP test is a nationally normed, computer-adapted test created by the NWEA (n.d.-a). NWEA MAP testing was developed and used as a formative assessment to guide instruction, examine growth, and assess programs and interventions (Thum & Hauser, 2015). Students take NWEA MAP tests 3 times per year in the charter school network selected for this study.

The number of participants in each group in this study was adequate for a small effect size with a 0.05 α level confidence. Effect sizes were reported via the partial eta squared and presented in ANOVA tables. The two groups of students (i.e., one with virtual teacher home visits, one without virtual teacher home visits) were equal in number. Multiple ANOVAs were used to test each of the hypotheses. This analysis was chosen because there was one independent variable and multiple dependent variables (Dalgaard, 2008). Students with incomplete scores were excluded. Although there was no random selection, the NWEA MAP scores for each student were independent, and ANOVA could be conducted. Multiple ANOVAs were conducted to determine whether there was a statistically significant difference in NWEA MAP scores

between virtually visited student groups on each dependent variable. Instead of MANOVA, multiple ANOVAs were used for assessing the effects on ELA and math separately. Additionally, ELA and math performance was not correlated, so a MANOVA would not have expressed relevant information (Cleophas & Zwinderman, 2016; Forsyth, 2018).

Description of the Study Variables

The descriptive statistics for the study variables are shown in Table 3. NWEA MAP ELA achievement percentiles ranged from 1–99. The mode was one (3.7%, $n = 890$). The mean NWEA MAP ELA achievement score was 53.28 ($SD = 29.12$); the median was slightly higher at 57. NWEA MAP ELA growth scores ranged from –103 to 86. The mode was four (4.2%, $n = 1018$). The mean NWEA MAP ELA growth score was 3.77 ($SD = 12.35$); the median was slightly higher at 4. NWEA MAP math achievement percentiles ranged from 1–99. The mode was 99 (3.1%, $n = 747$). The mean NWEA MAP math achievement score was 55.93 ($SD = 30.08$); the median was slightly higher at 61. NWEA MAP math growth scores ranged from –81 to 88. The mode was eight (4.5%, $n = 1081$). The mean NWEA MAP math growth score was 8.32 ($SD = 11.76$); the median was slightly higher at 9.

Table 3

Descriptive Statistics for the Study Variables ($N = 24075$)

Variables	Range	Mode	<i>Md</i>	<i>M</i>	<i>SD</i>
NWEA ELA					
Achievement (percentile)	1 to 99	1	57	53.28	29.12
Growth from fall to spring	-103 to 86	4	4	3.77	12.36
NWEA Math					
Achievement (percentile)	1 to 99	99	61	55.93	30.08
Growth from fall to spring	-81 to 88	8	8		11.76

Note. Variables are reported within the school NWEA MAP growth spreadsheet.

Test Results of the First Hypothesis

The first hypothesis questioned a statistically significant difference between the academic achievement of the school system's K–12 students who received a virtual teacher home visit and the students who did not receive a virtual home visit. Academic achievement was measured in two ways: (a) using the actual percentile scores and (b) categorizing the sample into either a failure or success group using their percentile scores. Students were categorized into the success group when their percentile scores were 50 or higher. One-way ANOVA procedures were used to test differences between the actual percentile scores because percentile scores are measured on an interval scale. Cross tabulation, with chi-square procedures, was conducted to test differences between the proportion of failures and successes. The results are presented in the Hypothesis 1 testing summary section. This procedure was used because both the independent variable, such as students with no visit versus visit, and the dependent variable, such as failure versus success, were measured using a nominal scale.

NWEA MAP ELA Percentiles

ANOVA findings revealed NWEA MAP ELA achievement differed significantly across virtual visit groups, $F(1, 24073) = 6.06, p = 0.014$; partial $\eta^2 = 0.00$. NWEA MAP ELA percentile scores for students who received a virtual visit ($M = 53.74, SD = 29.32$) were higher than students who did not receive a virtual visit ($M = 52.81, SD = 28.91$). Note, however, the effect size was very small at 0.000; therefore, the practical impact of having a virtual teacher home visit on NWEA MAP ELA achievement was virtually null.

NWEA MAP Math Percentiles

ANOVA findings indicated NWEA MAP math achievement differed significantly across virtual visit groups, $F(1, 24073) = 15.91, p = 0.001$; partial $\eta^2 = 0.001$. The findings in Table 4

show the NWEA MAP math percentile scores for students who received a virtual teacher home visit ($M = 56.70$, $SD = 30.41$) were higher than students who did not receive a virtual teacher home visit ($M = 55.16$, $SD = 29.74$). Again, note the effect size was very small at 0.001; thus, the practical impact was minimal.

Table 4

ANOVA Results for NWEA MAP ELA and Math Achievement (N = 24075)

Subject	No Visit <i>M</i>	No Visit <i>SD</i>	Visit <i>M</i>	Visit <i>SD</i>	<i>df</i>	<i>F</i>	<i>Partial η²</i>
NWEA ELA	52.81	28.91	53.74	29.32	1, 24073	6.06*	0.000
NWEA Math	55.16	29.74	56.70	30.41	1, 24073	15.91***	0.001

Note. * $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

NWEA MAP ELA Success

Cross-tabulation findings revealed the NWEA MAP ELA achievement differed only marginally across virtual visit groups, $\chi^2(1) = 3.57$, $p = 0.059$. Students were categorized into the success group when their percentile scores were 50 or higher. As shown in Table 5, the difference in percentage between failure and success in the group of students who did not receive a virtual teacher home visit was slightly lower (i.e., 14.2%) than the difference in percentage within the group of students who received a virtual teacher home visit (i.e., 16.6%).

Table 5*Cross-Tabulation Results for NWEA MAP ELA Achievement (N = 24075)*

Virtual home visit	Failure <i>n</i>	Failure %	Success <i>n</i>	Success %
No Visit	5170	42.9	6883	57.1
One Virtual home visit	5012	41.7	7010	58.3

Note. Percentages reported are within visit groups. NWEA MAP ELA achievement differed only marginally across virtual visit groups, $\chi^2(1) = 3.57, p = .059$.

NWEA MAP Math Success

Cross-tabulation findings in Table 6 revealed the NWEA MAP math achievement differed significantly across virtual visit groups, $\chi^2(1) = 10.67, p = 0.001$. Students were categorized into the success group when their percentile scores were 50 or higher. The difference in percentage between failure and success in the group of students who did not receive a virtual teacher home visit was significantly lower (i.e., 17.6%) than the difference in percentage within the group of students who received a virtual teacher home visit (i.e., 21.6%).

Table 6*Cross-Tabulation Results for Math Achievement (N = 24075)*

Virtual home visit	Failure <i>n</i>	Failure %	Success <i>n</i>	Success %
No Visit	4971	41.2	7082	58.8
One Virtual Home Visit	4710	39.2	7312	60.8

Note. Percentages reported are within visit groups. NWEA MAP math achievement differed significantly across virtual visit groups, $\chi^2(1) = 10.67, p = 0.001$.

Hypothesis 1 Testing Summary

Hypothesis 1 predicted a statistically significant difference between academic achievement of the school system's K–12 students who received a virtual teacher home visit and the students who did not receive a virtual home visit. The findings partially supported this hypothesis. NWEA MAP ELA achievement was significantly or marginally stronger when students received a virtual teacher home visit. The NWEA MAP math achievement results were generally more robust than the NWEA MAP ELA findings. First, the statistically significant difference in percentile scores between students who received and did not receive a virtual teacher home teacher visit was stronger for NWEA MAP math achievement ($p = 0.001$) than for NWEA MAP ELA achievement ($p = 0.014$). Second, the failure versus success findings for NWEA MAP math achievement was statistically significant ($p = 0.001$), whereas those for NWEA MAP ELA achievement were only marginally significant ($p = 0.059$).

