CORRELATION BETWEEN THE FREQUENCY OF ELECTRONIC PARENT MONITORING OF GRADES AND ELEMENTARY STUDENT ACHIEVEMENT

by

Michael S. Robinson

Liberty University

A Dissertation in Presented in Partial Fulfillment

Of the Requirements for the Degree

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ABSTRACT

Parent engagement in the education of a child is a scriptural obligation expressively outlined by 2 Timothy 3:16 - 17 (New International Version). Federal legislation also emphasized the importance of parent engagement via the Every Student Succeeds Act (2015), which is supported by professional research to have a positive effect on student achievement. One important limitation of current research is the effect of technology as the intervening variable on elementary student achievement. The purpose of this study was to understand if a relationship exists between the frequency of electronic parent monitoring of grades, using gradebook views from a Student Information System and student achievement, as measured by the Pennsylvania System of School Assessment (PSSA). A non-experimental, ex post facto, correlational research design was performed to analyze student achievement. The data also included a Parental Engagement Survey that considered the effects of the interconnected environmental experiences of a student. The researcher performed the study using a sample of fifth grade students (N=391) in a suburban area known as Central School District (pseudonym for the actual institution in Pennsylvania). There was a positive correlation between Gradebook Views and the math achievement, that was statistically significant ($\tau_b = .166$, $p = .005$). The results of the survey indicated that increased levels of relational interaction are associated with a higher incidence of parent engagement using technology. Further research should include persistent study of parent engagement using varying student samples, mechanisms of technology, and predetermined enrollment defaults in an effort to define an industry standard to support school leaders.

Keywords: family engagement, industry standard, Student Information System (SIS), technology determinism

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For everything comes from Him and exists by His power and is intended for His glory. All glory to Him forever! Amen (Romans 11:36, New Living Translation). This study serves as a personal proclamation to the living God that I serve. This Lord placed many people in perfect situations to encourage, support, motivate, and most importantly love me through the challenge that will ultimately glorify Jesus as I continue to serve wherever He leads.

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List of Abbreviations

Economically Disadvantaged (ED)

Elementary and Secondary Education Act (ESEA)

English Standard Version (ESV)

Every Student Succeeds Act (ESSA)

Institutional Review Board (IRB)

New International Version (NIV)

New King James Version (NKJV)

New Living Translation (NLT)

No Child Left Behind (NCLB)

Online Gradebook (OGB)

Pennsylvania Department of Education (PDE)

Pennsylvania Instructional management System (PIMS)

Pennsylvania System of School Assessment (PSSA)

Statistical Package for the Social Sciences (SPSS)

Student Information System (SIS)

CHAPTER ONE: INTRODUCTION

Chapter one includes a brief explanation of the problem, purpose, and significance of the proposed study. Chapter one will also introduce the research questions, hypothesis, identification of variables, and definitions of items that pertain to the study.

Overview

Technology has opened communication portals that have redefined the definitions of parent involvement. Parents and teachers alike place a high value on proactive parent involvement using emerging technologies (Olmstead, 2013). Online grading has quickly become the prevailing method for transmitting daily academic progress for students across the United States (Miller, Brady, & Izumi, 2016). In 2015, when the Every Student Succeeds Act (ESSA) was signed into law to replace No Child Left Behind (NCLB) changed the way school performance would be measured (Smythe-Leistico & Page, 2018). The methods that currently exist for parents to be engaged and keep properly informed are much different today from those that existed in the past. Educators and parents alike have attempted to find a standard in monitoring students' grades that supports high student achievement. Currently, there is no prescriptive approach to the process of electronic parent monitoring of classroom performance. Parents may be unaware of limits or standards that exist for the frequency of data review and may also be unclear regarding the most appropriate process for the information exchange between student and parent. As a result of this new paradigm in communication between school and home, research must be analyzed to determine if there is a correlation that exists for the variations in the success of student achievement compared to the frequency of electronic parent monitoring. For the purpose of this study, the researcher will seek to determine if the frequency of electronic

parent monitoring of classroom performance has a correlation with 5th grade math achievement using the state assessment test scores in Pennsylvania.

Background

While the idea that parent involvement has a positive influence on student achievement is intuitively appealing, there is still a great deal of inconsistency in the empirical research within the literature (Fan & Chen, 2001; McNeal, 2015). Some empirical studies have shown evidence that parent involvement has a positive effect on achievement (Benner, Boyle, & Sadler, 2016; Castro et al., 2015; Wilder, 2014), while others have found very little measurable effect (Bobbett, 1995; Boonk, Gijselaers, Ritzen, & Brand-Gruwel, 2018; Shumow & Miller, 2001). Detailed findings of correlation studies published between 2003 and 2017 confirmed that there have been small to medium associations between various parental involvement variables and academic achievement (Boonk et al., 2018). In general, a great deal is known about the potential academic benefits associated with parent involvement, but the specific role of school-based parent involvement in student outcomes is still being investigated (Daniel, Wang, & Berthelsen, 2016). One important limitation of current research is that few studies have examined potential mediating variables, such as technology in this relationship (Daniel et al., 2016).

The concept of parent involvement using technology has been instituted and mandated to compliment education. The Every Student Succeeds Act (ESSA) initiative encourages school personnel to promote parental involvement as a means to improve student achievement. Specifically, ESSA explicitly states that districts reserve funds to carry out parent and family engagement practices (Thompson, K. C. Herman, M. A. Stormont, W. M. Reinke, & C. Webster-Stratton, 2017). The ESSA legislation is the latest and most current charge by the Department of Education that specifically requires schools to intentionally involve parents in the educational

process. The legislation clearly asserts that parent involvement is necessary. This widespread inclusion of parents was initially bolstered by the No Child Left Behind Act in 2002, which established the inaugural definition of parent involvement to include language that reflects the participation of parents in regular, two-way, and meaningful communication involving student academic learning and other school activities (Epstein, 2005). Additionally, the ESSA legislation now requires school districts to have a technology system in place to promote parent involvement and increases school to home communication (Miller et al., 2016). The law has been amended and enhanced to support parent involvement using an electronic platform:

> Similar to other provisions of the school law, there is also a requirement for districts' parental engagement strategies to be evidence-based in terms of their effectiveness. ESSA also sets a higher bar than its predecessor in one respect: It mandates that districts conduct outreach to all parents and family members in order to receive parent-engagement funding. In their parent-and family-engagement policies, schools must describe how they will conduct regular two-way, meaningful communication with families, and to the extent practicable, in a language that family members can understand (United States Department of Education, n.d.).

The proper understanding of proven strategies to support the application and governance will eventually define an industry standard for schools to promote.

The Pennsylvania Department of Education's statewide longitudinal data system, known as the Pennsylvania Information Management System (PIMS) requires improving data capabilities by enhancing school districts' capacities to meet student-level data reporting requirements and providing robust decision support tools (Pennsylvania Information Management System, 2017).

The ways through which technology and media use have influenced parent–child interactions and parent involvement are required, but not well understood. The school's role in supporting parents navigation of the complex parameters in the digital era is unclear (Patrikakou, 2016). In a study of electronic communication, research showed that if one cannot measure something in one's organization, one cannot manage it (Blau & Hameiri, 2012). Conversely, computer scientist Lanier described the impact of technology on society and cautioned that life should not be turned into a database (Miller et al., 2016). The questions as to whether electronic communication supports school achievement through parent engagement is yet to be determined.

Parental engagement is a multifaceted construct that encompasses parents' educational involvement at home and at school, as well as parents' academic socialization (Benner et al., 2016). The researcher will use the Epstein model (1995, 2001, 2011) as the basis for the theoretical framework to guide the study. This model is related to parental involvement in schools and has been widely cited in the literature (Bocian, 2016; Fuller, 2017; Grossman, 2014; Taylor, 2016; Walker, 2017). Epstein's model describes how parents are involved in schools and forms the backbone of many schools' parent involvement programs (Dotterer & Wehrspann, 2016; Hamlin & Flessa, 2016; Lee & MIchelle, 2018).

Despite a common theoretical framework in research describing parent involvement, along with extensive study and professional dialogue that occurs, there is a somewhat "chaotic state" that exists in the research (Fan & Chen, 2001). The degree of inconsistency surrounding findings regarding parental involvement and its association with student's academic achievement is perhaps the most troubling aspect of current research (McNeal Jr, 2012). As the historical research and mixed interpretation is considered within the scope of the current study, the element of the progressive nature of the topic along with the influence of technology and law must be

carefully embedded into the current system of thinking. Parents have a new resource at their disposal that serves as a simple and unlimited nexus of involvement. The studies on the impact of technology on parent involvement are inconclusive and fragmented at best. What some studies have in common beyond an absence of a theoretical framework is also a general omission of social context when examining how parent involvement affects student behavior. Parent involvement does not occur in a vacuum. There is a social context in which parent involvement occurs that likely varies both within and across school communities (McNeal, 2015). It is the intent of the researcher to thread a second theoretical framework by Bronfenbrenner (1986) into the study that critically examines the influence of external environments on the functioning of families as contexts of human developments. The transitions and linkages between the family and other major settings that influence development, including school, have a profound effect on children (Bronfenbrenner, 1986).

Finally, research in the absence of biblical truth naturally produces a gap in the literature from a Christian worldview. According to the scriptures Christians are to go prepare people for works of service, so that the body of Christ will be built up (Ephesians 4:12, NIV). Leaders should strive to be experts in their respective fields by constantly working toward mastery in the core competencies of their professions. The danger of this singular pursuit of technical mastery in any area of leadership in the absence of biblical truth is that an individual may miss the foundation of leading others which is that integrity in all things precedes all else (Blackaby & Blackaby, 2011). There is never a moment, where a parent is in a situation with one of their children that is not under the wise, careful, and powerful control of the One who sent them into it (P. D. Tripp, 2016). God knows everything (1 John 3:20, ESV). He knows not only the minutest details of our lives but those of everything around us, for He mentions even knowing when a

sparrow falls or when we lose a single hair (Matthew 10:29-30, ESV). Not only does God know everything that will occur until the end of history itself (Isaiah 46:9-10, ESV), but He also knows our very thoughts, even before we speak (Psalm 139:4, ESV). He knows our hearts from afar; He even saw us in the womb (Psalm 139:1-3, 15-16, ESV). Solomon expresses this truth perfectly in 1 Kings 8:39 (ESV) when he says, "For you, you only, know the hearts of all the children of mankind" (Packer, 2011). Jesus does not need the latest technology to monitor the performance of children in school but rather is all knowing as has already accounted for each child. "And the very hairs on your head are all numbered. So don't be afraid; you are more valuable to God than a whole flock of sparrows" (Luke 12:7, NLT). While some moments can feel uncontrollable, there is no parenting moment that exists outside of the King who has commissioned us. Careful consideration of the theological framework must be considered to properly guide any research in a manner that is pleasing to the Lord.

Over the past twenty years, the number of parental involvement programs designed by school personnel have increased (Myers & Myers, 2013). Developing contextually focused strategies for increased parental involvement in schools is one of the demands placed upon school administrators (Bocian, 2016). Prior research has observed that increased academic assistance through homework help and other more intrusive parenting techniques, even when elicited by children's academic struggles, can compromise achievement. However, there is a positive main effect of academic advice for young people's ultimate educational attainment, suggesting that a balance of educational supports is needed (Benner et al., 2016). One important limitation is that few studies have examined potential mediating variables in this relationship. The element of electronic parent monitoring in all facets of child rearing has become an epidemic of study and analysis with a significant sense of urgency. Each year technology provides a greater degree of

information exchange, transparency, and insight into student achievement, with little regard for guidance in what to do with the data or how often to view it. While the type of parent involvement has consistently evolved through application and context, the concept of frequency has not been defined or quantified for educators and parents to consider. In the proposed study, the researcher plans to contribute to the broad body of literature by examining the correlation between the frequency of electronic monitoring of grades and academic achievement.

Problem Statement

One of the most notable changes in education has been the saturation of technology into the lives of both parents and students alike. The emergence of new technologies has changed the quality of family relationships (Hessel, He, & Dworkin, 2017). In a recent study investigating the process through which parent involvement influences adolescents' achievement and motivation one of the key recommendations was the need for reconceptualization of the ways in which parental involvement is measured, encouraged, and sought out (Suizzo et al., 2016). Technology has created a paradigm in educational research that dictates regular evaluation and pervasive attention to current practices. Education continues to be a moving target in regards to theory and practice. Communication portals have become an increasingly customary way of monitoring student achievement for adults responsible for elementary students. School districts across the United States have adopted web-based Student Information Systems (SIS) that offer parents, students, teachers and administrators immediate access to a variety of data points on each individual (Staples, 2018). Student Information Systems used by school districts provide parents with online academic information have grown so much they are now governed by state departments of education. A greater degree of access, frequency, and relevancy of desired information is currently available to parents. The transfer of information between the school and

parents has the potential to circumvent or enhance the scholastic achievement of the students. Schools could help facilitate behaviors by creating effective means of communication between teachers and parents (Perkins et al., 2016).

Many parents or guardians have taken an active role in various levels of frequency of school communication and participation. Parents exert their influence on children at varying rates (Smetana, 2017). The findings regarding the relationship between parental solicitation and adolescent outcomes are mixed (Hessel et al., 2017). Some parents or guardians overcorrect, overcompensate, and micro-coordinate some or all aspects of education, while others have no immediate impact or negatively influence students due to their absence or involvement. To move parent engagement from a random act to a systematically embedded philosophy and pedagogy within a school landscape, a school leader must ensure it is integral to all key school planning and continuous improvement frameworks (Pushor & Amendt, 2018). Until parenting practice can be investigated in large samples of parents and children over an extended period of time, the precise function of the parent and child traits will be open to multiple interpretations (Segrin, Woszidlo, Givertz, & Montgomery, 2013). Furthermore, findings from a growing body of research suggest negative traits in both parent and child when associated with over-parenting (Segrin et al., 2013). The problem is that the forms of parent involvement are open to interpretation and school districts simply have not prescribed a best practice, because parental involvement has not been consistently examined (Garbacz, Zerr, Dishion, Seeley, & Stormshak, 2018). The literature has not quantified characteristics of effective parent involvement using emerging electronic monitoring platforms, nor has it communicated implementation strategies in the homes of children. Regardless of both the requirements and the extensive research on the topic, there continues to be only random acts of parent engagement implemented by schools

(Pushor & Amendt, 2018). The body of research in the proposed study will contribute directly to the correlation between the frequency of academic monitoring and student achievement. The problem that must be considered is if the level of parent engagement using technology supports the most optimal student achievement.

Purpose Statement

The purpose of this study is to determine if a relationship exists between the frequency of electronic parent monitoring of grades and fifth grade student achievement on the Pennsylvania System of School Assessment (PSSA) in math. A non-experimental, ex post facto, correlational research design will be performed to analyze student outcomes on the PSSA. The researcher will attempt to determine the differences that exist between frequency of electronic parent monitoring and student achievement among fifth grade students. This will be accomplished by comparing student outcomes on the PSSA (Pennsylvania System of School Assessment) from fifth grade students enrolled at four elementary schools, in one school district in Central Pennsylvania. The researcher will determine if there is any positive or negative relationship that exists between the frequency of electronic parent monitoring (independent variable) and student achievement outcomes on the Pennsylvania System of School Assessment (PSSA) in math (dependent variable).

Public education has experienced the convergence of two trends: expansion of digital access and increased accountability of student outcomes, in relation to individual student needs, perceptions, and operating costs (Ni, 2013). As a result, empirical evidence is needed to determine at what point parent involvement becomes a deterrent to student achievement. Student success is frequently measured by examining student achievement (Ni, 2013). While attempts have been made to define student success in a comprehensive manner, many educational policy

makers prioritize performance outcomes on standardized tests to make decisions about the effectiveness of school programs (Watson, Murin, Vashaw, Gemin, & Rapp, 2013). A possible outcome of the study is to determine the optimal frequency of electronic parent monitoring that supports high student achievement. The information collected will involve an analysis of data and attempt to suggest an industry standard for parents as they consider the frequency in which they are going to review classroom achievement.

Significance of the Study

Digital technology is constantly changing and it is unclear how different types of communications are being incorporated into families (Stein, Osborn, & Greenberg, 2016). The concept of parent involvement must be reexamined beyond current theories, which have been prescribed without the influence of technology (Fan & Chen, 2001). Although it is useful to know whether overall levels of parent educational involvement are related to student outcomes, identifying specific dimensions of parent educational involvement is particularly useful when planning interventions and developing programs (Garbacz et al., 2018). Despite considerable support for the efficacy of family-school partnership models, the influence of the larger systems in which these models are embedded, has not been sufficiently explored in previous research (Sheridan et al., 2017). The theoretical frameworks are antiquated as they do not consider electronic monitoring as part of parent involvement in schools. A fascinating quest of the past few years has been the search for a fundamental theoretical structure that underpins all of technology and would improve understanding and management (Clarke, 2017). The frequency and the manner in which this level of monitoring is taking place varies greatly within family units but in general, technology has become the preferred form of communication within the culture. Educators must work cooperatively with parents and guardians of elementary students

to establish reasonable expectations for monitoring a child's academic performance and proper family engagement (Williams & Williams, 2005). The intended research will report descriptive statistics that should contribute to a greater degree of understanding of the level of electronic incidence that exists and correlates with academic achievement.