Test Results of Hypothesis 2

The second hypothesis posited a statistically significant difference between the academic growth of the school system's K–12 students who received a virtual teacher home visit and the students who did not receive a virtual home visit. Specifically, this hypothesis sought to determine growth within the grade level and within gender. One-way ANOVA procedures were done within grade and gender to determine whether academic growth differed between students who received a virtual home teacher visit and those who did not receive a visit.

Grade Level

Prior to conducting grade-level ANOVA procedures, a two-way ANOVA was conducted to determine whether the relationship between virtual home teacher visits and academic growth differed across grade levels. The findings in Table 7 indicated the relationship between virtual

home teacher visits and academic growth in NWEA MAP ELA did not differ significantly across grade levels, $F(9, 24055) = 1.17, p = 0.312$, partial $\eta^2 = 0.000$. Similarly, the relationship between virtual home teacher visits and academic growth in NWEA MAP math did not differ significantly across grade levels, $F(9, 24055) = 0.82, p = 0.595$, partial $\eta^2 = 0.000$.

Table 7

Two-Way ANOVA Results for Virtual Home Visit, Grade Level, and Academic Growth ($N = 24075$)

Source	<i>df</i>	<i>MS</i>	<i>F</i>	Partial η^2
NWEA ELA				
Visit	1	390.78	2.72	0.000
Grade level	9	23722.17	164.85 ***	0.058
Visit x grade level	9	167.78	1.17	0.000
Error	24055	143.91		
NWEA Math				
Visit	1	589.11	4.31*	0.000
Grade level	9	3925.66	28.71 ***	0.011
Visit x grade level	9	112.53	0.82	0.000
Error	24055	136.74		

Note. * $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

Twenty ANOVA procedures were conducted (two for each grade level) to determine academic growth within grade level (see Table 8). The findings are discussed in the Hypothesis 2 testing summary section. Only the two statistically significant findings are discussed. First, within the second grade, NWEA MAP math academic growth differed significantly across virtual teacher home visit groups, $F(1, 2338) = 3.90, p = 0.048$, partial $\eta^2 = 0.001$. Mean academic growth was significantly higher for the group of students who received a virtual teacher home visit ($M = 8.75, SD = 13.73$) than for those who did not receive a virtual teacher

home visit ($M = 7.63$, $SD = 13.71$). Second, within the fifth grade, NWEA MAP math academic growth differed significantly across virtual teacher home visit groups, $F(1, 2410) = 3.98$, $p = 0.046$, partial $\eta^2 = 0.002$. Mean academic growth was significantly higher for the group of students who received a virtual teacher home visit ($M = 8.75$, $SD = 13.73$) than for students who did not receive a virtual teacher home visit ($M = 8.75$, $SD = 13.73$).

Table 8

ANOVA Results for NWEA MAP ELA and Math Academic Growth within Grade Level (N = 24075)

Subject	No visit <i>M</i>	No visit <i>SD</i>	Visit <i>M</i>	Visit <i>SD</i>	<i>df</i>	<i>F</i>	Partial η^2
First grade							
ELA	6.70	15.73	7.18	14.77	1, 2439	0.61	0.000
Math	8.48	15.99	8.69	15.86	1, 2439	0.11	0.000
Second grade							
ELA	7.85	14.80	8.99	15.10	1, 2338	3.38	0.001
Math	7.63	13.71	8.75	13.73	1, 2338	3.90*	0.002
Third grade							
ELA	7.46	12.48	7.38	12.39	1, 2344	0.02	0.000
Math	10.19	11.42	10.73	10.80	1, 2344	1.40	0.001
Fourth grade							
ELA	4.44	11.37	4.46	11.31	1, 2338	0.00	0.000
Math	7.35	10.54	7.75	10.89	1, 2338	0.83	0.000
Fifth grade							
ELA	4.74	10.73	5.36	11.67	1, 2410	1.86	0.001
Math	6.38	9.21	7.16	10.06	1, 2410	3.98*	0.002
Sixth grade							
ELA	2.31	10.97	2.34	11.04	1, 2908	0.01	0.000
Math	9.47	10.64	9.40	10.56	1, 2908	0.04	0.000
Seventh grade							
ELA	2.10	10.82	1.36	11.24	1, 2842	3.25	0.001
Math	8.34	10.84	8.34	10.84	1, 2842	0.50	0.000
Eighth grade							
ELA	1.81	10.69	1.86	10.55	1, 2831	0.02	0.000
Math	9.30	11.39	9.34	11.13	1, 2831	0.01	0.000

Subject	No visit <i>M</i>	No visit <i>SD</i>	Visit <i>M</i>	Visit <i>SD</i>	<i>df</i>	<i>F</i>	Partial η^2
Ninth grade							
ELA	-0.65	10.68	-0.05	10.27	1, 1973	1.60	0.001
Math	6.51	11.23	6.53	11.06	1, 1973	0.00	0.000
10 th grade							
ELA	-1.45	10.40	-0.97	10.32	1, 1632	0.86	0.001
Math	6.46	10.78	6.87	11.67	1, 1632	0.57	0.000

Note. * $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

Gender

Prior to conducting gender ANOVA procedures, a two-way ANOVA was conducted to determine whether the relationship between virtual home teacher visits and academic growth differed across gender. The findings in Table 9 show the relationship between virtual home teacher visits and academic growth in NWEA MAP ELA did not differ significantly across gender, $F(1, 24071) = 0.99, p = 0.320$, partial $\eta^2 = 0.000$. Likewise, the relationship between virtual home teacher visits and academic growth in NWEA MAP math did not differ significantly across gender, $F(1, 24071) = 1.75, p = 0.186$, partial $\eta^2 = 0.000$.

Table 9

Two-Way ANOVA Results for Virtual Home Visit, Gender, and Academic Growth (N = 24075)

Source	<i>df</i>	<i>MS</i>	<i>F</i>	Partial η^2
NWEA ELA				
Visit	1	131.48	0.86	0.000
Gender	1	3814.41	25.00***	0.001
Visit x gender	1	150.73	0.99	0.000
Error	24017	152.55		
NWEA Math				
Visit	1	597.90	4.33*	0.000
Gender	1	1661.22	12.03***	0.000

Source	<i>df</i>	<i>MS</i>	<i>F</i>	Partial η^2
Visit x gender	1	241.66	1.75	0.000
Error	24071	138.10		

Note. * $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

Four ANOVA procedures were conducted (two for each gender) to determine academic growth within gender (see Table 10). Only the sole statistically significant finding is discussed. Within the group of males, NWEA MAP math academic growth differed significantly across virtual teacher home visit groups, $F(1, 12279) = 5.74, p = 0.017$, partial $\eta^2 = 0.001$. Mean academic growth was significantly higher for the group of students who received a virtual teacher home visit ($M = 8.32, SD = 11.85$) than for students who did not receive a virtual teacher home visit ($M = 7.81, SD = 12.01$).

Table 10

ANOVA Results for NWEA MAP ELA and Math Academic Growth Within Gender (N = 24075)

Subject	No Visit <i>M</i>	No Visit <i>SD</i>	Visit <i>M</i>	Visit <i>SD</i>	<i>df</i>	<i>F</i>	Partial η^2
Females							
NWEA ELA	4.19	11.77	4.18	11.69	1,11792	0.00	0.000
NWEA Math	8.53	11.38	8.65	11.74	1,11792	0.29	0.000
Males							
NWEA ELA	3.23	12.87	3.54	12.97	1,12279	1.72	0.000
NWEA Math	7.81	12.01	8.32	11.85	1,12279	5.74*	0.001

Note. * $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

Hypothesis 2 Testing Summary

It was hypothesized, within grade level, there would be a statistically significant difference between the academic growth of the school system's K–12 students who received a virtual teacher home visit and students who did not receive a virtual home visit. This hypothesis was only partially supported: it was not supported in terms of ELA, but was partly supported in terms of math growth (and only for the second and fifth grades). It was hypothesized, within gender, a statistically significant difference existed between the academic growth of the school system's K–12 students who received a virtual teacher home visit and the students who did not receive a virtual home visit. This hypothesis was only partially supported: it was not supported in terms of ELA, but was partly supported in terms of math growth (and only for males).

Reliability and Validity

The NWEA MAP tests are a computer-adaptive test. The test platform starts with a question of average difficulty for the assessed grade and then automatically adjusts the difficulty of the questions for each student based on the accuracy of their answers. Each question has four possible answer choices. The NWEA MAP tests' validity was assessed each year concurrently. The NWEA MAP has a robust research infrastructure recognized nationally for its reliability and validity (NWEA, n.d.-b; Thum & Hauser, 2015). Because the study involved collecting archival data from the target school system, no threats to external validity were expected. The two-group design (i.e., virtual teacher home visit, and no virtual teacher home visit) using archival data also controlled many threats to internal validity.

Chapter Summary

This quasi-experimental study of the virtual teacher home-visit program analyzed the 2020–2021 school year NWEA MAP ELA and math scores of a K–12 school system in Texas.

Half of the students examined in this study (i.e., 12,022) received a virtual home visit, and 49.0% were female. This study focused on NWEA MAP achievements and growth scores to determine difference between students who received a virtual teacher home visit and students who did not receive a virtual teacher home visit in Grades K–10 in a large Texas charter school district. NWEA MAP assessment has been established as an efficient and effective method for progress monitoring and universal screening (Cordray et al., 2012; NWEA, n.d.-b; Thum & Hauser, 2015).

The data and findings from the current study were consistent with previous research between NWEA MAP and student engagement (Cornett et al., 2020; Ilhan et al., 2019; Kronholz, 2016; Lin & Bates, 2010; Protacio et al., 2020; Topcu & Dogan, 2020; Wright et al., 2018). This study expanded on existing literature by examining the relationships and predictive features between virtual home visits and NWEA MAP scores. The results supported the first hypothesis partially. NWEA MAP ELA achievement was significantly or marginally stronger when students received a virtual teacher home visit. NWEA MAP math achievement results were generally more robust than NWEA MAP ELA findings. The second hypothesis was only partially supported: the second hypothesis was not supported in terms of ELA, but was partly supported in terms of math growth (albeit only for the second and fifth grades). More interpretations of those findings and an explanation of the study's strengths and limitations are presented in Chapter 5. A discussion of the implications of these findings, limitations of the study, and recommendations for practice and further research based on these findings follow.

Chapter 5: Discussion and Conclusion

The study's findings as they addressed the stated research questions are discussed and contextualized in this chapter. This chapter also highlights any additional discoveries and limitations and examines implications and recommendations. The quasi-experimental research study aimed to examine the impact of the virtual teacher home-visit program on student achievement and growth by comparing Northwest Evaluation Association (NWEA) Measures of Academic Progress (MAP) English language arts (ELA) and math scores of the school system's K–12 students who received a virtual teacher home visit and students who did not receive a virtual home visit.

The issue of the effect of virtual home visits on student success and academic growth was examined in this study. The study extended existing literature by analyzing relationships and predictive features between virtual home visits and NWEA MAP scores. The results supported the first hypothesis to some degree; a statistically significant difference existed between the academic achievement of the school system's K–12 students who received a virtual teacher home visit (i.e., the independent variable) and the similar students who did not receive a virtual home visit (i.e., the dependent variable) during the COVID-19 global pandemic. NWEA MAP ELA achievement was stronger when students received a virtual teacher home visit. The NWEA MAP math achievement results were stronger than the NWEA MAP ELA findings to some degree. The second hypothesis was only partially supported in second and fifth grade math growth scores, but not in ELA growth scores.

The detailed data analysis from this quasi-experimental study was presented in Chapter 4. The findings and recommendations presented in this research may be interpreted and used in further investigations. Chapter 5 also discusses this study's limitations, recommendations for

both educators and educational leaders, and implications for the field of education. The implications for leadership describe a potential change for virtual home-visit program implementation.

Findings, Interpretations, and Conclusions

Chapter 4 provided detailed results and data to analyze and answer the two research questions and their respective hypotheses. Interpretations and conclusions are outlined based on statistical analysis and within the context of the study's theoretical framework among existing literature. The literature review revealed a need for current research because comparatively little recent literature exists on virtual teacher home visits. The majority of the research literature was primarily anecdotal, qualitative, and generally without any statistical foundation. Chapter 4's data and findings were partially compatible with previous research between NWEA MAP and student engagement (Cornett et al., 2020; Ilhan et al., 2019; Kronholz, 2016; Lin & Bates, 2010; Protacio et al., 2020; Topcu & Dogan, 2020; Wright et al., 2018). The two research questions and two null hypotheses considered for the investigation were:

Null Hypothesis 1 (H01): No statistically significant difference exists between the academic achievement of the school system's K–12 students who received a virtual teacher home visit, the independent variable, and the similar students who did not receive a virtual home visit, the dependent variable, during the COVID-19 global pandemic.

Hypothesis 1 (Ha1): A statistically significant difference exists between the academic achievement of the school system's K–12 students who received a virtual teacher home visit, the independent variable, and the similar students who did not receive a virtual home visit, the dependent variable, during the COVID-19 global pandemic.

Null Hypothesis 2 (H02): No statistically significant difference exists between the academic growth of the school system's K–12 students who received a virtual teacher home visit, the independent variable, and the similar students who did not receive a virtual home visit, the dependent variable, during the COVID-19 global pandemic.

Hypothesis 2 (Ha2): A statistically significant difference exists between the academic growth of the school system's K–12 students who received a virtual teacher home visit, the independent variable, and the similar students who did not receive a virtual home visit, the dependent variable, during the COVID-19 global pandemic.

Description of the Study Variables

The sample size was 24,075. Half of the students received a virtual teacher home visit (49.9%). Half of the sample was female (49%), and slightly more than half were Hispanic (53.1%). Table 2 included the breakdown of students per grade level. The number of participants in each group in this study was sufficient for a small effect size with a 0.05 α level confidence. Effect sizes were reported via the partial eta squared and presented in the ANOVA tables. The number of students in each group was equal in number between students who received a virtual teacher home visit and who did not. Multiple ANOVAs were used to test each of the hypotheses. This analysis was chosen because there was one independent variable and multiple dependent variables (Dalgaard, 2008). Students without test scores were excluded. Because there was no random selection, and the NWEA MAP scores for each student were independent, ANOVA was selected. Multiple ANOVAs were conducted to determine whether a statistically significant difference existed in NWEA MAP scores between virtually visited student groups on each dependent variable. The effect on ELA and math scores were assessed separately (Cleophas & Zwinderman, 2016; Forsyth, 2018).

Table 3 presented the descriptive statistics for the study variables. NWEA MAP ELA and math achievement percentiles ranged from 1–99. The NWEA MAP ELA achievement mean was 53.28, and math was 55.93. ELA growth scores ranged from –103 to 86, and math growth scores ranged from –81 to 88. The average ELA growth score was 3.77, and the average math growth score was 8.32.