A wide range of studies have been conducted regarding technology in the classroom and the nuances of these studies demonstrate that parental involvement is a multifaceted and multidimensional phenomenon (Castro et al., 2015). It involves conceptual difficulties for researchers and organizational problems for school administrators. This great complexity makes addressing all angles of the research question difficult for a single study. Electronic monitoring by parents has quickly become an application that has not been clearly defined and levels of occurrence and usage is not available. Currently there are no standards in place which serve as a guideline or training for parental engagement in many schools. One challenge is that parents who have come to realize the importance of their involvement may not know how to help their children with school-related activities. It is imperative that programs and workshops are created to provide parents with necessary resources and techniques to facilitate their school-related parenting (Gordon & Cui, 2012). A systematic and inclusive understanding of the strategies parents use, youth benefit from, and teachers' desire is needed to broaden and deepen educators' conceptualization and understanding of parental involvement in education (Hill, Witherspoon, & Bartz, 2018). The proposed study will support both new policy and training for parents of elementary students.

Research Questions

In order to determine if a significant difference in achievement levels exist between frequencies of electronic monitoring and student achievement on the Pennsylvania system of School Assessment test in math, the following research questions were formulated:

Research Question 1:

Is there a relationship between the frequency of electronic monitoring by parents and 5th grade student achievement on the Pennsylvania State System Assessment in math?

Research Question 2:

What impact does the frequency of electronic gradebook monitoring have on the context of multiple environments of 5th grade students?

Definitions

This section provides an explanation and professional use of the terms and language that is directly related to this study. Explanations of terms and their meanings were emphasized for consistency in this study.

1. *Ephod* - A garment worn only by priests who were in training (Carr, 2017). "Samuel was ministering before the LORD, a boy clothed with a linen ephod" (1 Samuel 2:18, ESV).
2. *Family Engagement* - Family engagement refers to the systematic inclusion of families in activities and programs that promote children's development, learning, and wellness, including the planning, development, and evaluation of such activities, programs, and systems (U.S. Department of Health and Human Services and the U.S. Department of Education, 2016).
3. *Industry Standard* - Competency-based education requires formal exit requirements to be stated in clear and explicit terms, outcome goals designed to be easily attached to

concrete behaviors, known and agreed-on performance requirements, and collaborative decision making by all those interested in students' educational progress (Bailey & Merritt, 1997).

4. *Mezuzah* - This is a small container of Scripture attached to the front door on every house. Each occupant touched the container each time he or she passed through the door (Wiersbe, 2010). "Write them on the doorposts of your house and on your gates" (Deuteronomy 6:9, NLT).
5. *Micro-coordination* - Adolescents and parents communicate via a cellular phone to work out logistical concerns (Blair & Fletcher, 2011).
6. *Parent/Parents* - The words parent/parents are used to refer to adults raising a student, to match the federal definition of parent involvement—this includes grandparents, legal guardians, and others (United States Department of Education and United States Department of Health and Human Services, 2016).
7. *Parent Monitoring* - The term has been used to refer to home, school, and community-based activities in which parents engage to support their children's education development (Daniel et al., 2016).
8. *Pennsylvania Information Management System (PIMS)* - The Pennsylvania Department of Education's statewide longitudinal data system that provides robust decision support tools. It is based on open internet standards that enable sharing among diverse, otherwise incompatible systems and includes safeguards for data quality and security (Pennsylvania Department of Education, 2017)
9. *Phylacteries* - There were little containers that contained scripture worn on the foreheads and left arms of an individual. The Bible extols "on their arms they wear extra wide

prayer boxes with Scripture verses inside" (Matthew 23:5, NLT). "Tie them to your hands and wear them on your forehead as reminders" (Deuteronomy 6:8, NLT). "And it shall be for a sign for you upon your hand, and for a memorial between your eyes, that the law of the Lord may be in your mouth; for with a strong hand did the Lord bring you out of Egypt" (Exodus 13:9, ESV).

10. *Student Achievement* - A score or value that reflects a student's performance on a high quality assessment designed to measure student proficiency relative to a clearly defined set of expectations (Pennsylvania Department of Education, 2014)
11. *Student Information System (SIS)* - School districts have adopted web-based student information systems that offer parents, students, teachers and administrators immediate access to a variety of data points on each individual (Staples, 2018).
12. *Technological Determinism* – These are technologies that change the way that people function and interact, autonomous forces that compel society to change (Blau & Hameiri, 2017).

CHAPTER TWO: REVIEW OF LITERATURE

Introduction

The evolution of technology has caused a new human culture and identified an exigency for schools to support some type of guiding industry standard for electronic parent monitoring (Yan, 2017). Research suggests that parental involvement promotes the academic achievement of children (Castro et al., 2015). The nature of the independent variable and the extent of its potential to affect educational outcomes has becomes a research topic in itself (Castro et al., 2015). This chapter includes a synthesis of empirical literature that supports research on electronic parent monitoring. There is a scarcity of research on school-based electronic parental involvement and how it relates to student achievement, indicating that more research in this area could be useful for informing educational policy (Johnson & Hull, 2014). What follows is a review of literature as it pertains to relevant theoretical, legislative, and technological frameworks. The intended research will also include Biblical truths that supports a Christian worldview, which is used to convey a theological framework to support the study.

Theoretical Framework

The researcher will use the Epstein model (2001, 2011) as the theoretical framework to guide the study. Additionally, Bronfenbrenner (1979) theoretical framework will be used in an effort to thread the process of human interaction between an individual and his or her environment into the study. It is insufficient to study parent involvement in isolation without the inclusion of the guiding environmental impact of technology. Both Bronfenbrenner and Epstein developed theories that reflected the importance of communication between educators and parents as well as the connection that develops to support student academic achievement (Keyes, 2002). The child rearing process and collaboration between home and school is multifaceted. Parental

involvement is a complex construct rather than just school oriented (Hill & Tyson, 2009; Knopf & Swick, 2008). It is argued that there is no universal agreement on what constitutes parental involvement (Johnson & Hull, 2014). The previous frameworks can be summarized into two core aspects: home-based involvement and school-based involvement (Sebastian, Moon, & Cunningham, 2017). A parents' involvement in their children's education has received a great deal of attention in the literature, with studies predominantly reporting a positive relationship between parental involvement and children's achievement (Sy, Gottfried, & Gottfried, 2013).

Epstein's Framework for Involvement

The Epstein model provides a framework for how to establish successful partnerships between parents and a schools (Bocian, 2016). Epstein's typology remains the most widely acknowledged parental involvement framework used by state education agencies and school boards, education advocacy groups, and university researchers (Auerbach, 2007; Hill & Tyson, 2009). Epstein focuses on overlapping spheres of influence between the home, school, and community that increase parental involvement (Olmstead, 2013). Each context may have separate or combined influence on children (Epstein & Van Voorhis, 2010). This theory suggests that students succeed at higher levels when the internal and external models of influence intersect and work together to promote student learning and development (Griffin & Steen, 2010). Within the areas of overlap between family, school, and community, Epstein (2001) identifies six types of involvement: (a) parenting, (b) communicating, (c) volunteering, (d) learning at home, (e) decision-making, and (f) collaborating with the community. That typology provides schools with a structure to help organize specific activities to involve parents in their children's education (Sheldon & Epstein, 2005).

The six types of involvement interactions that operate within the theory of overlapping spheres act as a framework for organizing behaviors, roles, and actions performed by school personnel, family, and community members working together to increase involvement and student achievement (Griffin & Steen, 2010). If researchers produce better information about the results of specific involvement activities, more educators will be able to select and implement the activities most likely to produce the goals that they have set for their students (Sheldon & Epstein, 2005). Some schools still have educators who say, if the family would just do its job, we could do our job. And there are still families who say, I raised this child; now it is your job to educate her. These words embody the theory of separate spheres of influence. Other educators say, I cannot do my job without the help of my students' families and the support of this community. And some parents say, I really need to know what is happening in school in order to help my child. The previous phrases embody the theory of overlapping spheres of influence developed by Epstein (2001, 2011). These spheres overlap to a greater extent when parents participate in the education of their children. Interaction between the two spheres is at a maximum when the school and the family function as genuine partners within an overall program that includes a number of shared activities.

Traditional framing of parental involvement envisioned parents as supporters of school fundraising initiatives and events. Epstein (1995) later extended previous models considerably by emphasizing overlapping connections among community, family, and school and by devising a 6-point typology of parental involvement. Epstein's typology has been instrumental to advancing research on parental involvement. Studies of parental involvement have frequently used Epstein's typology in their analyses, but questions have arisen as to whether the model provides an adequate conceptualization of what is supposed to be measured (Jeynes, 2012).

Other scholars have further argued that Epstein's typology prioritizes school-based aspects of parental involvement while downplaying the importance of social and cultural context in shaping parent participation in children's education (Auerbach, 2007). Interestingly, many professors of education have expressed "serious doubts" about whether leaders are adequately preparing teachers to succeed in 21st century schools (Epstein & Sanders, 2006). Rapid social and technological shifts have also occurred since Epstein's typology was first articulated. Epstein's widely used parental involvement typology conceals these prominent aspects of parental involvement (e.g., nutrition, mental health, and technology use) (Hamlin & Flessa, 2016). Researchers have also drawn the following conclusions:

- Almost all families care about their children, want them to succeed, and are eager to obtain better information from schools and communities so as to remain good partners in their children's education.
- Almost all teachers and administrators would like to involve families in their students' academic lives, but many do not know how to go about building positive and productive programs and are consequently fearful about trying.
- Almost all students at all levels, elementary, middle, and high school want their families to be more knowledgeable partners about schooling and are willing to take active roles in assisting communications between home and school (Epstein, 1995).

Schools make choices. They might conduct only a few communications and interactions with families and communities, keeping the three spheres of influence that directly affect student learning and development relatively separate. Or they might conduct many high-quality communications and interactions designed to bring all three spheres of influence closer together. In this study, the theory of overlapping spheres of influence will be used as a framework to

consider parent involvement while concurrently examining the rapid social and technological shift affecting schools.

Bronfenbrenner Ecological System Theory

The influence of the family on the child's performance and the context of how school experiences affect the behavior of children may be related to the level and type of incidence of parental engagement. Specifically, the researcher will use a parent questionnaire to obtain feedback on how the information from the study impacts interaction in the home. While technology is not a direct study of relationship it may provide some type of nexus to previously undocumented interaction that directly impacts children. According to Bronfenbrenner (1979), no child lives in an isolated vacuum. Bronfenbrenner believed that a person's development was affected by everything in his or her surrounding environment. Two core concepts that underpin Bronfenbrenner's model include: 1) the notion that humans must be studied in relation to the changing environments in which they are located; and 2) the idea that any environmental (physical, social and/or cultural) structures surrounding the individual are interconnected (Bronfenbrenner, 1986). The model includes five main nested systems, including the Microsystem (most immediate system around the individual), the Mesosystem, the Exosystem, the Macrosystem, and the Chronosystem (Edwards, Henderson, Gronn, Scott, & Mirkhil, 2017). It is impossible to understand a child's development without considering his or her social context. While the relationship that exists between a parent and child is extremely important to the study of electronic monitoring, a researcher would be negligent if he or she did not consider the effect of the environment or context of the individuals. Therefore the Ecological Model of Development by Bronfenbrenner supports the investigation of a child's world on a number of levels. The Bio-ecological Model operates through a multilayered approach, at the center of

which is the child, viewed by Bronfenbrenner as an active agent in his or her own world (O'Toole, 2016).

Consisting of the child's most immediate environment (physically, socially, and psychologically), the Microsystem entity stands as the child's venue for initially learning about the world (Swick & Williams, 2006). The family is clearly the child's early Microsystem for learning how to live. The caring relations between child and parents (and many other caregivers) can help to influence a healthy personality (Swick & Williams, 2006). Bronfenbrenner's definition of setting is significant for better understanding technology use in homes and early childhood educational settings because it is a place with particular physical features in which the participants engage in particular activities in particular roles for particular periods of time. The factors of place, time, physical features, activity, and role constitute the elements of a setting (Edwards et al., 2017). Mobile phone use can be considered a developmental mediator (i.e., tools and signs) that changes developmental processes by adding an internal element that must be a consideration of current research (Yan, 2017).

The next level of ecological systems theory is the Mesosystem. The Mesosystem consists of the interactions between the different parts of a person's Microsystem. In short, the Mesosystem is a system of two or more Microsystems (Bronfenbrenner and Morris, 1998; 2006). This is a very powerful concept that elucidates how behavior in any one setting is a function not only of experiences in that setting, but in the full range of settings experienced by the person (O'Toole, 2016). The most applicable Mesosystem would be the relationship between the parent and his teacher. The Bio-ecological model emphasizes that lives are lived interdependently through a network of shared relationships (O'Toole, 2016). The socio-ecological theory refers to the people within a setting as having specific roles (Bronfenbrenner, 1977). However, research

suggests that interactive digital technologies, television, and other multimedia, could also be considered as having significant roles in the development of the child within specific settings (Edwards et al., 2017). Since technology is increasing rapidly, more research is needed to see its effects on children.

Exosystems are the contexts individuals experience vicariously that still have a direct impact on them. For example, many children realize the stress of their parent's workplaces without ever physically being in these places (Swick & Williams, 2006). In modern, industrialized societies, there are three Exosystems that are especially likely to affect the development of the child, primarily thorough their influence on family processes. The first of these is the parents' workplace, the second is the parents' social networks, and the third is community influences (Bronfenbrenner, 1986). The psychological development of children in the family is affected not only by what happens in the other environments in which children spend their time, but also by what occurs in the settings in which their parents live their lives, especially in the places children seldom enter (Bronfenbrenner, 1986). The Exosystem consists of links between the systems where the child has direct experience, and the settings where the child may never enter but nevertheless affects what happens to them (O'Toole, 2016). In the age of multitasking, many parents monitor their children's grades while engaged with work during the day thus integrating their emotions on the job with the feelings created by the child's academic performance.

The Macrosystem is the fourth level of ecological systems and is the cultural environment in which a person lives. It is the place people live and carry out relations (Swick & Williams, 2006). In Bronfenbrenner's theory, culture is an external influence because it belongs in the Macrosystem. In other words, culture is a separate entity from immediate settings (Velez-Agosto, Soto-Crespo, Vizcarrondo-Oppenheimer, Vega-Molina, & Garcia Coll, 2017). This can

be referred to as the swimming pool interaction. The larger systems of cultural beliefs, societal values, political trends, and community happenings act as a powerful source of energy in people's lives. Many parents have a social network that is communal and uses school age experiences to drive the context of the relationships and conversations. The real power of Mesosystems is that they help to connect two or more systems in which child, parent and family live (Swick & Williams, 2006).

The term Chronosystem describes a research model that makes it possible to examine the influence on a person's development of changes (and continuities) over time in the environments in which the person is lives (Bronfenbrenner, 1986; Rosa & Tudge, 2013). This means that, regarding personal factors, the individual is not viewed as a passive recipient of experiences within settings and processes (O'Toole, 2016). Such changes can either be normative, when the change is expected, such as school entry, or non-normative, when the occurrence is unexpected, such as the sudden death or serious illness of a family member (Rosa & Tudge, 2013). The main characteristic of these experiences or events is that they alter the existing relation between person and environment, thus creating a dynamic that may instigate developmental change (Rosa & Tudge, 2013).

Bronfenbrenner defined ecological theory as the study of human development in context or enduring environments (Velez-Agosto et al., 2017). The Bio-ecological Model was in a continual state of development, up until Bronfenbrenner's death in 2005. As Tudge et al. (2009) pointed out, all theories undergo evolution. It is easy to argue that persons and environments are mutually implicated in human development, but it is more difficult to explain how that each one works together (Rosa & Tudge, 2013). This simple parity that existed within the lifetime of

research by Bronfenbrenner is certainly consistent with that of the evolution of study that includes the use of current technology and parent involvement.

Legislative Framework

The evolution of parent involvement in education dates to the early 1900's and has seen a variety of changes and laws dedicated to improving the educational system (Fuller, 2017). Parent involvement was an issue as far back in history as for John Dewey, educational reformist who posited that a need exists for parents' involvement in educating their children (Dewey, 1938). The Elementary and Secondary Education Act (ESEA) of 1965 is often identified as the point where the federal government began to play a notable role in education policy (Saultz, Fusarelli, & McEachin, 2017). The Goals 2000: Educate America Act of 1994 and the reauthorized Elementary and Secondary Education Act (ESEA), has made parents' involvement in their children's education a national priority (Baker & Soden, 1998). More recently parental involvement was one of the strategies implemented by the federal government to improve student achievement. According to the Goals 2000: Educate America Act of 1994, school leaders must enhance parental involvement for students' increased performance, especially for minority students with a lower socioeconomic background (United States Department of Education, 2015). One of the objectives of the act stated, that every school will actively engage parents and families in a partnership which supports the academic work of children at home and shared educational decision making at school (United States Department of Education, 2015). As a result of the guiding legislation, integrated technology has become a pertinent part of school communication plans, and is supported by some researchers as the most effective factor in school improvement (Tosun & Baris, 2011). Research has confirmed that education has shifted from being the primary responsibility of the family to an almost hands-off approach from the family

and back again (Jennings, 2012). Most recently, major reform goals outlined in No Child Left Behind (NCLB) called for an increase of parental involvement in schools and a decrease in barriers between schools and home (United States Department of Education, 2003). NCLB (2001) was replaced by the ESSA (2015), which has maintained policies for specific parental involvement (Bocian, 2016).