Hypothesis 1 Findings and Results

Academic achievement was measured using the actual percentile scores and ordering the sample into either a failure or success group. Students with 50% or higher scores in their respective NWEA MAP test results were ranked in the success group, and students who scored below 50% were categorized as the failure group. One-way ANOVA procedures were used to test differences between the actual percentile scores because percentile scores were measured on an interval scale. Cross tabulation, with chi-square procedures, was conducted to test differences between the proportion of failures and successes.

The ANOVA findings revealed both NWEA MAP ELA and math achievement differed across virtual visit groups. As shown in Table 4, NWEA MAP ELA percentile scores for students who received a virtual visit ($M = 53.74$, $SD = 29.32$) were higher than students who did not receive a virtual visit ($M = 52.81$, $SD = 28.91$). Similarly, NWEA MAP math percentile scores for students who received a virtual teacher home visit ($M = 56.70$, $SD = 30.41$) were higher than those who did not receive a virtual home visit ($M = 55.16$, $SD = 29.74$). Note, because the effect size was minimal (ELA $\eta^2=0.000$ and math $\eta^2=0.001$), the practical impact of having a virtual teacher home visit on NWEA MAP ELA and math achievement was virtually null.

Students with percentile scores of 50 or higher were categorized into the success group. The cross-tabulation findings showed NWEA MAP ELA achievement differed only marginally across virtual visit groups. As shown in Table 5, the difference in NWEA MAP ELA percentage between failure and success in the group of students who did not receive a virtual teacher home visit was slightly lower (14.2%) than the difference in percentage within the group of students who received a virtual teacher home visit (16.6%). Likewise, the NWEA MAP math achievement scores differed across virtual visit groups. The difference in NWEA MAP math percentage between failure and success in the group of students who did not receive a virtual teacher home visit was significantly lower (17.6%) than the difference in percentage within the group of students who received a virtual teacher home visit (21.6%).

The first hypothesis expected a statistically significant difference between the academic achievement of the school system's K–12 students who received a virtual teacher home visit and the students who did not receive a virtual home visit. The results partially supported this hypothesis. NWEA MAP ELA achievement was marginally stronger when students received a virtual teacher home visit. The NWEA MAP math achievement results were generally more robust than the NWEA MAP ELA findings. First, the statistically significant difference in percentile scores between students who received and did not receive a virtual teacher home teacher visit was more robust for NWEA MAP math achievement ($p = 0.001$) than for NWEA MAP ELA achievement ($p = 0.014$). Second, the failure vs. success findings for NWEA MAP math achievement was statistically significant ($p = 0.001$), whereas those for NWEA MAP ELA achievement were only marginally significant ($p = 0.059$).

Hypothesis 2 Findings and Results

The second hypothesis predicted a statistically significant difference between the academic growth of the school system's K–12 students who received a virtual teacher home visit and the students who did not receive a virtual home visit. Particularly, this hypothesis proposed to determine growth within the grade level and gender. One-way ANOVA procedures were conducted within grade level and gender to determine whether academic growth differed between students who received a virtual home teacher visit and those who did not receive a visit.

A two-way ANOVA was performed to determine whether the relationship between virtual home teacher visits and academic growth differed across grade levels. The findings indicated the relationship between virtual teacher home visits and academic growth in NWEA MAP ELA and math did not differ significantly across grade levels. Two ANOVA procedures were conducted for each grade to determine academic growth within the grade level. The only significant findings were the second- and fifth-grade level NWEA MAP math academic growths differed significantly across the groups of the students who received a teacher home visit and students who did not. (Second grade math: $F [1, 2338] = 3.90, p = 0.048$, and fifth grade math: $F [1, 2410] = 3.98, p = 0.046$)

After determining no difference between the virtual teacher home visits in both NWEA MAP ELA and math academic growth, four ANOVA procedures were conducted to decide on academic growth within gender. Only one statistically significant finding was discovered within the group of males. NWEA MAP math academic growth differed significantly across virtual teacher home visit groups, $F (1, 12279) = 5.74, p = 0.017$.

Hypothesis 2 findings had a few varied results but primarily did not support the assumption proposing a statistically significant difference between the academic growth of the

school system's K–12 students who received a virtual teacher home visit and the students who did not receive a virtual home visit. The second hypothesis was supported in terms of math growth (and only for the second and fifth grade students) but not in ELA. Additionally, there was a significant difference in males' NWEA MAP academic growth between students who received a virtual teacher home visit and those who did not receive a virtual home visit.

Limitations

This study, like all studies, has limitations. As with experimental design, quasi-experimental research methodology lacks the element of random assignment to treatment or control. Quasi-experimental design cannot test for statistical relations between variables (Cleophas & Zwinderman, 2016; Dalgaard, 2008). Threats to internal and external validity exist. Internal validity is how changes in the dependent variable are directly related to the independent variable and are not due to some other variable. In contrast, external validity refers to whether or not the research results are generalizable to different settings and groups outside of the research setting (Dalgaard, 2008).

The virtual home visits conducted for this study included self-reporting measures entered by teachers, which may cause data entry error. The charter school system's student population was predominantly Hispanic, not unusual for U.S. student demographics (U.S. Department of Education, 2016). Another limitation of this study was the amount of data discarded because of invalid data. The data discarded were from missing student IDs and errors in activity types (i.e., entering in-person visit versus virtual visit). The discarded data was not significant because it was less than 2% of the whole dataset (Aggarwal & Ranganathan, 2016).

Another limitation of the study could be the generalizability. The research site was a large, Texas-based K–12 charter school system, which might differ in composition from other

school systems. Transferring the research findings of the study to other school networks should be considered carefully.

Neither limitation nor generalizability derailed the research. Completion of the study was accomplished, and the research questions and hypotheses were analyzed. The limitations could point to the need for further analysis using different sample sizes and another school year without the dominant effect of COVID-19.

Recommendations

Based on the findings of this research that indicated little or limited connection between NWEA MAP ELA and math achievement and growth scores for students who received a virtual teacher home visit and students who did not receive a virtual home visit, it is recommended schools who are implementing virtual teacher home-visit program to revise and modify their practices and implementations. District administrators can use information from this study to determine if funds and time spent on virtual home visits have the desired effect of raising the academic achievement levels of students they serve or research other possible benefits.

The in-person teacher home visits program might be a better model for school systems looking to improve student academic achievement by offering more parental involvement activities (Cornett et al., 2020; Ilhan et al., 2019; Kronholz, 2016; Wright et al., 2018). However, there is insufficient data regarding the virtual home-visit program to make a strong recommendation for all districts to move to this model. Virtual teacher home visits in literature lacked data and work to develop student's academic skills, especially when foundational skills are necessary for continued success and growth. Teachers and administrators need to be focused on initiatives and programs that have a direct impact on their students' academic success and growth.

If the school system considers conducting future virtual teacher home visits, it is recommended that visits are limited to the parents of newcomers, students with behavioral issues, and parents of the at-risk students, as in-person visit studies suggested (Keilty & Kosaraju, 2018; Kilburn & Cannon, 2019; Walsh, Mortensen, Edwards et al., 2020). For students not in the at-risk population, the impact of virtual home visits would likely diminish. The benefits of virtual teacher home visits may support and assist the students and their parents who need extra guidance and help.

Although these findings were informative for the charter school system with 58 schools all across Texas where this research was conducted, it is also informative to non-charter schools and non-Texas state schools who are thinking about changing their practices to address the needs of all learners. These findings are beneficial in evaluating the transition to an in-person home-visit program for district administrators, educators, and key stakeholders who prefer to start the home-visit program. This transition may require additional professional development for the teachers on how to conduct in-person home visits.