No Child Left Behind

The No Child Left Behind Act (NCLB) was arguably the most influential law/policy in United States', K-12 education over the last 15 years that identified parent involvement as a clear priority, mentioning it more than one hundred times in the legislation (Sebastian et al., 2017). NCLB required schools who received federal funds to implement a program to involve all parents in ways that support student success (Epstein, 2005). In a cover letter dated June 2003 and addressed Dear Parent, the United States Secretary of Education Rod Paige included a very strong introductory letter to a new legislation entitled No Child Left Behind (NCLB). The following statement is a quote from the correspondence:

> Accountability, local control and flexibility, new options for parents, and record funding for what works are now the cornerstones of our education system. If your child isn't learning, you'll know why. If your school isn't performing, you'll have new options and the school will receive additional help. Our commitment to you, and to all Americans, is to see every child in America regardless of ethnicity, income, or background—achieve high standards (United States Department of Education, 2003)

The No Child Left Behind Act was a landmark in education reform designed to improve student achievement and change the culture of America's schools. President George W. Bush described

the law as the "cornerstone of my administration" (NCLB, 2002). It was built on four common-sense pillars: accountability for results, an emphasis on doing what works based on scientific research, expanded parental options, and expanded local control and flexibility (United States Government Publishing Office, 2002). There are several specific key sections of NCLB designed to improve the academic achievement of disadvantaged students called the Title 1 legislation, which pertained directly to parent involvement in the legislation. According to NCLB (2002), Section 1111 describes parent involvement for states. Section 1114 describes parent involvement for school wide programs. Section 1120 outlines parent involvement related to children enrolled in private schools. And finally, Section 1118 of the act mandated that all schools receiving federal funds create parental involvement programs in part by creating "covenants" with parents within the school community. The purpose of the covenant, or strong relationship between school and home, is for schools to gather feedback from parents in an effort to foster flexible and meaningful parental involvement programs, build the schools' and parents' capacity for strong parental involvement, conduct, with the involvement of parents, an annual evaluation of the content and effectiveness of the parental involvement policy in improving the academic quality of the schools, identify barriers to greater participation by parents, reserve no less than one percent of such agency's allocation, and promote family literacy and parenting skills (United States Government Publishing Office, 2002).

Research shows that most reading problems faced by adolescents and adults are the result of problems that could have been prevented through good instruction in their early childhood years (United States Government Publishing Office, 2002). The first specific targeted initiative in the law for parents included resources for early childhood education so that all children would get a proper entry to school. Secondly, NCLB required states and school districts to give parents easy

to-read, detailed report cards on schools and districts, telling them which ones were succeeding and why (United States Government Publishing Office, 2002). Finally, in the new era of education, NCLB gave children a lifeline in low-performing schools. In the event of continuous poor performance of schools receiving federal funds, parents were entitled the option for additional compensatory programs such as tutoring or after school programs. Ultimately this also included the option to transfer to another higher performing school district (United States Government Publishing Office, 2002). Because of NCLB, parents knew their children's strengths and weaknesses and how well schools were performing.

Since the enactment of NCLB in 2002, research has suggested an increase in the amount of parental involvement programs implemented in United States schools (Myers & Myers, 2013). NCLB requires states, districts, and schools to develop and implement policies and plans to reach all families. Parental involvement is now a requirement of school and classroom organization. Parents and educators must share information and decisions about the quality of schools. Educators must communicate with all parents about their children's scores on achievement tests, including comparisons and trends of test scores for all schools in a district and major subgroups of students and other achievement indicators (Epstein, 2005). Underperforming schools must have options to change to successful schools. Parent involvement must include all families, even those who are not currently involved (Epstein, 2005).

While NCLB increased parent participation, it did not specify the type of involvement schools needed to focus on, resulting in wide variation in how schools implemented the law (Sebastian et al., 2017). Most parents claim familiarity with NCLB regardless of the type of school their child attends, yet few parents accurately understand how key provisions interact with the school context to structure outcomes and provide opportunity (Lavery, 2016). The

overarching result of NCLB was an emphasis on compliance instead of authentic connection and successful application of services with families. Most schools retain customs of placing one person "in charge" of parental involvement rather than a team (Epstein, 2005). States and school districts have committed an enormous amount of time and resources to complying with NCLB's mandates, particularly in developing testing and data collection systems (DeBray-Pelot & McGuinn, 2009). The effect of NCLB has been the unprecedented availability of disaggregated school-level student performance data which has fueled greater attention to school outputs by politicians, parents, school officials, and the media (DeBray-Pelot & McGuinn, 2009). Parental involvement programs increased between 1996 and 2007 and cited NCLB as the "lever of change" that prompted the increase (Myers & Myers, 2013).

Every Student Succeeds Act

In December of 2015, the Every Student Succeeds Act (ESSA) replaced NCLB as the primary federal legislation that guides schools and encourages a broader commitment to a well-rounded education. Simultaneously, states are engaging stakeholders in the long, hard, and important work of building consensus for the new systems that will be rolled out in the 2017-18 school year (Hough, Penner, & Witte, 2016). The Every Student Succeeds Act (ESSA) makes sweeping changes to the way school performance is measured and shifts many of the decisions about what to measure, how to identify schools for support, and what types of support to provide back to the states (Hough et al., 2016). ESSA makes parent and community partnerships central to the academic success equation. The recently modified legislation includes provisions for programs and practices that specifically address parents in a meaningful way, especially those who fall under the category of disadvantaged (Fenton, Ocasio-Stoutenburg, & Harry, 2017). ESSA explicitly states that districts reserve at least 1% of Title I funds to carry out parent and

family engagement practices (A. M. Thompson, K. C. Herman, M. A. Stormont, W. M. Reinke, & C. Webster-Stratton, 2017). According to the Every Student Succeeds Act (ESSA), each local education agency must have a written parent and family engagement policy. The following items are expected outcomes that have been identified in the formal legislation (United States Department of Education, n.d.):

- Build the capacity of all participating schools within the local educational agency by planning and implementing effective parent and family involvement activities
- Conduct an annual evaluation of the content and effectiveness of the parent and family programming
- Provide financial support to organizations to provide technical assistance and training for the enhancement of systemic and effective family engagement policies, programs, and activities that lead to improvements in student development and academic achievement
- To assist state educational agencies, local educational agencies, community-based organizations, schools, and educators in strengthening partnerships among parents, teachers, school leaders, administrators, and other school personnel in meeting the educational needs of children and fostering greater parental engagement
- Developing and strengthening the relationship between parents and their children's school
- To train parents in the learning and using technology applied in their children's education

More than 10 years since NCLB was created and ESSA took its place, many parents are still not satisfied with the services meant to prevent students from slipping through the cracks in the educational system (Lavery, 2016). ESSA has gone so far in the recent law as to strike the language of "parental involvement" with a change to "parent and family engagement" (Fenton et

al., 2017). Specifically, whereas the NCLB language narrowly defined engagement policies as pertaining to "parent involvement," ESSA policies were written to recognize "parent and family engagement" (Carpenter, Young, & Carmichael-Murphy, 2016). The term involvement refers to school-sanctioned, school authored activities in which parents participate. Engagement is conceptualized as encompassing those activities parents structure for themselves and their self-directed relational interactions with school officials (Fenton et al., 2017). The reference to engagement in ESSA contributes an instantaneous gap in the professional literature among recognized theoretical frameworks that have been developed solely around parent involvement strategies. Although one cannot be certain what prompted the change in terminology, what is evident is a crucial shift through the ESSA (2015) expansions from NCLB (2004)—parents and families are legally mandated to sit at the table with more input and decision-making power than before (Fenton et al., 2017).

The need for parent involvement in schools is rarely questioned; however, the structure and intentionality of parent involvement programs differ greatly. Variation in school and district populations make the need for a universal solution for increased family involvement difficult (Carpenter et al., 2016). Though school-based parental involvement policies were designed to significantly enhance relations between a child's home and the school, implementation efforts rarely led to sustainable and comprehensive parent-involvement programs (Carpenter et al., 2016). Research has shown that teachers may have a preference for deferential parents who passively accept whatever information they receive at schools (Fenton et al., 2017). It has also been demonstrated that teachers may develop biases about parents that may prohibit true partnership (Fenton et al., 2017). It seems that parents are positioned as either scapegoats, bearing the blame for poor educational outcomes for the neediest students, or opponents who

should be feared, and not necessarily respected or welcomed full partners (Fenton et al., 2017). Building capacity for involvement must provide materials and training to help parents work with their children to improve achievement, such as literacy training and the use of technology. The inclusion of technology in both legislation and the application of parent engagement serves as another gap in the literature that requires attention. ESSA strongly encourages personalizing education, included utilizing blended learning, as well as attempting to ensure more equitable access to technology and digital learning experiences. It also highlights blended learning as a practice that can help struggling students (United States Department of Education, n.d.). There is no excuse for doing things the old way, and federal legislation is trying to ensure the old way goes away. The key to this thinking is to allow room for parents who naturally take the initiative to structure their own interactions with schools, while also providing support for parents who have a more deferential attitude toward educators (Fenton et al., 2017). Therefore, although educators have the support of the law to usher them toward a place of true engagement, if thoughtful consideration of the issues parents face does not take place, teachers run the risk of falling short of truly fulfilling the spirit of the law (Fenton et al., 2017).

Parent Involvement to Parent Engagement

Surveys and time-use diaries have consistently indicated that a substantial proportion of parenting occurs during infancy and childhood and consists of involvement activities that have been termed managerial parenting, focused on physical care of children and organizing and structuring the activities in which children are engaged (Fletcher, Benito-Gomez, & Blair, 2018). In adolescence, parenting is more distal in nature, and is increasingly carried out via cell phone communications as adolescents and their parents use this technology to maintain contact while negotiating busy schedules that keep them out of one another's direct presence (Fletcher et al.,

2018). A finding contrary to a broadly held impression is that monitored technology use, such as that of cell phones, is not necessarily viewed by children as a means of parental intrusion, but instead is seen as part of expected parental monitoring and, more importantly, as consistent with a supportive relationship between parent and child (Patrikakou, 2016). Managerial communications have been defined in terms of the day-to-day caretaking activities that parents perform with respect to their adolescent children. These communications fall into four categories: logistic communications focused on moving persons or items from one location to another, monitoring/ location communications involving communicating information about a communication partner's location or requesting information about location, plan-focused communications concentrated on arranging or confirming an activity or interaction between the parent and adolescent, and informational communications involving asking or answering questions related to knowledge or assistance an individual is seeking (Fletcher et al., 2018).

In the ESSA legislation, the construct of parental involvement was broadened to encompass parental and family engagement (Zolkoski, Sayman, & Lewis-Chiu, 2018). Educational researchers do not believe that family engagement is embedded in most states' teacher accreditation standards and recognizes that, if it is not in the standards, it is not something that receives attention from teachers (Pushor & Amendt, 2018). A lack of consensus regarding parental involvement begins with a definition of the construct, and the fact that despite its intuitive meaning, the operational use of parental involvement has not been clear and consistent (Wilder, 2014). Researchers, educators, and policy makers have identified the lack of parental involvement in education as a problem that surpasses socio-economic status (Eaford, 2018). Parent and family school involvement decreases dramatically as students grow older, with the decline beginning as early as fourth grade (Wang & Sheikh-Khalil, 2014). Often, parents serve

only the school's agenda by doing the things educators expect them to do. Parent choice and voice is not strong and often non-existent. Parent engagement, in contrast, is reciprocal, a partnership where educators work alongside parents to enhance teaching and learning for children (Heinrichs, 2017). It is important to differentiate between involvement and engagement because it is through parent engagement that the teacher shifts from being the expert knower to becoming a partner in a student's education (Ippolito, 2017). The change represents a difference in relational agency, with the relationship between parents and schools, and the object of the relationship children's learning (Janet Goodall & Montgomery, 2014). Research has made clear that the greatest lever for change is the atmosphere towards learning in the home (Pushor & Amendt, 2018).

Technological Framework

On March 26, 2004, President George W. Bush proclaimed that the country needs a national goal for the spread of broadband technology and the United States must have affordable access for broadband technology by the year 2007 (Patrikakou, 2016). In June 2013, President Obama announced the ConnectED initiative, which intends to provide access to 99% of American students by 2017, emphasizing that such connectivity will better prepare students to acquire those skills necessary to compete in an increasingly globalized economy (Patrikakou, 2016). Given the priority established by the federal government and the fact that 95% of American adults now own a cell phone (and 77% a smartphone) (Pew Research Center, 2017), it seems logical that educators mobilize these technologies in the most effective ways to communicate with families. The proliferation of smartphones has changed the nature of communication, likely altering the modes parents select to communicate with teachers and the ways they are involved in education (Thompson, Mazer, & Flood Grady, 2015). The proliferation of smartphones is a

technological development in my opinion. It has major significance and effects on many areas of one's life, and in the academic areas as well (Davidovitch & Yavich, 2015). According to Govender (2014), the introduction of technology alone cannot determine its adoption or use. Failing to implement technology largely results from individuals' attitudes toward its adoption (Govender, 2012).

The rapid technological advances, the expansion of online media use, and the declining cost of mobile technology have introduced a communication factor that has precipitously affected parent involvement and the relationship between parents and children (Patrikakou, 2016). Despite the benefits of technology the line between Internet use and problematic Internet use has been noticeably overstepped, with Internet addiction the focus of much global research (Anderson, Steen, & Stavropoulos, 2017). Problematic Internet use comprises an important area of research as its negative consequences have been found to impact everyday functioning, interpersonal relationships, and emotional well-being. This area is particularly relevant to adolescents (12–17 years) and emerging adults (18–29 years) (Anderson et al., 2017). Parents play vital roles in all stages of development and must develop ways to adapt parenting in the digital era, schools can play a critical role in keeping parenting relevant in these confusing times (Patrikakou, 2016).

There is a correlation between computer-assisted teacher-parent communication and parent involvement, such that computer-assisted communication increases parent involvement at school (Nitza & Roman, 2016). Schools are in a position to play a crucial role in these times of change. Recent research has demonstrated that providing information to parents can produce significant gains in student achievement at potentially low cost (Bergman & Chan, 2017). Although scholars have begun to examine how students use smartphones in the classroom, minimal

research has investigated parents' smartphone use to communicate with teachers (Thompson et al., 2015). Scholars need to examine parents' smartphone use to understand how the devices are utilized in parent–teacher communication and gain a theoretical understanding of why parents select specific modes in this new era (Thompson et al., 2015). Educators can assist parents in navigating the use of technology and media with their children and, quite importantly, enhancing the use of technology and media to strengthen the learning continuum between school and home (Patrikakou, 2016). This possibility is consistent with the argument of technological determinism that technologies can change the way that people function and interact. According to this approach, technological tools are autonomous forces that compel society to change (Blau & Hameiri, 2017). The task of communicating with parents is difficult and time-consuming, but through technological advancement, teachers have choices of how to keep parents involved in a more convenient manner (Curtiss et al., 2016; Lwoga, 2014; Tosun & Baris, 2011).

Management of Educational Data

While developing in utero and seconds after birth, children are positioned within intense networks of surveillance on the part of parents, healthcare workers, and teachers (Lupton & Williamson, 2017). Over the past decade, new technologies have generated an explosion of data for public school systems to use and analyze (Polonetsky & Jerome, 2014). Digital educational data management has become an integral part of school practices (Blau & Hameiri, 2017). Data use is identified as a common and core characteristic of high-performing schools and is widely believed to promote school improvement (Ebbeler, Poortman, Schildkamp, & Pieters, 2016). The collection of information, data mining, and analytics is an integral element of contemporary society in general and education systems in particular (Selwyn & Facer, 2014). The Department of Education has identified using student data systems to help students and improve education as

a top national priority (Polonetsky & Jerome, 2014). The Education Department lists hundreds of questions for states to answer about each child in the public education system, including questions regarding mental health and social skills (Simon, 2014). In order to ensure that performance data is managed efficiently for public transparency, schools are instructed to utilize digital technology tools, such as Management Information Systems (Perelman, 2014). Schools are held accountable for their own performance and required to collect and publish performance data for the purpose of justifying public expenditures (Selwyn, Banaji, Hadjithoma-Garstka, & Clark, 2011). The Pennsylvania Information Management System (PIMS) is an example of a statewide, longitudinal data system (SLDS) that efficiently and accurately manages, analyzes, disaggregates, and uses individual data for each student served by Pennsylvania's pre-K through grade 12 public education system (Pennsylvania Department of Education, 2017). PIMS serves many purposes, including: meet current state and federal reporting requirements, improving education decision-making through the use of high quality data and decision support tools, providing longitudinal tracking of education progress over time and across LEAs, and reporting timely and accurate education data through standardized and ad hoc reporting capabilities (Pennsylvania Department of Education, 2017). The literature advocates that school databases enhance administrative efficiency and effectiveness but the number of studies that examine the realization potential in educational management is rather scarce (Harris, Jones, & Baba, 2013; Jameson, 2013). Educators must draw inferences from data to make information actionable in school change. As educators make sense of data, they identify what data are important, and what attributions they make about students and instruction. These inferences provide a productive course of action (Wardrip & Herman, 2018).

A host of scholarly publications since the advent of personal computing in the 1980s has directed attention to the ways in which children use digital technologies. However, little research thus far has sought to examine how children are the objects of a proliferating range of digitized surveillance practices that record details of their lives (Lupton & Williamson, 2017). As children's daily lives become more heavily mediated, and as the media simultaneously converges and diversifies, researchers, policy-makers, and the public are now debating whether the digital age is enhancing or undermining children's rights (Livingstone, 2016). Rendering children's behaviors, qualities, and bodies into digital data, and relying principally on these data when making important assessments, judgements, or inferences, may delimit what can be known about the children and how they might be treated as a result (Lupton & Williamson, 2017). Most of the personal data generated publically is collected and stored on proprietary platforms that have a commercial motive to exploit these data (Lupton & Williamson, 2017). Some researchers argue that the use of an educational database is a reflection of the data-obsessed discourse based on the perception of schools as service providers, students as consumers, and the education process as a service offered to clients (Perelman, 2014). Schools generate a massive amount of data, the use of which can effectively promote pedagogical goals and change patterns of educational management (Blau & Hameiri, 2017). Unfortunately, the pedagogical and administrative potential of mobile devices in educational organizations is usually ignored, and in some cases questions educational policy (Blau & Hameiri, 2017). Parents play an essential role in education, and when it comes to the technology implementation and planning processes at schools and school districts, they should be consulted and invited to participate in the decision-making. Scholars have only just begun to confront the issue of children's rights in the digital age (Lupton & Williamson, 2017). Mobile data access becomes a part of the hidden curriculum. By

entering and accessing data during lessons and meetings, teachers implicitly convince students and their parents that they will persist in preparing the student data pool and using this data for pedagogical purposes and data driven decision-making (Blau & Hameiri, 2017). Ultimately, educators and policymakers are faced with critical choices regarding data use that can profoundly affect students' daily educational experiences and trajectories (Datnow & Park, 2018). The collection of data in the proposed study will contribute to the greater band of knowledge of how educators should gather, review, and manage student information in each local school district. School Administrators must transition from being data collectors to data users.

Student Information System

A Student Information System (SIS) refers to online intranets or managed learning environments that school leaders use for keeping records such as grades, attendance, disciplinary actions, homework, classroom instructional resources, curriculum practices, notices, and other vital communications (Cavus, 2013). In addition, a school database opens the possibility to analyze online parental involvement since the information is automatically stored (Blau & Hameiri, 2017). School administrators may use an SIS to support educators and students in the teaching and learning process and to inform parents of their children's progress and school activities (Nasser, Cherif, & Romanowski, 2011). School databases enable data-driven educational interactions between teachers, students, and parents (Kraft & Rogers, 2015). Schools' SISs accommodate various stakeholders' interactions of pedagogical information through open-access applications, which essentially provides transparency for all stakeholders involved (Blau & Hameirie, 2010). Schools SISs are significant because they provide tools such as electronic communications, students' assessments, instructional materials, multimedia

resources, and grade books that greatly aid the learning process (Gautreau, 2011). An SIS facilitates the achievement of instructional goals in a less traditional environment and extends learning beyond the ambit of school hours through readily available content (Srichanyachon, 2014). Despite the positive association between parental involvement and student success, we know far less about the causal mechanisms behind this relationship, including electronic communication (Kraft & Rogers, 2015). The proposed study will consider data from a specific period of time to study the validity of a Student Information System as a form of parent involvement.

Online Grade Book

Online Grade Booking (OGB) is one mechanism of an SIS, where parents and students have access to teachers' grade books through the Internet. It has become the prevailing method for transmitting daily academic progress for students across the United States, using email as the primary mode of communication with the child's teacher (B. Thompson & Mazer, 2012). Compared with Thompson and Mazer's (2012) investigation, the findings in a more recent study revealed that parents' e-mail preference elevated from 2:1 to 5:1 in a three-year span (Thompson et al., 2015). It is estimated nearly all American public school districts now engage in some form of online grade-sharing with parents and students (Miller et al., 2016). Parents most frequently seek grade information when accessing school portals and were found likely to engage with their students and communicate with teachers after this experience (Bocian, 2016). OGBs give parents and students 24-hour access to expectations, assignments, due dates, and grades, and provide opportunities for parents to communicate with their children regarding school work and progress. An OGB may also prompt parents to reach out to teachers more frequently because, they feel more involved in their child's education (Patrikakou, 2016).

Public media coverage of OGB use and impact on students, teachers, and parents noticeably increased beginning in the 2006–07 school year, concurrent with the entrance of NCLB kindergarteners into middle school (Miller et al., 2016). Tan (2012) performed a study to determine if electronic means of communication would increase parents' involvement, and if so, what caused the increase. The results indicated that 35% of the parent participants did not log into the system daily or weekly, although 98% reported they were aware of the online grade book system (Tan, 2012). OGBs include valuable information but must be prescribed by schools. Kraft & Rodgers (2015) found that a weekly one-sentence message from teachers about the children's schoolwork increased students' academic success. Blau and Hameirie (2010) examined the interaction of educators in the implementation of a new SIS called Moshov in 10 secondary schools in Israel. The results showed that when administrators oriented parents and included them in the onset of the innovation, greater technology integration was evident versus an implementation that omitted parents in the inclusion and orientation (Blau & Hameirie, 2010). In recent years, online grade books, accessible not only to teachers and to school administrators but also to students and parents, have provided all members of school communities with transparent and accessible information about students' progress (Miller et al., 2016). Technology integration as an instructional tool in education is a progressive step in enhancing learning.

The challenges that education systems face include the failure of school officials to provide the orientation of grading platforms (Shin & Kang, 2015). There can be added stress and strain on the family caused by excessive monitoring of student grades. The OGB leads to a perception that the frequency with which the parent checks the child's progress is a reflection of parenting skill or commitment, and evidence of parents attempting to remain connected to their students

via an “electronic umbilical cord” while they are at school and maturing (Miller et al., 2016). The OGB and other online grading systems open up schools to parents and the community (Cameron, 2011). Consequently, a new form of highly involved helicopter parent has emerged (Miller et al., 2016). Snowplow parents, a variation of helicopter parenting has also emerged. Snowplow parents and seek to preemptively remove barriers to their child’s education (Miller et al., 2016). The OGB enables this group with newfound currency to “plow” through obstacles for their children by manipulating their schedules and managing their time in ways not previously possible when the student was the only party in the home with detailed information on assignments, due dates, and class activities (Miller et al., 2016). Family plays a valuable role in the adoption of any new program within the education system but must be carefully structured and moderated. According to Kraft & Rodgers (2015) there is still much to learn about the content, delivery method and frequency of messages that elicit meaningful parental investment and involvement in their children’s academic world. The researcher of the proposed study will consider the frequency of parent monitoring of an OGB in an effort to contribute information that will provide school administrators a recommended industry standard of online parent involvement.

Technological Barriers - Parents

Parents have reported using media and technologies, including television, computers, video games, and cell phones, almost seven hours per day outside of work (Vittrup, Snider, Rose, & Rippy, 2016). The data revealed an increase in parents’ preference for frequent e-mail communication as well as for emerging modes of parent–teacher communication such as text messaging and social media (Thompson et al., 2015). However, despite the known benefits, interaction and collaboration between teachers and parents is often quite limited (Dor, 2012).

Technology now offers both longstanding and new ways for schools to communicate with parents, and support the learning of their children, yet many schools do not take advantage of these opportunities (Olmstead, 2013). Technology plays an important role in either fostering parent teacher relationships or can negatively affect those relationships due to parental beliefs influenced by teacher-parent communication (Olmstead, 2013). Psychosocial factors are a leading cause of technology resistance in education (Yu, Brewer, DiGangi, & Kaprolet, 2009). Psychosocial factors refer to lack of social control, lack of motivation, feelings of intimidation, and lack of environmental support that a person might encounter in using technology (Metz, Kelly, & Gore, 2015). For technology to be effective and efficient, all stakeholders must possess a level of technological readiness (Demir & Yurdugül, 2015). Resistance to technology might occur due to individuals' trust in the potential of the technology and their confidence in using the technology (Demir & Yurdugül, 2015). One of the disadvantages of implementing innovations is that individuals must modify their behavior, skill set, and belief system to accommodate the innovation. These modifications may create barriers or reluctant attitudes toward the adjustment (Yu et al., 2009).

Although internet use can have a negative impact on family cohesion, it can also facilitate the creation of family experiences and memories and foster the family's collective identity (Patrikakou, 2016). Designed to serve, please, inform, entertain, and connect, digital devices have finally come to define the current populations (Patrikakou, 2016). Technology has always altered the nature of social interactions, including those within the family (Patrikakou, 2016). In order to understand the nature of the experience of children, it is important to consider the attitudes, perceptions, and beliefs of the parent toward technology use (Vittrup et al., 2016). The family is not immune to the positive and negative effects of technology and the media

(Patrikakou, 2016). An increased reliance on technology in schools has marginalized parents and decreased the level of participation in school programs, as engagement centers on basic technology skills that some parents lack (Lee & MIchelle, 2018). It is possible that American society has become so saturated in media and technology that the digital divide is no longer as prominent, and most families regardless of income, education, or age consume large amounts of media and technology daily (Vittrup et al., 2016). Parents' lack of technical skills in using an SIS platform are a direct result of an inevitable failure in education (Nasser et al., 2011). Additionally, conflicting values, beliefs, and personalities of older adults can also act as inhibitors to technology use, which could be perceived as reluctant behavior and affect the level of parent involvement pertaining to communicating, accessing, and using technology to increase students' performance (Gilly, Celsi, & Schau, 2012). Educators expect parents to assume active roles as co-educators, especially in virtual environments (Waters & Leong, 2014). Technology and media use also expand the co-parenting experience, especially in post-divorce cases when parents live apart, and the use of technology can facilitate communication in order to plan and make joint decisions for children, while avoiding co-parental conflicts (Patrikakou, 2016).

With increased competition for admission to colleges, parents feel they need to monitor and control their children's school progress (Cameron, 2011). Parents who check in too often on their students using email or online gradebook access can begin to create a barrier to academic success not just with their child, but with their child's teacher as well (McNeal Jr, 2012). In a recent study, approximately half of the parents interviewed indicated a negative impression of their children's teachers and a general hostility towards, which demotivated them from being involved in everyday events in the school (Murray et al., 2014). For those parents who spoke positively about the theme of varying communication methods, those parents cited accessible

teachers, alternative methods of communication, and a person on staff who could answer questions and accommodate parents during meetings (Rodriguez, Blatz, & Elbaum, 2014). Some parents shared that when they displayed dissatisfaction with teachers or the curriculum, teachers became defensive and unapproachable (Anderson et al., 2017). Parents who spoke unfavorably about a school's communication methods mentioned that the school was rigid about providing services or reciprocating parents' initial contact (Rodriguez et al., 2014). The ultimate positive outcome for both schools and families is that positive communication between parents and teachers creates environments where parents are more likely to ask for help with a family problem, and teachers are more open to giving parents information (Bokony, Whiteside-Mansell, Swindle, & Waliski, 2013).

Technological Barriers - Educators

Recent research and theorization stresses the role of teachers as versatile communicators (Kiemer, Gröschner, Pehmer, & Seidel, 2014). As data analysis further reveals, three words were repeated frequently when educators shared their views on transparency: pressure, fear, and criticism (Perelman, 2014). The discomfort is related to difficulties in getting parents to collaborate, teachers to cope with parents' feelings of disrespect and mistrust toward them, and parents' over protectiveness of their children or questioning teachers' authority (Fisher, 2009). These factors, combined with the decline in the social status of the teaching profession, make retaining high-quality teachers difficult (Friedman & Fisher, 2002). Olmstead (2013) suggested this may be due to a lack of training for teachers or a lack of research in this area. Training on communication and counseling skills helps teachers become more aware of their professional image by understanding their professional space and boundaries with parents (Symeou, Roussounidou, & Michaelides, 2012). The relevance of this task is underscored by current

reports of parents acting in more demanding ways when meeting teachers (Gartmeier, Gebhardt, & Dotger, 2016).

Teacher identity is shaped by technology, public policy, and the social context of their day-to-day work (Rose, 2016). From a school's viewpoint, parent involvement induces advantages and weaknesses simultaneously; to maximize benefits of parent involvement, both parents and teachers must cooperate to reduce misunderstandings and disagreements (Ho, Hung, & Chen, 2013). Teachers have expressed that the transparency element of technology adds to the pressure of exhibiting high levels of performance (Perelman, 2014). Collaborating with parents varies because of the diversity of the parent body; thus, schools must address the ineffectiveness of using an undifferentiated approach with all parents (Symeou et al., 2012). In one study teachers said that the technology system was a mere technical tool with superior administrative functions (Perelman, 2014). An unstable school environment can occur when parents are given more administrative input on such factors as staffing and daily school decisions (Zohora, Othman, Hoque, Daud, & Ab Samad, 2013). Only a small number of studies focus on the detrimental consequences of SIS usage, mainly in relation to disempowerment and deprofessionalization of teachers (Waring, Wainwright, & Skoumpopoulou, 2011). Although the telephone and email are the communication methods of choice for many teachers, email is often extremely time consuming because finding the best words to ensure that information is not misunderstood or misconstrued is difficult (Palts & Kalmus, 2015). In some schools with crowded classrooms, teachers are unable to reach out to all parents at all times, and some teachers find that parents create situations putting teachers in unpleasant positions (Dor, 2012). Parents usually feel dismissed when school personnel do not respond to parent initiations or when a call, email, or note is not quickly acknowledged (Elbaum, Blatz, & Rodriguez, 2016). Any need identified in

educational research should directly lead to professional development that support eliminating barriers to improve student achievement.

Professional Development

A 2012 nationwide survey found that beginning teachers were most likely to report parent communication and involvement to be their biggest challenge (Gauvreau & Sandall, 2017; Markow, Macia, & Lee, 2013). Despite decades of research supporting the benefit of family engagement on children's social, emotional, behavioral, and academic development, teachers are not always adequately prepared to consult and work with families (Smith & Sheridan, 2018). Preparing teachers and offering continuing professional development focused on effective family engagement can positively impact teachers' attitudes about families, improve knowledge regarding families' roles in their children's education, and increase family engagement practices (Smith & Sheridan, 2018). Nationally representative data on the frequency and quality of school-initiated communication with public school parents shows that communication in any form between schools, teachers, and parents is surprisingly rare (Kraft, 2017). Preservice training in family engagement was successful at improving preservice teachers' levels of confidence, self-awareness, knowledge of diverse families and their role in education, and ability to utilize knowledge about families to inform and improve instruction (Evans, 2013). Despite training, teachers still report feeling unprepared to work with families and overwhelmed when these interactions occur with families (Evans, 2013). Teachers and school leaders do not always feel well prepared to involve parents and acknowledge that involving families is one of the top three challenges in their profession (Daniel et al., 2016). School administration should provide professional development on best communication practices (Knappenberger, 2018). Teacher Training Programs had a positive impact on key teacher family-engagement outcomes (Smith &

Sheridan, 2018). One theme emerges from all forms of research on the topic of parent involvement and school success - quality of parent involvement is more important than quantity of parent involvement regarding successful student engagement (Monti, Pomerantz, & Roisman, 2014). It is paramount that teachers receive training but also evaluate their parent communication and engagement competency (Gartmeier et al., 2016).

The ways through which technology and media use have been influencing parent–child interactions and parent involvement, as well as the school's role in supporting parents to navigate the complex parameters of parenting in the digital era, are not well understood (Patrikakou, 2016). When communicating through text message or school-appropriate social media platforms, communication methods require adequate training for teachers to understand the usefulness of the communication system to ensure a positive attitude engagement towards the system (Ho et al., 2013). Consistent with previous research, teacher training increases teacher self-efficacy for working with families (Evans, 2013). School to home communication should be enhanced through technology and media use to keep parents informed regarding various school-related matters such as school events, homework, learning strategies, and student progress (Curtiss et al., 2016; Olmstead, 2013; Tan, 2012). One study suggested continued research and instruction on the various apps and technology currently available for teachers and parents to foster meaningful two-way communication (Knappenberger, 2018). Technology should personalize, not standardize, in order to avoid the formulaic process of school (Couros, 2015). Research reveals that smartphones have affected how parents and teachers communicate, suggesting that parents view academic support and new communication technologies as important to their child's education (Thompson et al., 2015). A competent communicator not only mean being able to establishes good interpersonal relationships with parents, but also

reaches reaching these goals within a narrow timeframe (Gartmeier et al., 2016). In general, computer use at home has been found to be associated with enhanced learning and increased academic achievement over time (Patrikakou, 2016). In a recent empirical study of the characteristics related to student achievement, relationships with parents has clearly grown in importance (Leithwood & Azah, 2017). Communication between parents and teachers appears to be based more on the efforts of individual teachers or the student and their requests for involvement rather than on school wide procedures or practices (Guskey, Ellender, & Wang, 2006). When teachers are well informed about the benefits of parent involvement, they can better communicate these benefits to uninvolved parents (DeHass, 2005). Properly trained parents and teachers can be influential in improving schools (Taylor, 2016). Most importantly, students had significantly higher scores on standardized tests when families were involved (Voorhis, 2011). The goal of the research in the proposed study is to contribute to a standard practice regarding parent engagement via technology.

Theological Framework

Parents are called to teach their children to observe everything that Jesus commanded (P. D. Tripp, 2016). And Jesus came and said to them, "All authority in heaven and on earth has been given to me. Go therefore and make disciples of all nations, baptizing them in the name of the Father and of the Son and of the Holy Spirit, teaching them to observe all that I have commanded you. And behold, I am with you always, to the end of the age" (Matthew 28:18-20, ESV). This directive from Jesus is a call to every parent. The first verse in the passage states that all authority has been given to Jesus and then to the parent to do everything within their power, as an instrument in the hands of the Redeemer to train children to live as disciples of the Lord Jesus Christ. Obedience to God is more important than how children perform in school, sports, their

future careers, or even how they contribute to their own families (P. D. Tripp, 2016). American parents in our culture often improvise in this area because they do not understand the biblical mandate to shepherd children (T. Tripp & Tripp, 1995). As a parent, a father and mother have the authority to act on behalf of God in a child's life. A parent does not have the right to shape the life of a child as it pleases them, but rather as it pleases Him (T. Tripp & Tripp, 1995). Success is about faithfulness, not results. One does not have to fear being judged by God for the results that he or she has produced in child-rearing. One is not manufacturing trophies, but parenting children (P. D. Tripp, 2016). No matter how righteously a parent acts toward the children God has placed in his or her care, if the children do not commune with God, they will not be what they are supposed to be and live as they are designed to live (P. D. Tripp, 2016). Children are a gift from the LORD; they are a reward from Him (Psalms 127:3, NIV). Missing the most in parenting are the perspectives and principals of the gospel of Jesus Christ, which are radical and counterintuitive (P. D. Tripp, 2016). All research in parenting should include a Christian worldview or philosophy behind a topic. It is the intention of the researcher to include a biblical worldview to support the study of parent engagement.