A few constraints in this study indicated future research would be beneficial. One recommendation for future research is to make comparisons based on different demographics of students in the study to see if the demographics of the students give different NWEA MAP assessment information about the virtual home visits. In addition to the demographics, all subgroups of the learners, such as gifted, special education, and ESL, can be examined to see the impact of virtual home visits (Iruka et al., 2018; Kronholz, 2016; Protacio et al., 2020). Future research can be conducted on different school systems and states that might cause the success of this model. A final recommendation for future research is to analyze students' academic grades

and discipline referrals of the students who received a virtual home visit and who did not, in addition to the NWEA MAP ELA and math scores.

Implications for Leadership

Educational leaders need to consider the facts of educational programs with an emphasis on their impact on student success and growth. Concerns about the effects of virtual teacher home visits on student achievement raised questions about the program's effectiveness. School administrators may apply information shared from the study to review their actions and practices regarding the virtual home-visit program. The study's findings confirmed a critical component for evaluating the effectiveness of the virtual home-visit program. Strategies can be created either to support teachers on expected outcomes and practices on how to conduct virtual home visits (Faber, 2015) or transform the program to in-person teacher home visits (Topcu & Dogan, 2020; Wright et al., 2018).

Motivational theory studies a person's drive to function toward a particular objective or output (Kaplan et al., 2012; Khurana & Joshi, 2017). Motivational theory is relevant to the in-person home-visit program outcome where students and parents can be motivated toward schoolwork and instruction when implemented effectively (Kronholz, 2016). Educators can build better relationships with learners and their families through virtual home visits. Teachers can find ways to intrinsically motivate students to become more engaged with their learning through these visits. In-person home visits can also transform parents' perceptions about the school and break barriers between schools and families. Studies have shown motivation to be a potent stimulant of student learning and success (Beese & Martin, 2019; Liu et al., 2020). One implication needed for the impact of in-person home visits was high-quality ongoing training for educators

passionate about the program (Topcu & Dogan, 2020). The research findings suggest an evaluation of the virtual home-visit program from both students' and educators' perspectives.

Transformational leadership, after presented by Downtown in 1973, became the most influential leadership model in educational administration (Brown et al., 2019). In transformational leadership theory, campus administrators can demonstrate authentic leadership and inspire employees to follow them. By motivating their followers, educational leaders can support educators to a higher level of morals and motive (Brown et al., 2019; Kwan, 2020; Nandedkar et al., 2020). The findings and results drawn from the study could have implications for the school and district leaders, educators, and other governing stakeholders. School leaders can transfer results of this research to reevaluate the impact of the virtual home visits and transition from virtual visits to in-person home visits that recent studies suggested (Cornett et al., 2020; Faber, 2015; Ilhan et al., 2019; Kilburn & Cannon, 2019; Kronholz, 2016; Wright et al., 2018). Educational administrators can use this research data when presenting reasons for the transformation of the in-person home visits. Although literature supports the need for in-person home visits in schools (Ilhan et al., 2019; Kronholz, 2016; Wright et al., 2018), there is limited information on virtual home visits. Data drawn from this study have implications for school leaders. District administrators may benefit from the study by understanding how virtual home visits have relationships with the students' academic success and growth.

Conclusion

The purpose of the quasi-experimental research study was to determine the impact of virtual teacher home visits on the academic growth and achievement of Texas-based charter school district students by using NWEA MAP data during the COVID-19 global pandemic. The research was necessary to address whether the school system's virtual teacher home-visit

program resulted in student academic achievement and differences in growth. This research contributed to the knowledge base by providing evidence of the effectiveness of virtual teacher home visits for students in elementary and secondary schools.

The study's findings revealed virtual teacher home visits have little or limited influence on overall student academic success and growth. Building relationships with parents and schools to increase student achievement by conducting virtual home visits was not confirmed by this study's results. Transformational changes are needed to evaluate the virtual home-visit program. Published literature has reported the best practice is to conduct in-person home visits for increased parent engagement and lower student discipline referrals (Cornett et al., 2020; Ilhan et al., 2019; Kronholz, 2016; Topcu & Dogan, 2020; Wright et al., 2018). Students' academic success and growth, analyzed by NWEA MAP assessments, were not confirmed in this research. With a data-driven mindset, the school leaders and educators can look for alternative practices to improve parent engagement.

References

- Aggarwal, R., & Ranganathan, P. (2016). Common pitfalls in statistical analysis: The use of correlation techniques. *Perspective in Clinical Research*, 7(4), 187–190.
<https://doi.org/10.4103/2229-3485.192046>
- Akasha, O. (2020). “Frozen up like an ice cube!”: The influence of situated learning on pre-service teachers’ cultural and linguistic awareness. *The Qualitative Report*, 25(9), 3391–3424. <https://nsuworks.nova.edu/tqr/vol25/iss9/15/>
- Akdemir, E. (2020). The determination of teachers’ motivation based on Herzberg’s motivation theory. *The Turkish Online Journal of Educational Technology*, 19(4), 89–101.
<https://teachonline.ca/tools-trends/journals/turkish-online-journal-educational-technology-tojet>
- Amrein-Beardsley, A., Polasky, S., & Holloway-Libell, J. (2016). Validating “value-added” in the primary grades: One district’s attempts to increase fairness and inclusivity in its teacher evaluation system. *Educational Assessment, Evaluation, and Accountability*, 28(1), 139–159. <https://doi.org/10.1007/s11092-015-9234-5>
- Andrich, D., & Marais, I. (2019). *A course in Rasch measurement theory* [Adobe digital ed.]. Springer. <https://doi.org/10.1007/978-981-13-7496-8>
- Anonymous. (2021). Post pandemic. *Issues in Science and Technology*, 37(2), 31–49.
<https://issues.org/>
- Avelino, C. C. V., da Costa, L. C. S., Buchhorn, S. M. M., Nogueira, D. A., & Goyatá, S. L. T. (2017). Teaching-learning evaluation on the ICNP® using virtual learning environment. *Revista Brasileira de Enfermagem*, 70(3), 602–637. <https://doi.org/10.1590/0034-7167-2016-0545>

Bailey, J. (2020). Reopening resilient schools. *Education Next*, 20(4), 1–9.

<https://www.educationnext.org/the-journal/>

Baker, T. L., Wise, J., Kelley, G., & Skiba, R. J. (2016). Identifying barriers: Creating solutions to improve family engagement. *School Community Journal*, 26(2), 161–184.

<https://www.schoolcommunitynetwork.org/SCJ.aspx>

Bak-Srednicka, A. (2018). Foreign language teacher education: School placements as a source of knowledge about parents as partners in the educational process. *International Journal of Progressive Education*, 14(6), 51–60. <https://doi.org/10.29329/ijpe.2018.179.4>

Barrasso, A. P., & Spilios, K. E. (2021). A scoping review of literature assessing the impact of the learning assistant model. *International Journal of STEM Education*, 8(12), 1–18.

<https://doi.org/10.1186/s40594-020-00267-8>

Beese, J. A., & Martin, J. L. (2019). Csikszentmihalyi's concept of flow and theories of motivation connection to the arts in an urban public high school. *Journal for Learning Through the Arts*, 15(1), 1–34. <https://doi.org/10.21977/D915135480>

Berkovich, I. (2016). School leaders and transformational leadership theory: Time to part ways? *Journal of Educational Administration*, 54(5), 609–622. <https://doi.org/10.1108/JEA-11-2015-0100>

Berkovich, I. (2018). Will it sink or will it float: Putting three common conceptions about principals' transformational leadership to the test. *Educational Management Administration & Leadership*, 46(6), 888–907.