Unity in Parenting

The intimate relationship that existed between Abraham and Isaac clearly represents the preferred unity required in parenting. As frequency is considered in the proposed study, the concept of togetherness in ministry must define a parenting relationship and underscore any quantified, prescriptive process. The story of Abraham and Isaac is a wonderful example for parents of the obedience and dedication to the Lord that must exist in parenting. And Abraham took the wood of the burnt offering, and laid it upon Isaac his son; and he took the fire in his hand, and a knife; and they went both of them together. And Isaac spake unto Abraham his

father, and said, my father: and he said, "here am I, my son." And he said, behold the fire and the wood: but where *is* the lamb for a burnt offering (Genesis 22:6-7, KJV). Parents are to supervise and even participate in the ministry of their children. The intimacy set forth in this passage indicates that the boundaries between a child and parent should not be limited by others. The oneness described in the relationship between Abraham and Isaac should be considered and interference by an outside party would certainly take away from the original intention of the Lord. As educators, individuals must consider the effect that any censorship or redirection would have on the intended partnership of a parent and child. This passage supports the separation and the discretion that must be included in home to school communication and its governance by the school. A parent is prescribed a process of togetherness in this passage that functions continuously and serves as the primary teacher of a child.

Deuteronomy 6

Deuteronomy contains three great speeches and a collection of legal arrangements that God gave to Moses when he was at the end of his life. As such, Deuteronomy holds religious education as its primary purpose (Kuykendall, 2017). The focus of attention in this reading is on the very purpose of Deuteronomy as a pedagogical tool to instruct each generation on what it means to be a part of God's chosen people (Clines, 2017). The purpose of study is to train the whole person for lifelong, obedient service in the knowledge of God. The aim of learning is holiness in living, set apart unto God in every dimension of life (Wilson, 1989). This book contains instructions and serves as a model for how the Law should be taught to the younger generations (Merrill, 2001). Children were not expected to discover this on their own; they were to be taught this by the previous generations (Merrill, 2001).

In Deuteronomy 5 (New Living Translation), Moses summoned all of Israel to consider the covenant and hear the decrees and regulations set forth by the Lord. Moses fulfilled one of the most important tasks of the older generation by teaching the younger generation the Word of God and the principles of Godly living. The book of Deuteronomy is quoted nearly 100 times in the New Testament and Jesus quotes Deuteronomy more than any other Old Testament book (Wiersbe, 2010). In (Deuteronomy 5:28-5:32, NLT), Moses recounted what God had instructed him to share with the people of Israel, that they must be careful to obey all of God's commands, decrees, and regulations. Moses sought to equip a generation for their new lives in the Promised Land in the long farewell speech in Deuteronomy (Wiersbe, 2010). Moses recounted what God stated on Mount Sinai and commanded the Israelites to teach God's commands diligently in (Deuteronomy 6:7-9, ESV) "by talking of them when you sit in your house, and when you walk by the way, and when you lie down, and when you rise. You shall bind them as a sign on your hand, and they shall be as frontlets between your eyes. You shall write them on the doorposts of your house and on your gates."

In the Old Testament, the word wisdom has more to do with character rather intelligence and describes the right use of knowledge. See, I have taught you decrees and laws as the LORD my God commanded me, so that you may follow them in the land you are entering to take possession of it. "Observe them carefully, for this will show your wisdom and understanding to the nations, who will hear about all these decrees and say, surely this great nation is a wise and understanding people (Deuteronomy 4:5-6, NIV)." "Hear, oh Israel: The LORD our God, the LORD is one. Love the LORD your God with all your heart and with all your soul and with all your strength Deuteronomy 6:4-5 (NIV)." Hear of Israel: The Lord our God is one Lord is the first basic tenet in the Jewish confession of faith, the Shema (Wiersbe, 2010). The word covenant is used at least

27 times in Deuteronomy and comes from the Hebrew word berith, which some scholars translate mean "to eat bread." God made a covenant and expected His people to keep it (Wiersbe, 2010). The orthodox Jewish confession of faith is called the Shema is so important that Jewish boys are required to memorize it as soon as they can speak. It is said in times of joy and despair, and it is the last prayer uttered on their deathbeds. It is the ultimate declaration of Jewish faith (Wiersbe, 2010). The Jews took these commandments literally and wore portions of Scripture in little containers called phylacteries on their foreheads and left arms. On their arms they wore extra wide prayer boxes with Scripture verses inside (Matthew 23:5, NLT). The Jews also attached a small container of Scripture, called a Mezuzah to the front door of their house (Wiersbe, 2010). The sign on the door was meant to indicate a location where God's word was loved, obeyed, and taught. As an individual considers this approach to educating children, the interaction between parents and children seem to be constant and pervasive.

Later Moses restated that one should "teach his children when you are sitting in your house, and when you are walking by the way, and when you lie down, and when you rise. You shall write them on the doorposts of your house and on your gates, that your days and the days of your children may be multiplied in the land that the LORD swore to your fathers to give them, as long as the heavens are above the earth. For if you will be careful to do all this commandment that I command you to do, loving the LORD your God, walking in all his ways, and holding fast to him (Deuteronomy 11:19-22, ESV)." The frequency in this case that Moses suggests seems to include innumerable examples of personal opportunities throughout a day. If the prospect exists to teach children, then Godly mentors must do so, without ceasing. "You are too great a burden for me to carry all by myself. But you are such a heavy load to carry! How can I deal with all your problems and bickering? Choose some well-respected men from each tribe who are known

for their wisdom and understanding, and I will appoint them as your leaders (Deuteronomy 1:9, 12-13, NLT)." Moses was a great leader but could only do so much to help the nation of Israel. Parents should not be expected to be the only influence on their children. There must be a strong partnership that exists with a school. Even the greatest spiritual leaders are but frail human beings apart from the grace of God, and many of them have failed in their strongest points (Wiersbe, 2010). Parents are going to come up short as advocates for their children but educators need to remember that they are the primary teachers of children. "These are the commands, decrees, and regulations that the LORD your God commanded me to teach you. You must obey them in the land you are about to enter and occupy, and you and your children and grandchildren must fear the LORD your God as long as you live. If you obey all his decrees and commands, you will enjoy a long life (Deuteronomy 6:1-2, NLT)."

Role of the Guardian

Samuel and Eli are another example of shepherding a child to be a servant of the church. Their relationship characterized how to grow in favor with the Lord and the people (1 Samuel 2:26, NLT). Later in Luke 2:52 (NLT), there is reference to Jesus growing in wisdom, stature, and favor with God and all the people. In each of these depictions the duties of progressive development in biblical leadership are defined as a continuous process. The transition made from Samuel to Jesus provides accounts of lives that should define the shepherding process of a child, shaping the importance that exists in the frequency of contact. Samuel embodied the duties set forth by the tribe of the Levities who served in spiritual work through the priesthood in Israel. Scripture reveals that Eli's sons were scoundrels who had no respect for the Lord or for their duties as priests (1 Samuel 2:12-13, NLT). Eli assumes guardianship of Samuel. Samuel ministered before the LORD, girded with a linen ephod that represented his status as a child.

Moreover, his mother made him a coat, and brought it to him from year to year, when she and her husband offered the yearly sacrifice (1 Samuel 2:18-19, King James Version). The role of the guardian is similar to that of the parent in this case as the ephod was girded to Samuel which indicates the constant attention to his development into priesthood. The process of development in Samuel's case is recognized as constant and the ephod is a visual reminder of his continuous growth into priesthood. As an educator, this should demonstrate that attention to children must be purposeful and continuous.

Luke 15 - Parables in Scripture

The condition of the lost is highlighted in several ways in Luke 15 that helps parents understand their experiences with their children. Sheep need a shepherd. They need the wisdom, protection, and sustenance a shepherd can provide (P. D. Tripp, 2016). The needs of children get their parents up early in the morning, will interrupt their parents a hundred times per day, and even interfere with their sleep (P. D. Tripp, 2016). While there is no prescriptive time within this passage, the end of Luke 15:4 (NLT) says to search for the one that is lost until the lost sheep is founds. The shepherd must realize that in some cases God does not place time or limits on the attention kids may require. The second portion of the parable of the Lost Sheep demonstrates that sheep are prone to wander (P. D. Tripp, 2016). Children will wander or go astray and this action is not always intentional. The third aspect of the parable is that once sheep have wandered they are incapable of rescuing themselves (P. D. Tripp, 2016). This simple truth in scripture supports the need for constant attention by parents in child rearing. This is not a constant reality, but is case sensitive with an individual. This means that parenting is a moment by moment, day to day rescue mission (P. D. Tripp, 2016). Parents need to remind themselves daily that they are called to rescue their children again and again (P. D. Tripp, 2016).

Finally, in a stirring in the picture of the prodigal son that the father never gave up, never gave way to bitterness and anger, he never threw away his hope, he never closed the door of his heart, and he never quit loving his son (P. D. Tripp, 2016). Children are radically different and unique, even in the same family. The picture in the Parable of the Prodigal Son represents the difference in the way children become independent and recover from being lost. And he said to him, Son, you are always with me, and all that is mine is yours. "It was fitting to celebrate and be glad, for this your brother was dead, and is alive; he was lost, and now is found (Luke 15:31-32, ESV)." Whether a child wanders and finds trouble for any length of time or is obedient without concern, parents should ultimately show grace in all experiences with their children.

Summary

The most human profession, teaching, and has been reduced to simply letters and numbers (Couros, 2015). The use of technology to monitor classroom achievement is no longer a progressive movement but rather a guiding influence that is mandated by both cultural expectation and federal law. The question that needs to be supported in education is not how parents are going to monitor a students' performance in school but rather how often. Furthermore, school administrators require further study to suggest the optimal amount of electronic monitoring necessary to support the highest level of student achievement. Most importantly, both parents and educators must not function without the guidance and intercession of the Holy Spirit. "Whatever you do work at it with all your heart as working for the Lord, not for human masters (Colossians 3:23, NIV)." Many parents question and in some cases defer to educators as resident experts to provide guidance and primary direction while they support classroom instruction at home. As the guiding influence in the home to school connection educators must assume a significant responsibility to properly suggest the best practices that

support student achievement. To not provide guidance or influence in this area of education would be negligent and support a detrimental division, to a necessary connection. It is unknown whether there is a significant difference in the level of student achievement on standardized tests based on the frequency of online parent involvement during the school year. Additionally, it is unknown what type of industry standard is preferable for parents to consider as the most optimal level of monitoring. The body of research through the proposed study will directly support the comparison between the frequency of academic monitoring and student achievement. The data collected will assist school leaders in the design of policy and development of training for both professionals and parents to support student achievement. The purpose of this study is to evaluate the frequency of electronic parent monitoring and compare it to individual student achievement.

CHAPTER THREE: METHODS

Overview

The purpose of this correlational study is to determine whether a relationship exists between electronic parent monitoring and student achievement, which for the purpose of this study is defined as fifth grade student achievement on the Pennsylvania State System Assessment (PSSA) in math. If a statistically significant relationship is obtained, a regression analysis will be conducted. The variable of frequency count (the exact number of times a parent logs into the Student Information System called Skyward to view his or her student's grades during a six month period) will be used as the predictor variable. Student achievement will be measured as a raw score on the 2018 Fifth Grade Pennsylvania State System Assessment (PSSA) in math and will be used as the criterion variable. Each student will be assigned one raw score in a range from 600-1548. In an effort to support risk-mitigation strategies and properly protect the adolescent human subjects to preserve anonymity and confidentiality precautions will be taken prior to extracting any data. The personal identifier for each student will be removed by an individual identified as the Pennsylvania Information Management Specialist for the Central School District who is responsible to both the local education agency and the state of Pennsylvania for the protection of student information. The data will be assigned a random identifier to support the matching of information in the study while eliminating any unique information about each participant.

Design

The design of this study is a correlational, ex post facto design. Regression models use past relationships between variables to predict their future behavior (Gall, Borg, & Gall, 1996). The primary intent of this study is to determine if a relationship exists between the variable frequency

of electronic monitoring by parents and the variable student achievement. Standardized test scores and high school grade point averages are the most widely used and relied upon indicators that a student is prepared (Gaertner & McClarty, 2015). In the proposed study student achievement serves as the primary indicators of student achievement which is defined by an individual score on the PSSA test in 5th grade math. This research design was selected to determine the existence of a relationship between the frequency of electronic parent monitoring and math achievement on the PSSA exam. The data used in the research has been collected from the 2017-2018 academic years.

The data will be analyzed using a Pearson *r*, as the variables are measured as continuous scores (Gall et al., 1996). This statistic will reveal a determination of the magnitude and direction of the relationship between students' scores on two measures assuming the relationships between the two variables is linear. Size of effect will also be determined. The product-moment correlation is the most widely used bivariate correlational technique because most education measures yield continuous scores and *r* has a small standard error of measurement (Gall et al., 1996). To check on the linearity of the relationship between these variables, the data will be represented in a scatterplot. If the scatterplot indicates that the relationship between two variables is markedly nonlinear, other non-linear correlation coefficients will be used to analyze the data (Gall et al., 1996). In the event that the data violates the tests of assumptions, a nonparametric measure will be employed as the alternative to the proposed research structure.

In addition to the bivariate correlation, descriptive statistics will be used to help give additional context for the comparative research. A census sample of parents will be invited to participate in an online survey. The survey is designed to gather data regarding the information

parents accessed and how they used the information found in their child's online portal. Survey responses will be recorded digitally and analyzed.

Research Questions

Achievement on the PSSA is measured by four levels of performance in descending order: Advanced, Proficient, Basic, and Below Basic. Each score is assigned a ratio level of measurement called a raw score that corresponds to the ordinal classification that will be used for the comparison of data. In order to determine if a significant relationship exists between achievement levels on the PSSA test and the frequencies of electronic parent monitoring, the following research questions were formulated:

RQ1: Is there a relationship between the frequency of electronic monitoring by parents and 5th grade student achievement on the Pennsylvania State System Assessment in Math?

In order to examine the contextual variables that affect how the information accessed is utilized between parents and students, this study will survey parents to identify how they used their student's information after they accessed it. Information provided by parents will be collected to consider whether other types of parental involvement occurred after accessing their child's online portal. A child's disposition influences the way he or she experiences the world and acts in it, which in turn influences the way the world responds, which in turn influences the development of further dispositions, and so on (O'Toole, 2016). Specific types of parental involvement will be examined to consider the Bio-ecological perspective that envisions the child as an active agent in his or her world.

RQ2: What impact does the frequency of electronic gradebook monitoring have on the context of multiple environments of 5th grade students?

Hypothesis

$H_0$1: There will be no statistically significant correlation between the frequency of electronic parent monitoring of 5th grade students and individual academic achievement on the Pennsylvania State System Assessment in Math.

Participant and Setting

For this study, a sample representative of the entire population of fifth grade elementary students from four public schools in the same school district in Pennsylvania was selected. The population in the school district was approximately 4,700 students. A random sample from each of the four elementary schools, will be used to test the research hypothesis. The district covers a large geographical area and includes a mixed rural and suburban population depending on the assigned school in the county. The household median income for the district is $55,499 (U.S. Census, 2010). Each school includes a student population from Kindergarten through Fifth Grade. Each of the four schools uses a common curriculum and assessments developed collectively among district grade level teachers with equal representation from each of the four independent buildings. The curriculum has been aligned to the Pennsylvania Core Standards and approved for use by the governing body of school directors. The participants will be students who were enrolled in the school district during the 2016/2017 academic year. Students were enrolled in one of four elementary schools in the geographic jurisdiction of the district according, to the primary residence of the parents or guardians. An experiment is deemed to be valid and possess external validity if the results are generalizable to groups, environments, and contexts outside of the experiment. (Onwuegbuzie, 2000). Fifth-grade students were chosen as the population of interest as they are universally tested in state-wide achievement in all public schools in both the Commonwealth of Pennsylvania and nationally on similar end of the year,

grade level achievement tests. The population from which the research sample was drawn was easily accessible to the researcher and reasonably homogenous, allowing for a reliable extrapolation of the data (Gall et al., 1996).

A random sampling of 391 participants was gathered during two consecutive 45 day marking periods immediately prior to the state testing window assigned by the Pennsylvania Department of Education. The overall sample will consist of students who are 52% female and 48% male, with 75% of them White, 12% Black, 15% Hispanic, and 8% other. Ages of the students range between 11 and 13, with a mean age of 12. The researcher assumes that the respondents will be from different socioeconomic backgrounds, genders, and ability levels, which is consistent with the population of the school district of interest. The information that will be reported includes ethnicity, socioeconomic status, and gender of the population sample. There are varying opinions on the appropriate sample size for a bivariate correlation analysis (Field, 2009). There are tradeoffs between sample size, level of significance, directionality, and effect size. These factors are mathematically related and any three of them will determine the other (Gall et al., 1996). For this study, a two-tailed, bivariate correlation with $\alpha = .05$, medium effect (.3), and statistical power of .8, the sample size should be set to 84 or higher (Faul, Erdfelder, Buchner, & Lang, 2009). In general, the larger the sample size, the more likely the sample will represent the population (Gall et al., 1996). According to Warner (2006), it is advisable to have an *N* size of at least 100 for a study where correlations are reported.