<https://doi.org/10.1177/1741143217714253>

- Bishop, A., & Brott, T. (2020). The digital age of occupational therapy home visits. *New Zealand Journal of Occupational Therapy*, 67(2), 14–18.
<https://search.informit.org/doi/10.3316/informit.540132589459154>
- Bloomfield, J., & Fisher, M. J. (2019). Quantitative research design. *Journal of the Australasian Rehabilitation Nurses' Association*, 22(2), 27–30. <https://doi.org/10.33235/jarna.22.2.27-30>
- Borup, J., Chambers, C., & Srimson, R. (2019). Online teacher and on-site facilitator perceptions of parental engagement at a supplemental virtual high school. *International Review of Research in Open and Distributed Learning*, 20(2), 79–95.
<https://doi.org/10.19173/irrodl.v20i2.4237>
- Brown, M., Brown, R. S., & Nandedkar, A. (2019). Transformational leadership theory and exploring the perceptions of diversity management in higher education. *Journal of Higher Education Theory and Practice*, 19(7), 11–21.
<https://doi.org/10.1177/1059601111401017>
- Callan, G. L., & Cleary, T. J. (2019). Examining cyclical phase relations and predictive influences of self-regulated learning processes on mathematics task performance. *Metacognition and Learning*, 14(1), 43–63. <https://doi.org/10.1007/s11409-019-09191-x>
- Castelló, M., Pardo, M., Sala-Bubaré, A., & Suñe-Soler, N. (2017). Why do students consider dropping out of doctoral degrees? Institutional and personal factors. *Higher Education*, 74(6), 1053–1068. <https://doi.org/10.1007/s10734-016-0106-9>
- Cleophas, T. J., & Zwinderman, A. H. (2016). *SPSS for starters and 2nd levelers* (2nd ed.). Springer. <https://doi.org/10.1007/978-3-319-20600-4>

- Coll, S., Coll, R., & Treagust, D. (2018). Making the most of out-of-school visits: How does the teacher prepare? Part I: Development of the learner integrated field trip inventory (LIFTI). *International Journal of Innovation in Science and Mathematics Education*, 26(4), 1–19. <https://www.ijism.org/>
- Cordray, D., Pion, G., Brandt, C., Molefe, A., & Toby, M. (2012). *The impact of the measures of academic progress (MAP) program on student reading achievement* (NCEE 2013–4000). National Center for Education Evaluation and Regional Assistance. https://ies.ed.gov/ncee/edlabs/regions/midwest/pdf/REL_20134000.pdf
- Cornett, A., Paulick, J., & van Hover, S. (2020). Utilizing home visiting to support differentiated instruction in an elementary classroom. *School Community Journal*, 30(1), 107–137. <https://www.schoolcommunitynetwork.org/SCJ.aspx>
- Dalgaard, P. (2008). *Introductory statistics with R* (2nd ed.). Springer. <https://doi.org/10.1007/978-0-387-79054-1>
- Dobish, M., Griffiths, J., & Meyer, R. (2017). Improving teaching and learning using the keeping learning on track professional development program and strategies. *Journal for Leadership and Instruction*, 16(1), 22–26. <https://www.scooponline.us/journal-for-leadership-and-instruction/>
- Edwards, N. M. (2020). Are we maximizing the role of caregivers' support networks in early intervention? *Journal of Early Intervention*, 42(3), 203–223. <https://doi.org/10.1177/1053815119873087>

- Eisenberg, J. L., Hou, J. G., & Barbour, P. J. (2018). Current perspectives on the role of telemedicine in the management of Parkinson's disease. *Dove Press Journal: Smart Homecare Technology and TeleHealth*, 5(1), 1–12.
<https://doi.org/10.2147/SHTT.S152018>
- Faber, N. (2015). The professional educator: Connecting with students and families through home visits. *American Educator*, 39(3), 24–27. <https://www.aft.org/ae/fall2015/faber>
- Forsyth, D. (2018). *Probability and statistics for computer science*. Springer.
<https://doi.org/10.1007/978-3-319-64410-3>
- Giunco, K. M., Rosen-Reynoso, M., Friedman, A. A., Hunter, C. J., & Cownie, C. T., III. (2020). Lessons from the field: Catholic school educators and COVID-19. *Journal of Catholic Education*, 23(1), 243–267. <https://doi.org/10.15365/joce.2301172020>
- Goodwin, A. P., Petscher, Y., & Tock, J. (2020). Morphological supports: Investigating differences in how morphological knowledge supports reading comprehension for middle school students with limited reading vocabulary. *Language, Speech, and Hearing Services in Schools*, 51(3), 589–602. https://doi.org/10.1044/2020_LSHSS-19-00031
- Gopalan, M., Rosinger, K., & Ahn, J. B. (2020). Use of quasi-experimental research designs in education research: Growth, promise, and challenges. *Review of Research in Education*, 44(1), 218–243. <https://doi.org/10.3102/0091732X20903302>
- Guerrero, H. (2019). *Excel data analysis: Modeling and simulation* (2nd ed.). Springer.
<https://doi.org/10.1007/978-3-030-01279-3>
- Guisse, V., & Wiig, S. (2017). Perceptions of telecare training need in-home healthcare services: A focus group study. *BMC Health Services Research*, 17(164), 1–10.
<https://doi.org/10.1186/s12913-017-2098-2>

- Harji, M. B., Balakrishnan, K., & Letchumanan, K. (2017). The PaCT: Parents, children, and teacher partnership in developing ESL literacy. *English Language Teaching*, 10(9), 150–160. <https://doi.org/10.5539/elt.v10n9p150>
- Harji, M. B., Balakrishnan, K., & Letchumanan, K. (2016). SPIRE project: Parental involvement in young children's ESL reading development. *English Language Teaching*, 9(12), 1–15. <https://doi.org/10.5539/elt.v9n12p1>
- He, X., Shelden, D., Kraftson, A., Else, T., & Auchus, R. J. (2020). A virtual teaching clinic for virtual care during the COVID-19 pandemic. *Clinical Diabetes and Endocrinology*, 6(25), 1–3. <https://doi.org/10.1186/s40842-020-00108-1>
- Huber, S. G., & Helm, C. (2020). COVID-19 and schooling: Evaluation, assessment and accountability in times of crises—reacting quickly to explore key issues for policy, practice and research with the school barometer. *Educational Assessment, Evaluation and Accountability*, 32(2), 237–270. <https://doi.org/10.1007/s11092-020-09322-y>
- Hwang, J. K., Mancilla-Martinez, J., McClain, J. B., Oh, M. H., & Flores, I. (2020). Spanish-speaking English learners' English language and literacy skills: The predictive role of conceptually scored vocabulary. *Applied Psycholinguistics*, 41(1), 1–24. <https://doi.org/10.1017/S0142716419000365>
- Icel, M. (2018). Implementation of STEM Policy: A case study of a STEM-focused urban charter school. *Journal of STEM Education: Innovations & Research*, 19(3), 7–13. <https://www.jstem.org/jstem/index.php/JSTEM>
- Ilhan, F., Ozfidan, B., & Yilmaz, S. (2019). Home visit effectiveness on students' classroom behavior and academic achievement. *Journal of Social Studies Education Research*, 10(1), 61–80. <https://jsser.org/index.php/jsser>

- Iruka, I. U., Brown, D., Jerald, J., & Blitch, K. (2018). Early steps to school success (ESSS): Examining pathways linking home visiting and language. *Child Youth Care Forum*, 47(1), 283–301. <https://doi.org/10.1007/s10566-017-9430-1>
- Jacobs, J. (2017). Pacesetter in personalized learning. *Education Next*, 17(4), 1–15. <https://www.educationnext.org/journal/>
- Jones, C. (2018). SPARK early literacy: Testing the impact of a family–school–community partnership literacy intervention. *School Community Journal*, 28(2), 247–264. <https://www.schoolcommunitynetwork.org/SCJ.aspx>
- Jung, S. B., & Sheldon, S. (2020). Connecting dimensions of school leadership for partnerships with school and teacher practices of family engagement. *School Community Journal*, 30(1), 9–32. <http://www.schoolcommunitynetwork.org/SCJ.aspx>
- Kaplan, A., Katz, I., & Flum, H. (2012). Motivation theory in educational practice: Knowledge claims, challenges, and future directions. In K. R. Harris, S. Graham, & T. Urdan (Eds.), *APA educational psychology handbook: Individual differences and cultural and contextual factors* (Vol. 2, pp. 165–194). American Psychological Association. <https://doi.org/10.1037/13274-007>
- Keilty, B., & Kosaraju, S. (2018). The impact of an early intervention home visiting experience on student learning in a dual early childhood/special education graduate preservice program. *Journal of Early Childhood Teacher Education*, 39(3), 243–260. <https://doi.org/10.1080/10901027.2018.1457579>
- Khurana, H., & Joshi, V. (2017). Motivation and its impact on individual performance: A comparative study based on McClelland’s three need model. *International Journal of Research in Commerce & Management*, 8(7), 110–116. <https://ijrcms.com/>

- Kilburn, M. R., & Cannon, J. S. (2019). Home visiting for first-time parents: Community innovation. *The Future of Children*, 29(1), 81–97. <https://doi.org/10.1353/foc.2019.0004>
- Kiral, B., & Gidis, Y. (2019). The evaluation of school-parent association activities according to the views of the teachers. *Universal Journal of Educational Research*, 7(3), 874–884. <https://doi.org/10.13189/ujer.2019.070329>
- Kirmaci, M. (2019). Reporting educators' experiences regarding family–school interactions with implications for best practices. *School Community Journal*, 29(2), 129–156. <https://www.schoolcommunitynetwork.org/SCJ.aspx>
- Klingbeil, D. A., Maurice, S. A., Van Norman, E. A., Nelson, P. M., Birr, C., Hanrahan, A. R., Schramm, A. L., Copek, R. A., Carse, S. A., Koppel, R. A., & Lopez, A. L. (2019). Improving mathematics screening in middle school. *School Psychology Review*, 48(4), 383–398. <https://doi.org/10.17105/SPR-2018-0084.V48-4>
- Kluge, A., Schöffler, A. S., Thim, C., Haase, J., & Gronau, N. (2019). Investigating unlearning and forgetting in organizations: Research methods, designs and implications. *The Learning Organization*, 26(5), 518–533. <https://doi.org/10.1108/TLO-09-2018-0146>
- Kronholz, J. (2016). Teacher home visits: School-family partnerships foster student success. *Education Next*, 16(3), 17–21. <https://www.educationnext.org/journal/>
- Kuhfeld, M., Domina, T., & Hanselman, P. (2019). Validating the SEDA measures of district educational opportunities via a common assessment. *AERA Open*, 5(2), 1–18. <https://doi.org/10.1177/2332858419858324>

Kwan, P. (2020). Is transformational leadership theory passé? Revisiting the integrative effect of instructional leadership and transformational leadership on student outcomes.

Educational Administration Quarterly, 56(2), 321–349.

<https://doi.org/10.1177/0013161X19861137>

Kyakuwa, J. (2019). Jumped three hurdles with one leap: A review of qualitative research and complex teams understanding qualitative research series. *The Qualitative Report*, 24(1),

204–207. <https://doi.org/10.46743/2160-3715/2019.3943>

Levesque, J., & McGregor, L. (2019). Transformative parent leadership and school engagement.

Instructional Practices and Learner Engagement, 8(2), 72–78.

Lin, M., & Bates, A. B. (2010). Home visits: How do they affect teachers' beliefs about teaching and diversity? *Early Childhood Education Journal*, 38(3), 179–185.

<https://doi.org/10.1007/s10643-010-0393-1>

Liu, W. C., John Wang, C. K., Reeve, J., Kee, Y. H., & Chain, L. K. (2020). What determines teachers' use of motivational strategies in the classroom? A self-determination theory perspective. *Journal of Education*, 200(3), 185–195.

<https://doi.org/10.1177/0022057419881171>

Lockhart, K., & Mun, R. U. (2020). Developing a strong home–school connection to better identify and serve culturally, linguistically, and economically diverse gifted and talented students. *SAGE Journals*, 43(4), 231–238. <https://doi.org/10.1177/1076217520940743>

Macaruso, P., Wilkes, S., & Prescott, J. E. (2020). An investigation of blended learning to support reading instruction in elementary schools. *Education Tech Research and Development*, 68(6), 2839–2852. <https://doi.org/10.1007/s11423-020-09785-2>

- McVancel, S. M., Missall, K. N., & Bruhn, A. L. (2018). Examining incremental rehearsal: Multiplication fluency with fifth-grade students with math IEP goals. *Contemporary School Psychology*, 22(3), 220–232. <https://doi.org/10.1007/s40688-018-0178-x>
- McWayne, C. M., Mistry, J., Hyun, S., Diez, V., Parker, C., Zan, B., Greenfield, D., & Brenneman, K. (2020). Incorporating knowledge from children's homes and communities. *Young Children*, 75(5), 20–26. <https://www.naeyc.org/resources/pubs/yc>
- Modic, M. B., & Neuendorf, K. (2020). Enhancing your website manner: Optimizing opportunities for relationship-centered care in virtual visits. *Journal of Patient Experience*, 7(6), 869–877. <https://doi.org/10.1177/2374373520968975>
- Mogonea, F., & Mogonea, F. R. (2019). The pedagogical research project - an essential tool for the development of research competencies in the field of education. *Educatia 21 Journal*, 17, 50–59. <https://doi.org/10.24193/ed21.2019.17.05>
- Munir, F., & Aboidullah, M. (2018). Gender differences in transformational leadership behaviors of school principals and teachers' academic effectiveness. *Bulletin of Education and Research*, 40(1), 99–113. <http://pu.edu.pk/home/journal/32/#>
- Nandedkar, A., Mbindyo, M., & O'Connor, R. J. (2020). Advisor transformational leadership and its impact on advisees: A conceptual analysis. *Journal of Higher Education Theory and Practice*, 20(14), 156–169. <https://articlegateway.com/index.php/JHETP/about>
- Noor, S., Isa, F. M., & Mazhar, F. F. (2020). Online teaching practices during the COVID-19 pandemic. *Educational Process: International Journal*, 9(3), 169–184. <https://doi.org/10.22521/edupij.2020.93.4>
- NWEA. (n.d.-a). *About NWEA*. <https://www.nwea.org/about/>
- NWEA. (n.d.-b). *Map growth*. <https://www.nwea.org/map-growth/>