The following information is specific information about each elementary school within the district of the proposed study:

Elementary School #1

Elementary school one is a public school in Central Pennsylvania. It serves approximately 565 students from kindergarten to fifth grade. 24% of students enrolled at this school receive free and reduced-price lunches. 16% of the students are in kindergarten, 17.3% are in first grade, 15.4% are in second grade, 14.3% are in third grade, 18.9% are in fourth grade, and 14% are in fifth grade. The population of male students is 53% and the population of female students is 47%. The school serves approximately 87% Caucasian students, 6% Hispanic students, 3% African American students, 2% Asian students, and 2% Multi-Racial students (Pennsylvania Department of Education, 2017).

Elementary School #2

Elementary school two is a public school in Central Pennsylvania. It serves approximately 593 students from kindergarten to fifth grade. 38% of students enrolled in this school receive free and reduced-price lunches, which is a high enough percentage to designate this school a Title I school. 16% of the students are in kindergarten, 17.3% are in first grade, 15.4% are in second grade, 14.3% are in third grade, 18.9% are in fourth grade, and 14% are in fifth grade. The population of male students is 50% and the population of female students is 50%. The school serves approximately 80% Caucasian students, 8% Hispanic students, 6% African American students, 3% Asian students, and 3% Multi-Racial students (Pennsylvania Department of Education, 2017).

Elementary School #3

Elementary school three is a public school in Central Pennsylvania. It serves approximately 520 students from kindergarten to fifth grade. 33% of students enrolled at this school receive free and reduced-price lunches. 16% of the students are in kindergarten, 17.3% are in first grade,

15.4% are in second grade, 14.3% are in third grade, 18.9% are in fourth grade, and 14% are in fifth grade. The population of male students is 51% and the population of female students is 49%. The school serves approximately 88% Caucasian students, 6% Hispanic students, 3% African American students, 1% Asian students, and 2% Multi-Racial students (Pennsylvania Department of Education, 2017).

Elementary School #4

Elementary school four is a public school in Central Pennsylvania. It serves approximately 425 students from kindergarten to fifth grade. 50% of the students enrolled at this school receive free and reduced-price lunches, which is a high enough percentage to designate this school a Title I school. 16% of the students are in kindergarten, 17.3% are in first grade, 15.4% are in second grade, 14.3% are in third grade, 18.9% are in fourth grade, and 14% are in fifth grade. The population of male students is 53% and the population of female students is 47%. The school served approximately 80% Caucasian students, 14% Hispanic students, 2% African American students, 1% Asian students, and 2% Multi-Racial students (Pennsylvania Department of Education, 2017).

Instrumentation

The instrumentation used for this study is the Grade 5 Math assessment formally known as the Pennsylvania System of School Assessment (PSSA). Pennsylvania began in state-wide assessment during the 1969-1970 school year with a purely school-based instrument known as Education Quality Assessment. This was followed by a student competency testing program called Testing for Essential Learning and Literacy Skills (TELLS) operated through 1990-1991 (Pennsylvania Department of Education, 2016). The formal recognition of the PSSA program was instituted in 1992 as part of a strategic plan by the state to implement assessment of students

every three years. Major changes to the Pennsylvania School Code, specifically Chapter 4 titled "Academic Standards and Assessment," required public schools in the state to detail and measure what students should be able to know and do at each grade level in the form of academic standards, and transition to annual testing. In compliance with a major structural change in educational law that governed public schools in Pennsylvania, Assessment Anchor Content Standards were developed to support Adequate Yearly Progress Reporting as specified by the federal law No Child Left Behind (United States Department of Education, 2003).

The operational assessments in 2015 marked the most recent completion of the revision of the state assessments to implement Common Core standards into annual testing. State education chiefs and governors in 48 came together to develop the Common Core Standards, a set of clear college and career-ready standards for kindergarten through 12th grade in English language arts/literacy, and mathematics on June 2, 2010 (Common Core State Standards Initiative, 2018). The Common Core enables collaboration among states on a range of tools, policies, and research to support the integrity of the assessment. The Pennsylvania State Board of Education adopted the change in requirements as outlined by the National Common Core Standards on July 10, 2010. Pennsylvania began the 2012–13 school year with the newly-developed Pennsylvania Core Standards (PCS). The 2015 administration of the PSSA marked the completion of the transition to the PCS in Mathematics, English Language Arts, and Science. Math was administered as a separate test from English Language Arts.

Preliminary performance level descriptors were developed and validated beginning in 2012 to describe student performance. Validity is often defined as the degree to which theory and evidence support the intended purpose and intended uses. The beginning of any validation

process is to clearly articulate the test's purpose and intended uses (Pennsylvania Department of Education, 2016). The intended uses of the PSSA are to:

1. Provide information for use in school and district accountability systems
2. Improve curricular and instructional practices in order to help students reach proficiency in Pennsylvania Core Standards in Math.

The Rasch model is the basis of all calibration, scaling and linking analysis associated with the PSSA test (Pennsylvania Department of Education, 2016). The Rasch model reports validity of the PSSA test as how well the test measures what it is alleged to report. The Rasch measurement model provides a natural framework to inspect the process of mapping scores onto existing raw-to-scale conversion tables and measure student response that are not binary (Arce & Wang, 2012). Such a model allows for the measurement of open-ended and constructed responses. The Grade 5 Math PSSA test represents excellent internal validity. The Cronbach alpha which is a measure of internal consistency and a scale of reliability was noted as a .94 (Pennsylvania Department of Education, 2016). The Grade 5 Math PSSA test represents excellent internal consistency. Differential item functioning occurs when a test item is examined for bias (Mantel, 1963). For multiple-choice items, the Mantel-Haenszel procedure for detecting differential item functioning is a commonly used technique in educational testing.

Assessment anchors are a coding system used to clarify what is expected across each grade span (Pennsylvania Department of Education, 2016). Overall assessment anchors are organized into five classifications on the Math PSSA that also include assigned a performance value: Numbers and Operations (Base Ten) 24-28%, Numbers and Operations (Fractions) 26-30%, Algebraic Concepts 14-17%, Geometry 14-17%, and Data Analysis 17-21%. The majority of the math PSSA is multiple choice which is especially efficient for measuring a broad range of

content. Each multiple choice question has four response options and is awarded one point for selecting the correct response. Open ended items are designed to take approximately 10 minutes and are scored on a zero to four point scale. Performance level cut scores have been established to include a scaled raw score divided into four distinct performance categories from the lowest obtainable scaled score of 600 to a maximum of 1548. The four established cut score ranges by performance level are as follows in descending order: Advanced 1113 – 1548 (superior academic performance), Proficient 1000 – 1112 (satisfactory academic performance), Basic 901 – 999 (marginal academic performance), Below Basic 600 – 900 (inadequate academic performance).

The majority of the test items for the 2016 PSSA test have been previously field tested in 2014 by the Data Recognition Corporation and WestEd. The 2016 PSSA test has nine field test forms. The assessment is presented in one test booklet and a separate answer booklet. The test window for the exam, including make-up sessions runs from the end of April through early May. The Math PSSA test consists of three sections that are recommended to be administered over the course of three consecutive days. There are 72 multiple choice questions and four opened-ended response items. Within the framework of the test the operational layout includes 10 multiple choice and one open-ended field test question that are embedded in the testing form. Each testing administration is suggested to take a student 50 to 65 minutes to complete. As part of the item construction and evaluation process, each item was reviewed by content specialists and editors at DRC or WestEd. Following this internal development process, items were reviewed by content specialists at the Pennsylvania Department of Education (PDE) on an annual basis. PDE staff consults with DRC about any general issues or concerns regularly. In 2013, a Bias, Fairness, and Sensitivity Committee composed of six members evaluated the assessment for racial and gender bias.

Procedures

This study will be conducted with the support and authorization of the Pennsylvania Department of Education and representatives from the Central School District. The researcher will receive formal approval from the School District Executive Director named Superintendent (see Appendix A), School District, Pennsylvania Information Management System (PIMS) Director named Technology Coordinator (see Appendix B), and the Liberty University Internal Review Board (IRB) (see Appendix C), which will be applied for and obtained before any data extraction or analysis takes place for this study. Due to the ex post facto design of the study, all data analyzed will be archived and available for review from the school district and from the Pennsylvania Department of Education under the governing reporting system called The Pennsylvania Information Management System (PIMS). The PIMS system is a collaborative effort of the Pennsylvania Department of Education and the Local Education Agencies (LEAs) across the Commonwealth of Pennsylvania. PIMS is a longitudinal data system that has been implemented and required exclusively across the state to efficiently and accurately manage, analyze, disaggregate, and use individual student data for Pennsylvania's Pre-K through Grade 12 public education system (Pennsylvania Department of Education, 2017). One administrative designee is named the PIMS Coordinator and is responsible for the data collection and dissemination of student information during assigned reporting periods, established by the Pennsylvania Department of Education. All student, school, and district names will be extracted from the data to be reviewed and analyzed by the researcher prior to receiving the information for the study by the assigned PIMS coordinator for the school district. The authenticity and anonymity will be certified by the PIMS coordinator prior to acquisition of the student data used for the purposes of the intended research in this study. The process of assigning random

identifiers to each student will be performed by the PIMS Coordinator who is accountable for the data collection to the Pennsylvania Department of Education in the school district.

Students will be categorized as male or female, disabled or non-disabled, and economically disadvantaged eligible or not-eligible. This information will be indicated on the supporting informational spreadsheet. The spreadsheet will be coded numerically in descending alphabetical order with unique personal naming identifiers replaced by numbers in a series beginning in progression. All data will be organized prior to acquisition by the researcher in order to protect the identity of the subjects in the study. The information will be analyzed using a Bivariate Analysis in SPSS. Data will be collected on student outcomes for the Pennsylvania State System Assessment test for years 2017-2018. Data will be recorded in coordination with frequency information on spreadsheets and stored locally on a secure computing device and external storage unit. SPSS statistical analysis software will be used to conduct descriptive and inferential analysis of the data to determine if the research hypothesis could be accepted or rejected.

Data Analysis

Statistical analysis will be conducted to determine if a relationship exists between the frequency of electronic parent monitoring and student achievement levels on the math PSSA test. According to Gall, Gall, & Borg, (1996), a bivariate correlation coefficient is a statistic that enables researchers to describe the magnitude of a relationship in mathematical terms between two or more variables. Simply stated, the data analysis will support a comprehensive description of the effects of the frequency of electronic parent monitoring using a Student Information System known as Skyward to measure the total number of views of individual online gradebooks during a designated period of time, as well 5th grade student achievement on the Pennsylvania

State System Assessment in Math. The supporting instrument for the data analysis of the intended study was SPSS (IBM SPSS, Version 25). If a statistically significant correlation co-efficient is obtained a regression analysis will be conducted to determine the predictive validity of frequency of use of electronic reporting system as a predictor of student achievement (Warner, 2008). In the event that the data fails to meet the requirements for parametrical statistics, other forms of nonparametric testing will be employed. When violations of the assumptions from parametric statistics are severe nonparametric analysis in appropriate (Warner, 2008). In the current study the sample may include a non-normal distribution and the inclusion of extreme outliers which initiate the use of the index of association known as a Kendall's tau-b to test the hypothesis. Additional statistics will be collected using a 17 question Parent Engagement Survey. The data collected was intended to give additional context for the comparative research and was reported using percentages of agreement.

The product-moment correlation coefficient is appropriate for determining the magnitude of the relationship between student scores on two measures (Gall et al., 1996). The assumptions required in the Pearson correlation are normality, linearity, homoscedasticity, and evaluation of outliers. Each of these assumptions will be examined in order to support the defense of the results that will be reported in Chapter 4. Normality is usually assessed visually by evaluating the population distributions to consider if the data collection is approximately bell-shaped (Warner, 2008). Tests for normality include the Shapiro Wilk and Kolmogorov-Smirnov tests. While the visual examination is deemed sufficient, the aforementioned tests of normality provide an empirical process to quantify skewness or kurtosis (Warner, 2008). Histograms are also examined to review the normality assumption. Linearity is an examination of the degree to which one variable is related to another, along with the direction of the relationship (Gall et al.,

1996). A "best fit" line is drawn and examined through the middle of a scatterplot of the two variables. Homoscedasticity considers the consistency in variance that exists in the data collected compared to the line of best fit. The assumption of the Pearson correlation analysis is that the data points will be equidistant from the best fit line across the sample. Specifically the researcher must examine the scatterplot and line of best fit to determine if the variance is consistent. The final assumption is to examine the data for outliers. Outliers can have a disproportionate influence on Pearson's correlation coefficient. Dealing with skewed or extraneous data is always a judgment call (Warner, 2008). For the proposed study, the researcher will attempt to transform the data by removing outliers or extreme conditions prior to drawing nonparametric statistics. The first consideration should be to check for an error in the data collection in the scatterplot. In the case of the proposed study this may involve collaboration with the PIMS Coordinator for the school district, as this is the person who has access to confidential information. Some researchers prefer to remove high or low scores to avoid disproportionate impact on correlation results, while other researchers employ techniques such as data transformation of higher or lower scores, or separate analyses of the normal and non-normal portions of the distribution, or take larger samples (Warner, 2008). In most cases outliers should be removed, altered, or otherwise accounted for before sampling or analysis is conducted. Thus the presence of outliers relevant to the study will be explained in Chapter 4.

CHAPTER FOUR: FINDINGS

Overview

The purpose of this quantitative research study was determine the relationship between the frequency of electronic parent involvement, using an online gradebook and student achievement on the Pennsylvania State System Assessment (PSSA) in math. An ex post facto correlational research design was performed to investigate the relationship between the frequency of electronic parental involvement and student achievement among fifth grade students. Prior research has generally not been conducted within a theoretical framework and omits social context when examining how parent involvement affects student behavior. In an effort to contribute to a more inclusive understanding of parent engagement, a census sample of fifth grade parents participated in a complimentary survey to further investigate the archival data and contribute to the second research question. A digital survey was designed to provide insight into the information accessed digitally and to discern the potential interconnected environments of a child.

Research Questions

This study investigated the following research questions:

RQ1: Is there a relationship between the frequency of electronic monitoring by parents and 5th grade student achievement on the Pennsylvania State System Assessment in Math?

RQ2: What impact does the frequency of electronic gradebook monitoring have on the context of multiple environments of 5th grade students?

Null Hypothesis

$H_0$1: There will be no statistically significant correlation between the frequency of electronic parent monitoring of 5th grade students and individual academic achievement on the Pennsylvania State System Assessment in Math.

Descriptive Statistics

The participants for this study were fifth grade students (see Table 1) from four elementary schools in one suburban school district in Central Pennsylvania. The data set of archival parent gradebook logins included a sample of 391 students. Five students were found with missing PSSA achievement data and were excluded from the study reducing the total participants to 386.

All of the parent/guardian view counts from four elementary schools took place in a designated time period from December 2017 to June 2018, spanning 191 days. This time period extended through two consecutive grading periods. The view counts did not include report card views, which occurred at the end of each 45-day period in January and April of 2018. The number of view counts includes a cumulative total for the designated period of time for each student in the sample. The data set did not specify the time, date, or identity of each individual observer of the online gradebook in the sample. The report card view was reported in a separate location in the Student Management System and was not part of the current research data. The math achievement scores were obtained from the 2018 PSSA test, which is required in all public schools in the state of Pennsylvania and administered annually (see Table 2).

The Parent Engagement Survey created for this study was administered via Google Sheets to 546 parent or guardians of 379 students in February 2019. There were two digital communications sent to fifth grade parents by the school administration over a two-week period,

along with the consent information approved by the Institutional Review Board. A total of 92 participants completed the survey providing a 17% response rate (see Appendix A).

Table 1

Demographic Characteristics of the Sample

Student Group	n	Percent
Female	175	45%
Male	216	55%
Special Education	48	12%
Economically Disadvantaged	131	34%
White	314	80%
Black or African American	30	8%
Hispanic	29	7%
Asian	17	4%
Native Hawaiian / Pacific	1	.3%
Total	391	100%

Table 2

PSSA Math Raw Cut Scores

Student Group	n	Percent
Advanced (1139 and Above)	78	20%
Proficient (1000 – 1138)	141	37%
Basic (893 – 999)	113	29%
Below Basic (600-892)	54	14%
Total	386	100%

The study investigated two variables. The first variable was the frequency of electronic parent monitoring noted by gradebook views. Gradebook views were grouped by different levels of frequency (see Table 3). The second variable was PSSA raw scores of the disaggregated student groups reported along with the assigned rates of gradebook views. In an effort to consider the need for targeted support and further analysis, several subgroups of the population have been summarized using the mean of the view count and achievement score. (See Table 4).