- Orcan, F. (2020). Parametric or non-parametric: Skewness to test normality for mean comparison. *International Journal of Assessment Tools in Education*, 7(2), 255–265. <https://doi.org/10.21449/ijate.656077>
- Oswald, D. P., Zaidi, H. B., Cheatham, D. S., & Diggs Brody, K. G. (2018). Correlates of parent involvement in students' learning: Examination of a national data set. *Journal of Child and Family Studies*, 27(1), 316–323. <https://doi.org/10.1007/s10826-017-0876-4>
- Peterson, C. A., Hughes-Belding, K., Rowe, N., Fan, L., Walter, M., Dooley, L., Wang, W., & Steffensmeier, C. (2018). Triadic interactions in MIECHV: Relations to home visit quality. *Maternal and Child Health Journal*, 22(1), 3–12. <https://doi.org/10.1007/s10995-018-2534-x>
- Proehl, R. A., Starnes, H., & Everett, S. (2015). Catalyst schools: The Catholic ethos and public charter schools. *Journal of Catholic Education*, 18(2), 125–158. <https://doi.org/10.15365/joce.1802072015>
- Protacio, S., Piazza, S. V., David, V., & Tigchelaar, M. (2020). Elementary teachers' initiatives in engaging families of English learners. *School Community Journal*, 30(2), 211–227. <https://www.schoolcommunitynetwork.org/SCJ.aspx>
- Raboca, H. M., & Cotoranu, D. (2020). The efficiency of the online academic teaching process during the pandemic COVID-19. *Educatia 21 Journal*, 19, 119–126. <https://doi.org/10.24193/ed21.2020.19.15>
- Reardon, S. F., Kalogrides, D., Fahle, E. M., Podolsky, A., & Zárate, R. C. (2018). The relationship between test item format and gender achievement gaps on math and ELA tests in fourth and eighth grades. *Educational Researcher*, 47(5), 284–294. <https://doi.org/10.3102/0013189X18762105>

- Rogers, R. H. (2020). Removing the mysteries of research proposals: A review of Steven. R. Terrell's writing a proposal for your dissertation: Guidelines and examples. *The Qualitative Report*, 25(6), 1672–1675. <https://nsuworks.nova.edu/tqr/>
- Ruiz, L. D., McMahon, S. D., & Jason, L. A. (2018). The role of neighborhood context and school climate in school-level academic achievement. *American Journal of Community Psychology*, 61(3/4), 296–309. <https://doi.org/10.1002/ajcp.12234>
- Siqueira, L. D., Reticena, K. O., Nascimento, L. H. D., Abreu, F. C. P. D., & Fracolli, L. A. (2019). Home visit assessment strategies: A scope review. *Acta Paulista Enfermagem*, 32(5), 584–591. <https://doi.org/10.1590/1982-0194201900077>
- Spurlock, D., Jr. (2019). Searching the literature in preparation for research: Strategies that matter. *Journal of Nursing Education*, 58(8), 441–443. <https://doi.org/10.3928/01484834-20190719-02>
- Stetson, R., Stetson, E., Sinclair, B., & Nix, K. (2012). Home visits: Teacher reflections about relationships, student behavior, and achievement. *Issues in Teacher Education*, 21(1), 21–37. <https://www.itejournal.org/>
- Stockemer, D. (2019). *Quantitative methods for the social sciences* [Adobe digital ed.]. Springer. <https://doi.org/10.1007/978-3-319-99118-4>
- Strickler, A., Trunzo, A. C., & Kaelin, M. S. (2018). Treatment foster care pre-service trainings: Changes in parenting attitudes and fostering readiness. *Child Youth Care Forum*, 47(3), 61–79. <https://doi.org/10.1007/s10566-017-9418-x>
- Tangen, R. (2014). Balancing ethics and quality in educational research—The ethical matrix method. *Scandinavian Journal of Educational Research*, 58(6), 678–694. <https://doi.org/10.1080/00313831.2013.821089>

- Tauginienė, L., & Jurkevičius, V. (2017). Incongruences of ethical and legal norms in academia: The case on revocation of doctoral degrees. *Journal of Academic Ethics*, 15(1), 73–91.
<https://doi.org/10.1007/s10805-016-9270-x>
- Thum, Y. M., & Hauser, C. H. (2015). *NWEA 2015 MAP norms for student and school achievement status and growth* [NWEA Research Report]. NWEA.
<https://www.nwea.org/resources/nwea-2015-map-norms-student-school-achievement-status-growth/>
- Topcu, I., & Dogan, S. (2020). Principals' and teachers' views on home visits in Turkey. *Educational Policy Analysis and Strategic Research*, 15(2), 205–221.
<https://doi.org/10.29329/epasr.2020.251.11>
- National Center for Education Statistics. (2012). *NCES common core of data state dropout and graduation rate data file*. http://nces.ed.gov/programs/coe/indicator_coi.asp
- U.S. Department of Education. (2016). *The state of racial diversity in the educator workforce*.
<http://www2.ed.gov/about/offices/list/oepdp/index.html>
- VanDerHeyden, A. M., & Burns, M. K. (2018). Is more screening better? The relationship between frequent screening, accurate decisions, and reading proficiency. *School Psychology Review*, 47(1), 62–82. <https://doi.org/10.17105/SPR-2017-0017.V47-1>
- Viner, R. M., Bonell, C., Drake, L., Jourdan, D., Davies, N., Baltag, V., Jerrim, J., Proimos, J., & Darzi, A. (2021). Reopening schools during the COVID-19 pandemic: Governments must balance the uncertainty and risks of reopening schools against the clear harms associated with prolonged closure. *Archives of Disease in Childhood*, 106(2), 111–113.
<https://doi.org/10.1136/archdischild-2020-319963>

- Walsh, B. A., Mortensen, J. A., Edwards, A. L., & Cassidy, D. (2020). The practice of family life education within early head start home visiting. *Family Relations*, 69(2), 392–407.
<https://doi.org/10.1111/fare.12392>
- Walsh, B. A., Mortensen, J. A., Peterson, C. A., & Cassidy, D. (2020). Competency alignment and certification for preservice home visitors. *Family Relations*, 69(2), 408–419.
<https://doi.org/10.1111/fare.12414>
- Wenczenovicz, T. J. (2020). Distance learning, face-to-face difficulties: Perspectives in times of COVID-19. *Revista Ibero-Americana de Estudos em Educação*, 15(4), 1750–1768.
<https://doi.org/10.21723/riace.v15i4.13761>
- Wherry, J. H. (2009). Your best parent involvement year ever. *Principal*, 89(1), 68.
https://www.naesp.org/sites/default/files/resources/2/Principal/2009/S-O_p.68.pdf
- Wodon, Q. (2020a). COVID-19 crisis, impacts on Catholic schools, and potential responses: Introduction. *Journal of Catholic Education*, 23(1), 1–12.
<https://doi.org/10.15365/joce.2301012020>
- Wodon, Q. (2020b). COVID-19 crisis, impacts on Catholic schools, and potential responses | Part 1: Developed countries with focus on the United States. *Journal of Catholic Education*, 23(1), 12–50. <https://doi.org/10.15365/joce.2301022020>
- Wodon, Q. (2020c). COVID-19 crisis, impacts on Catholic schools, and potential responses | Part II: Developing countries with focus on Sub-Saharan Africa. *Journal of Catholic Education*, 23(1), 50–86. <https://doi.org/10.15365/joce.2301032020>

Wright, K. B., Shields, S. M., Black, K., & Waxman, H. C. (2018). The effects of teacher home visits on student behavior, student academic achievement, and parent involvement.

School Community Journal, 28(1), 67–90.

<https://www.schoolcommunitynetwork.org/SCJ.aspx>

Zambak, V. S., Alston, D. M., Marshall, J. C., & Tyminski, A. M. (2017). Convincing science teachers for inquiry-based instruction: Guskey's staff development model revisited.

Science Educator, 25(2), 108–116. <https://www.nsela.org/science-educator-journal->

Zeid, H., Assadi, N., & Murad, T. (2017). The effect of junior high school teachers' motivation and willingness to change on the diversity of their teaching methods. *Theory and Practice in Language Studies*, 7(12), 1160–1170. <https://doi.org/10.17507/tpls.0712.02>