Table 3

Parental Gradebook View Counts

View Rate	n	Range	Percent	Mean	Median	SD
High	36	30 - 828	9%	133.94	104	144.487
High Moderate	26	20 - 29	7%	26.08	25	4.995
Low Moderate	55	10 - 19	14%	14.27	14	2.978
Occasional	133	1 - 9	34%	4.14	4	2.550
No View	136	0	35%	0	0	.000
Total	386	0 - 828	100%	17.71	3	57.854

Table 4

View Count / Achievement Score by Subgroup

Student Group	n	View Count Mean	PSSA Raw Score Mean
Female	175	13.5	1035.3
Male	216	21.17	1016.1
Special Education	48	10.7	893.5
Economically Disadvantaged	131	6.3	971.4
White	314	20.2	1032
Black or African American	30	6.1	953.8
Hispanic	29	7.0	992.3
Asian	17	10.9	1059.5
Native Hawaiian / Pacific	1	0	1323
Total	391	17.71	1024.8

The mean of the entire sample indicated a general level of regular activity through the collection of view counts by parents that seemed acceptable upon the initial review by the researcher; however, the standard deviation of the view counts indicated that it may not be normally distributed (M = 17.71, SD = 57.854). The standard deviation of the view counts was much higher than the mean, which indicates that the data points are spread out over a large range of values and are not consistent with the average. The math achievement as represented by the mean and standard deviation was acceptable upon review (M = 1024.75, SD = 120.981). The distribution of the math achievement raw scores for the entire sample indicated a normal bell-shaped curve without limitations or observed violations (see Figure 1). The findings of the large standard deviation for gradebook views was deemed unacceptable by the researcher and

ultimately confirmed by a skewed representation in the scatterplot graph (see Figure 2). As a result of the non-normal distribution, the researcher used nonparametric statistics to further investigate the sample.

Table 5

Descriptive Statistics for Correlation

Variable	N	Mean	Std. Deviation	Min	Max
Gradebook Views	386	17.71	57.854	0	828
Math Achievement	386	1024.75	120.981	756	1515

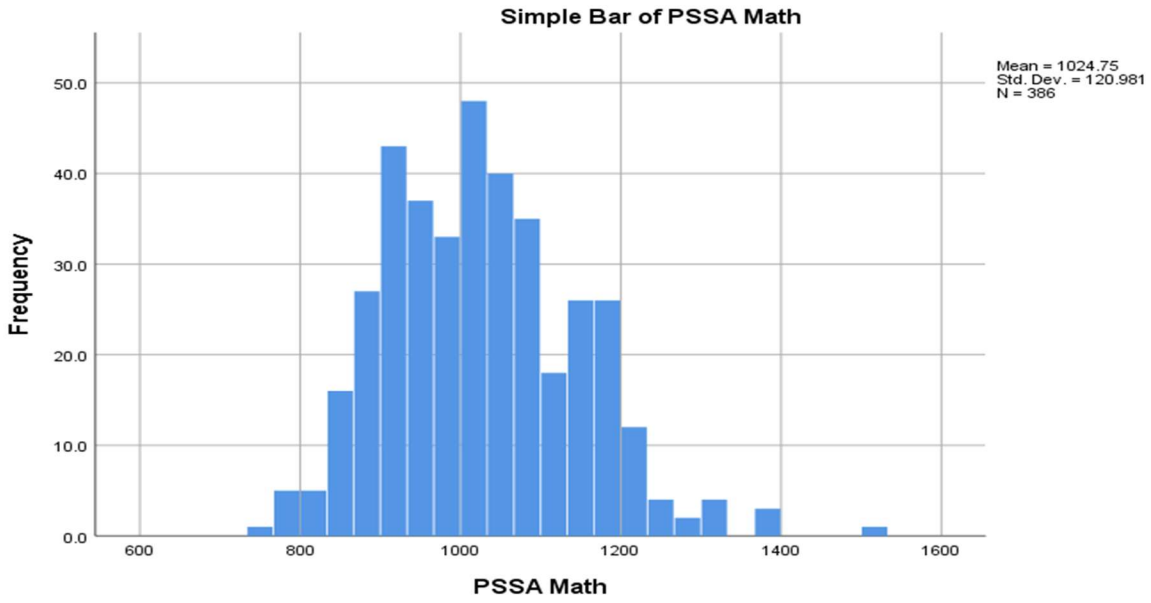

Figure 1. Bar Chart PSSA Math Score

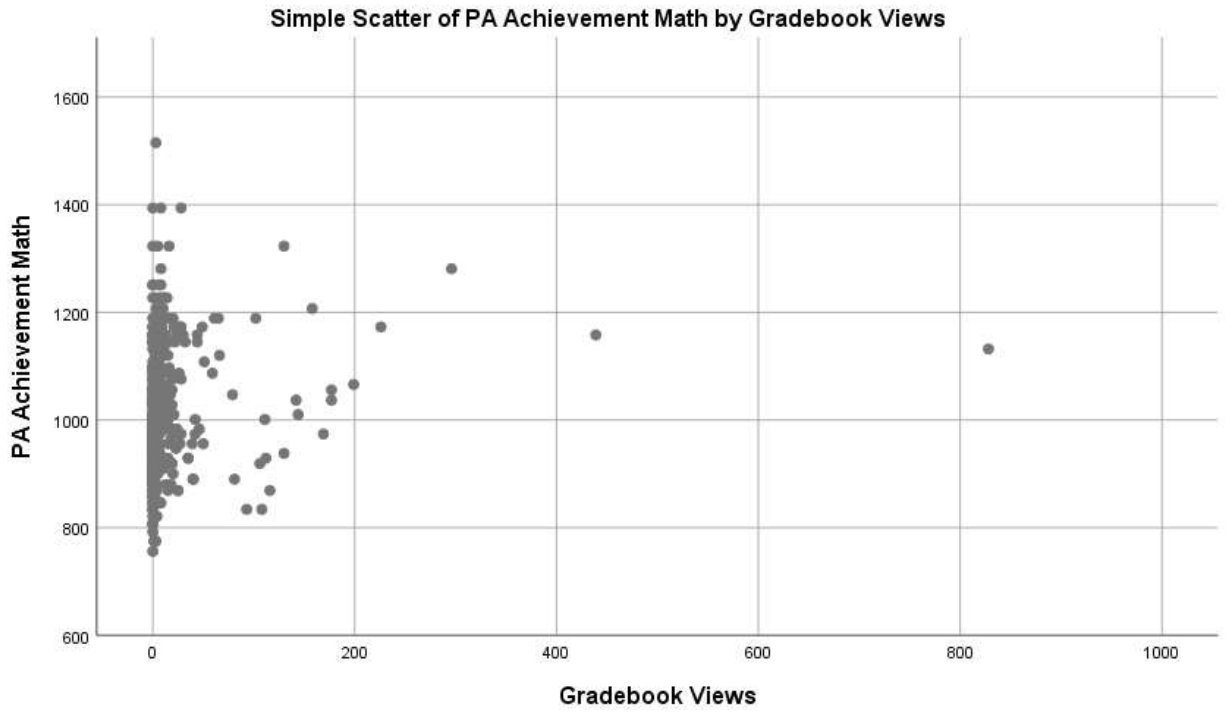

Figure 2. Scatterplot Gradebook View

Data Screening

The data were examined using scatterplots and revealed a non-normal distribution for the frequency of view counts. The researcher determined that nonparametric data analysis was necessary for this sample. Both the Spearman *r* and Kendall's tau-b are nonparametric tests used in situations where variables are measured or converted into ranks (Warner, 2008). The Kendall's tau-b is preferred for this study because it is not as sensitive to large discrepancies in a sample (Gibbons & Fielden, 1993). In the study of gradebook views there were as many as 11 records that were considered outliers and occurred more than two standard deviations above the mean.

The assumptions of linearity, bivariate normal distribution, and bivariate outliers were further examined by removing outliers. Initially the first alternative test attempted to normalize the correlation that was initially performed by removing outliers in the upper limits. All view counts

above 44 were removed and correlation tests were rerun. The remaining sample count contained 92% of the data but seemed to eliminate an interest group significant to the study. The edited data distribution was also not normally distributed and resulted in the same violation by removing the zero view counts. This population seemed to represent a second and possibly separate independent sample of study because there were raw PSSA scores that were evenly distributed and the sample size was large (n=136). The influence of the high number of zero gradebook views represented a very large portion of the sample and was consistent with the normalized data, thus it could not be removed from the data set. The final descriptive statistics to compares the view count rate and achievement by cut score. It is represented by grouped data organized by the researcher (See Table 6).

Table 6

Descriptive Statistics for Achievement by assigned View Count

View Count	N	PSSA Mean	SD	Below	Basic	Proficient	Advanced
High	36	1049.08	127.456	6 (17%)	7 (19%)	12 (33%)	11 (31%)
High Mod	26	1061.22	129.215	2 (8%)	9 (35%)	4 (15%)	11 (42%)
Low Mod	55	1044.40	102.840	3 (6%)	15 (27%)	26 (47%)	11 (20%)
Occasional	133	1041.15	125.826	16 (12%)	28 (21%)	61 (46%)	28 (21%)
No View	136	987.38	111.734	27 (20%)	54 (40%)	38 (28%)	17 (12%)
Total	386	1024.75	119.4142	54 (14%)	113 (29%)	141 (37%)	78 (20%)

**Five students were excluded from the sample due to an absence of PSSA Data*

Results

A power analysis using Gpower (Faul, Erdfelder, Lang, & Buchner, 2007) indicated that a total sample of 117 people would be needed to detect medium effects (d=.3) with 90% power using a nonparametric test with an alpha at .05. The current sample included the necessary

population size for the nonparametric test. After running descriptive statistics, a Kendall's tau-b correlation was computed to assess the correlation between the dependent variable frequency of electronic monitoring (gradebook view counts) and the variable student achievement (math PSSA raw score), (see Table 7).

Table 7

Kendall's tau-b

			Gradebook Views	Math Achievement
Kendall's tau_b	Gradebook Views	Correlation Coefficient	1.000	.166**
		Sig (2-tailed)		.000
		N	386	386
	Math Achievement	Correlation Coefficient	.166**	1.000
		Sig (2-tailed)	.000	
		N	386	386

**Correlation is significant at the 0.05 level (2 tailed)

Hypothesis One

Hypothesis one was examined to determine if there was a relationship between electronic monitoring and student achievement. A Kendall's tau-b correlation analysis was conducted between gradebook views and math achievement. Cohen's standard was used to evaluate the strength of the relationships, where coefficients between .10 and .29 represent a small association, coefficients between .30 and .49 represent a moderate association, and coefficients above .50 indicate large associations. There was a positive correlation between gradebook views and math achievement, which was statistically significant ($\tau_b = .166$, $p = .005$). The correlation

coefficient between gradebook views and math achievement was .166 indicating a small association. Therefore the null hypothesis was rejected.

Research Question Two

Research question two was examined to determine if there is a difference in responses provided for what parents do with the student information once it is accessed through electronic parent monitoring. The data collected from the 17-question survey has been associated with a Bio-Ecological Theory, and the inferential statistics have been reported in Appendix A. The survey created by the researcher was used as a complimentary instrument to support one of the guiding theoretical models used in the study (Bronfenbrenner's Ecological Systems Theory) (see Table 8). The instrument was used to gather additional data from parents who accessed their fifth grade students electronic gradebooks. The survey was created using Google Forms and reviewed by the researcher's dissertation committee. Prior to the distribution of the survey to the sample population, a random generator tool in Excel was used to create two data sets and verify the confidence interval to support the reliability of the Parent Engagement Survey. A Split-Half Reliability measure was performed using SPSS on two separate sets of data. The first set of data included the questions 2, 6, 7, 8, 10, 11, 12, 15, and 17. This sample included the Likert response questions with five possible responses. The summary included 92 valid cases and nine items. The Cronbach's Alpha was .775. The second set of data included questions 1, 3, 4, 4, 5, 9, 13, 14 and 16. The second sample included yes/no response questions with two possible options. The Cronbach's Alpha was .692. When combined the reliability coefficient of .70 or higher is considered acceptable in most research situations (Warner, 2008).

The content validity of the survey was evaluated by five certified specialists recognized in the subject matter of elementary education. Each of the certified specialists has both a doctoral

degree and educational administrative experience in elementary education. Using Google Forms, the content specialist had the opportunity to review each question and respond with one of the following answers:

- The question/statement is designed to adequately gather the necessary information to answer the research questions with no changes.
- The question/statement is designed to adequately gather the necessary information to answer the research questions with minor revisions/modifications.
- The question/statement is not designed to adequately gather the necessary information to answer the research questions and major revisions/modifications are necessary.

Each question also included an alignment and brief description of the Ecological System of study from the guiding theoretical framework by Bronfenbrenner (see Table 8). Finally, each question included an open-ended opportunity to provide written feedback for each question. The survey was modified to include feedback from the expert panel and distributed, along with the consent form, to all parents and guardians of fifth grade students via an email generated by the school district public relations specialist. One week after the distribution the local building principal sent a follow-up email with the survey link to the parents and guardians involved in the study. The survey remained active for 14 calendar days and was closed on February 14, 2019.

Table 8

Bronfenbrenner's Ecological Systems Theory

Ecological System	Survey Question	Example
Microsystem	4 questions (#9 -12)	School/Child, Parent/Child
Mesosystem	3 questions (#13, 14, 16)	School/Parent
Exosystem	10 questions l (#1 – 8, 15, 17)	Workplace/Child
Total	17 questions	

The first survey question related to RQ2 stated, "I have consulted with my child's teacher after viewing the on-line gradebook." This question offered respondents to answer by choosing one of the following: "Yes" or "No." The following is a breakdown of how the respondents answered: 52.2% of respondents answered "Yes" and 47.8% of respondents answered "No." Results displayed in Figure 3 reflect that enhanced parent engagement takes place as a result of an electronic monitoring antecedent.

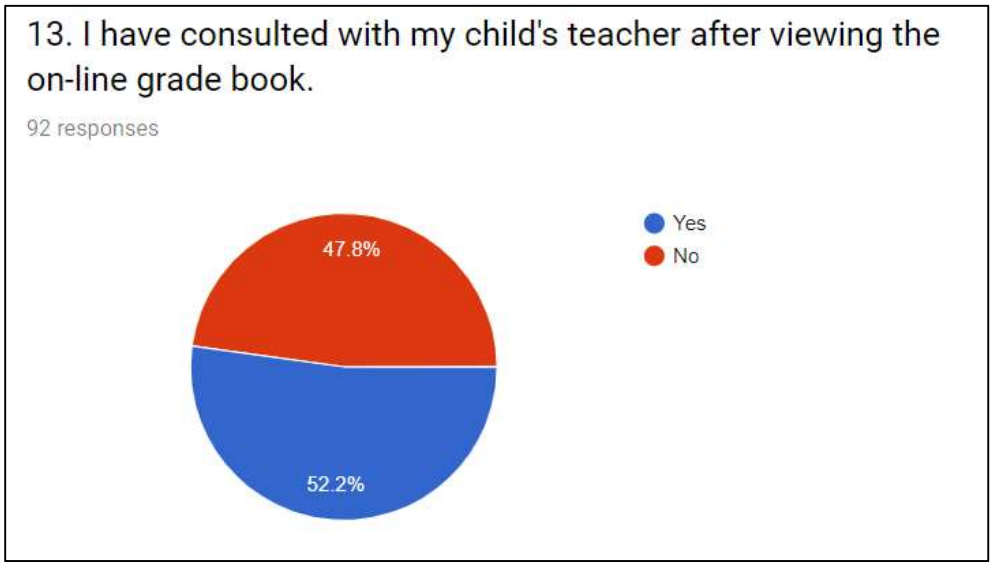

Figure 3. Question #13 Parent Engagement Survey

The second survey question related to RQ2 stated, “Access to the on-line grade book has improved communication with my child’s classroom teacher.” This question offered respondents to answer by choosing one of the following: “Yes” or “No.” The following is a breakdown of how the respondents answered: 43.5% of respondents answered “Yes” and 56.5% of respondents answered “No.” Results displayed in Figure 4 reflect that enhanced parent engagement takes place as a result of an electronic monitoring antecedent.

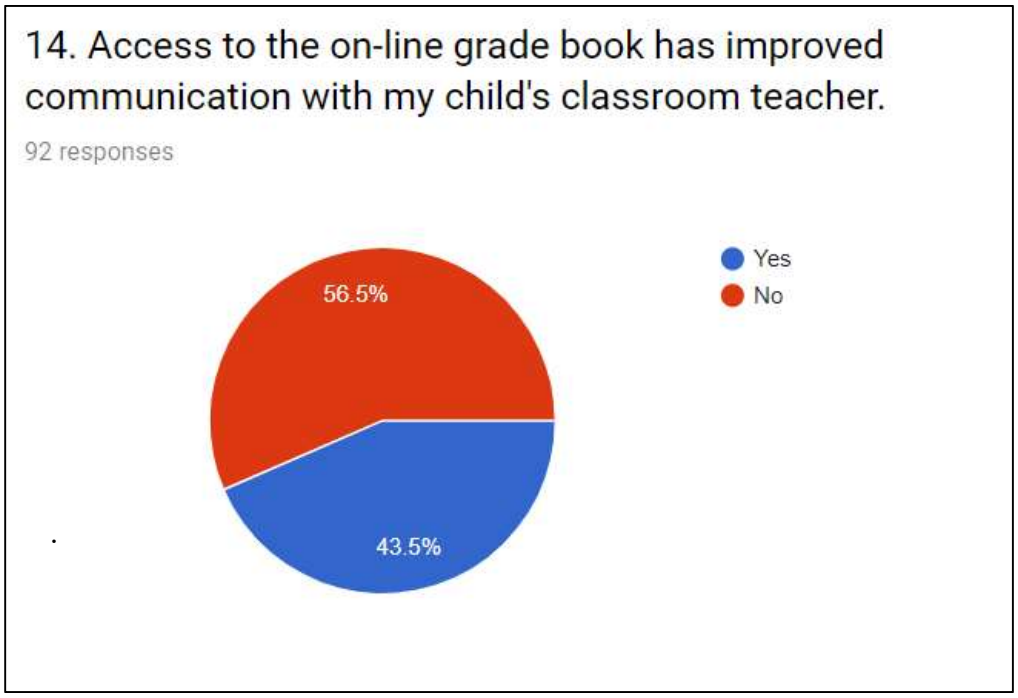

Figure 4. Question #14 Parent Engagement Survey

The third survey question related to RQ2 stated, “Do you check grades using the mobile application on your cell phone?” This question offered respondents to answer by choosing one of the following: “Yes” or “No.” The following is a breakdown of how the respondents answered: 63% of respondents answered “Yes” and 37% of respondents answered “No.” Results displayed in Figure 5 reflect that multitasking exposes a child to many unintended environments.

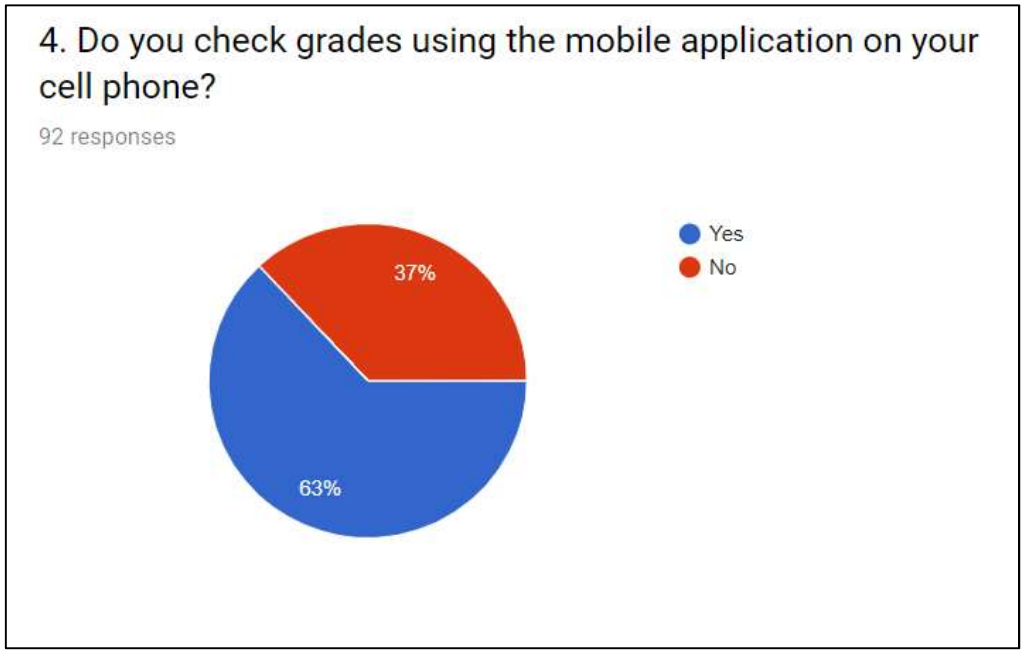

Figure 5. Question #4 Parent Engagement Survey

The fourth survey question related to RQ2 stated, “I check my child’s grades throughout the workday.” This question offered respondents to answer by choosing one of the following: “Yes” or “No.” The following is a breakdown of how the respondents answered: 32% of respondents answered “Yes” and 67.4% or respondents answered “No.” Results displayed in Figure 6 reflective that multitasking leads to the exposure of many unintended environments to a child.

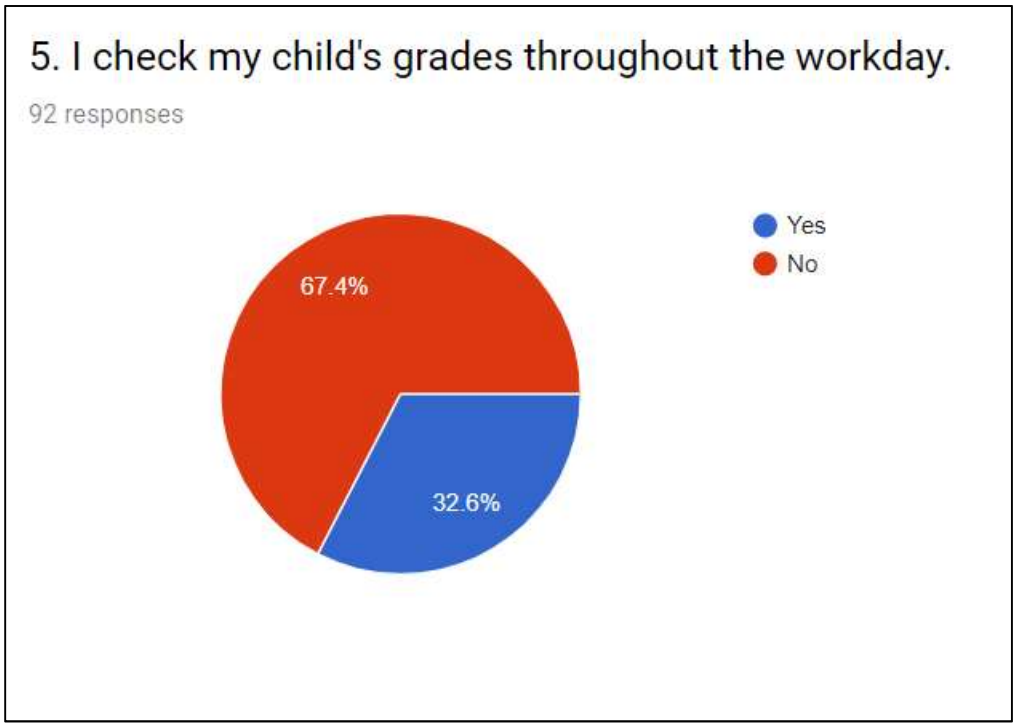

Figure 6. Question #5 Parent Engagement Survey

The fifth survey question related to RQ2 stated, “The on-line grade book has influenced the amount of time I spend with my child on schoolwork.” This question offered respondents to answer by choosing one of the following: “Yes” or “No.” The following is a breakdown of how the respondents answered: 47.8% of respondents answered “Yes” and 52.2% of respondents answered “No.” Results displayed in Figure 7 reflect that electronic monitoring of grades leads to increased personal attention from parents.

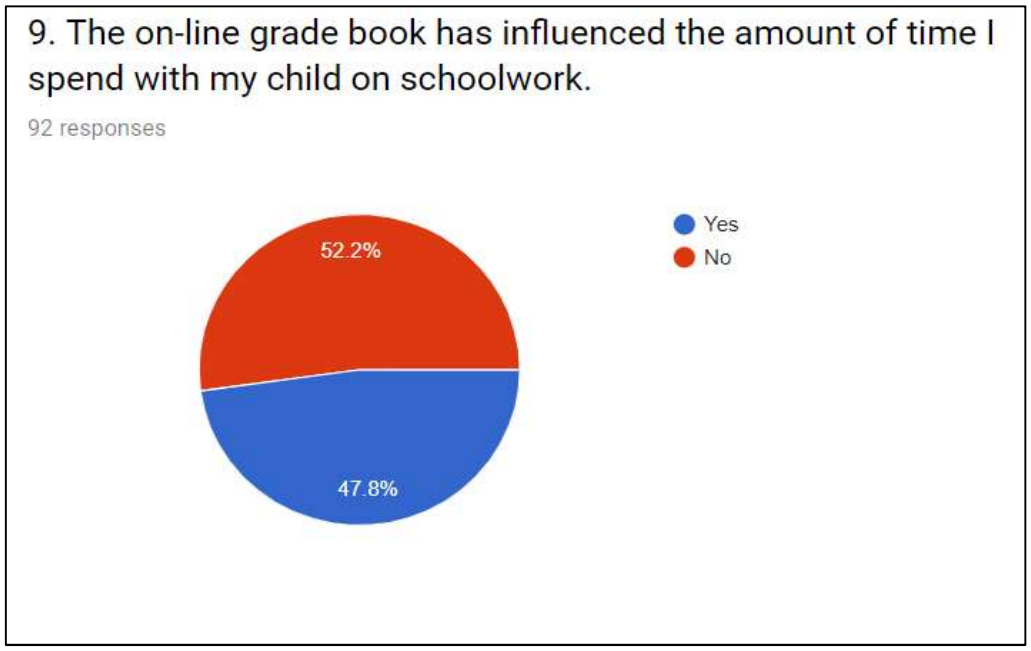

Figure 7. Question #9 Parent Engagement Survey

CHAPTER FIVE: CONCLUSIONS

Overview

The intent of this study was to investigate the relationship between electronic parent monitoring and student achievement as defined by a fifth grade raw score on the Pennsylvania State System Assessment (PSSA) in math. Additionally, the researcher used a parent questionnaire to obtain feedback on how the information from the study affects student interactions and human development in various social contexts. In this chapter, the researcher will provide a summary of the findings, implications, and offer recommendations for further research.

Summary of Findings

The first research question investigated if there was a relationship between electronic monitoring and student achievement. The findings for this study indicated that there was a statistically significant relationship between the frequency of electronic parent monitoring and student achievement among fifth grade students, collectively as a group and when compared to sub groups using the following factors: (a) students classified as economically disadvantaged, (b) students identified with Special Needs, (c) students of varying ethnic backgrounds, (d) and students with regard to gender. A Kendall's tau-b correlation was run to determine the relationship between gradebook views and math achievement amongst 386 participants. There was a positive correlation between Gradebook Views and the math achievement, which was statistically significant ($\tau_b = .166$, $p = .005$). Given this dependent variable (M=17.71 SD = 57.854) and the independent variable (M=1024.75, SD = 120.981), it was determined that a correlation existed between the frequency of electronic monitoring and student achievement.

Research question two measured how home-based parental engagement and the interconnected environmental experiences of a child can be impacted by the process of monitoring an electronic gradebook. The second portion of the research included a parent survey with 17 selected response questions specifically associated with three of the five nested theories in the Bronfenbrenner Ecological Model. The calculations for the inferential responses have been collected and reported (see Appendix A). Based on the data engagement in various contexts was influenced by electronic parent monitoring and showed trends that require continued research to determine if a statistically significant data exists.

Discussion

While technology is not a direct study of relationship it may in fact provide some type of nexus to previously undocumented interaction or effect that directly impacts student achievement. Ultimately, research in education should not only contribute to a greater body of study but also support a general prescription of information that can be used in professional development for both educators and parents. Furthermore, the information discovered should also improve programming and change process upon discovery. After reviewing the data, it is evident that the frequency of parent engagement as defined by electronic monitoring supports higher student achievement. For example, parents who did not view grades over an extended period of time yielded the following results (M=987.38, SD=111.734) while parents in the same sample who demonstrated higher moderate use had results that were significantly greater (M=1061.22, SD=129.215). This newer form of parent engagement is consistent with traditional studies that demonstrated a positive influence on student achievement (Benner et al., 2016; Castro et al., 2015; Wilder, 2014). What remains ambiguous in the current study similar is the specific method of activity required by parents that is conducive to the positive effect. The

actual system of monitoring is subject to the interpretation of the parent and is not prescribed by the school. The system ultimately exists without orientation or direction for optimization, thus lendings to some disparity in results and a small relationship between variables.

The results in the current study contradict recent research findings. The results of recent empirical studies indicated no significant relationship was found to exist between the frequency a parent accessed their student's grade portal and grade point average (Bocian, 2016; Dries, 2014; Mathern, 2009). In each of these complimentary studies, what differed was the measure of student achievement and age of the population. The current study included an elementary student group compared to a high school population. Some of the explanation for the difference in results between the current study and former studies is consistent with the research of Wang & Sheikh-Khalil (2014) who noted that parent and family school involvement decreases dramatically as students grow older, with the decline beginning as early as fourth grade. Additionally, the method of measuring achievement differed in the current study with the use of a standardized test measure in lieu of grade point average. Ultimately the disparity in results continues to support the longitudinal data collection summarized in the detailed findings of correlation studies published between 2003 and 2017, which confirm varying associations between different parental involvement variables and academic achievement (Boonk et al., 2018).

Consistent with former studies on parent involvement in schools, the Epstein model (2005) has been integrated into the current research and is widely used to provide an acceptable conceptual framework. The Epstein model's pluralistic framework may assist school leaders in developing strategies to increase parental involvement in a variety of ways (Bocian, 2016). While the conceptual model developed by Epstein is prominently used in the study of parental

involvement, this typology has been found to conceal prominent aspects of research such as technology (Hamlin & Flessa, 2016). The role of technology has taken an indirect point of emphasis historically and has not been noted as a guiding sphere of influence in the field of study. Despite its effectiveness, the Epstein model has inherent limitations that some researchers have also confirmed (Griffin & Steen, 2010; Jeynes, 2012). Specifically, the Epstein model is limited because school leaders often dictate home-based strategies to parents. The current study did not dictate a strategy and included a high degree of discretion for the parent. The intent of the current study on electronic monitoring is to contribute to former literature by describing a new sphere of influence through a prescriptive process.

The data collected in the digital survey associated with the Bronfenbrenner Ecological Model supports an interpretation of information beyond the primary frequency study. The survey identified three specific themes associated with each individual nested theory and included direct application and consideration to the field of education from the 92 responses. First, questions 13, 14, and 16 in the Parent Engagement Survey were linked with the Mesosystem of a child. This is the basis of the current study, which is the relationship between two of a child's most intimate environments, home and school. The responses to question 13 indicated that approximately 52.2% of parents consulted with a teacher after reviewing the online gradebook. The response to Question 14 indicated that 43.5% of parents felt the online gradebook improved home to school communication. These two findings are very important when considering the third question associated with the Mesosystem. The response to question 16 indicated that 50% of parents had been personally contacted by the teacher. The recommendation for further research would be to consider whether electronic monitoring is a deterrent to personal interaction between a teacher and parent or a contributor to parent engagement in its entirety. The research seemed to indicate

that the spheres of influence are functioning in isolation, as opposed to interacting as prescribed by both Epstein and Bronfenbrenner. The information from questions associated with a child's mesosystem indicates some degree of substitution for personal contact. Individual school districts need to consider what degree of personal contact is optimal prior to leveraging a digital emphasis, which might ultimately replace the primary form of communication.

Secondly, questions 3, 4, and 5 in the Parent Engagement Survey were linked with the Exosystem of a child. Specifically, the age of multitasking using technology has introduced many monitoring systems that occur while parents are engaged with other interests or activities, which ultimately impacts the relationship between parent and child. This collection of information is consistent with research that suggests that Bronfenbrenner's Ecological Model is in a continued state of development and that the study of technology serves as the primary lever of change in the world (O'Toole, 2016; Tudge et al., 2016). Question 3 indicated that 60.9% of parents do not establish an automatic email which leads to multitasking at varied times and places. The use of the online gradebook takes place in times of convenience rather than a prescriptive options provided by the school. Additionally the results in this area of the survey indicate that 63% of parents check grades with a cell phone and 32% review grades while at work. This data includes the exposure of many unintended environments to a child.

Lastly, the most intimate and important relationship that a child can have is with his or her parents. Bronfenbrenner identifies the relationship of parent and child as the Microsystem. Any mechanism or activity that promotes a greater degree or depth of relational activity in the home and enhances prescribed time between a parent and child is a benefit. Question 9 of the Parent Engagement Survey indicated that 47.8% of parents felt that the online gradebook influences the

amount of time that they spend with their child. This is a powerful result if one considers that without electronic monitoring, a child may receive less personal attention from his or her parents.

The disposition of a leader in an organization or a researcher evaluating a field of study can diverge or extend information based on the leader's individual worldview, and this contributes to the study of parent engagement. A personal philosophy that goes unmeasured can serve as a hidden violation to a study or a conflict of interest. The current research includes a theological framework outlining parenting from a Christian worldview. The guiding text from this specific study is found in the Old Testament in Deuteronomy 6 (NIV) and reveals a strong historical contribution about the frequency of parent engagement necessary in training a child that could contribute to the prescription of parent engagement by school leaders.

> Hear, O Israel: The LORD our God, the LORD is one. Love the LORD your God with all your heart and with all your soul and with all your strength. These commandments that I give you today are to be on your hearts. Impress them on your children. Talk about them when you sit at home and when you walk along the road, when you lie down and when you get up" (Deuteronomy 6:4-6:7, NIV).

This passage begins with a confession that all Jewish boys are required to memorize as soon as they can speak; this confession is called the Shema. It is followed by clear directives to parents to consider a constant and pervasive frequency of involvement with their child. A school system should generate the same sense of urgency that scripture reveals in early education through accountability and personalization. The passage continues with more instruction on specific ways to instruct children using phylacteries and Mezuzah. These two objects were representations of the specific tools used to support education in the home. Parents were provided a clear process that was projected which limited their own discretion to interpret the

expectation. "Tie them as symbols on your hands and bind them on your foreheads. Write them on the doorframes of your houses and on your gates" (Deuteronomy 6:8-6:9, NIV).

Implications

Throughout the study, several suggestions have been made to support the theoretical change from parent involvement to parent engagement in education. The term involvement refers to school-sanctioned, school-authored activities in which parents participate. Engagement is conceptualized as encompassing those activities parents structure for themselves and their self-directed relational interactions with school officials (Fenton et al., 2017). The role of parent engagement via technology is sanctioned by school districts, mandated by law, and necessitates the cooperation by parents. The practical implication is that a high level of randomization takes place without orientation or standardization by educators for parents. The volatility in results seems to be a direct result of a lack of prescription in application. A prescriptive approach is not defined in research, and thus is absent from professional development and application.

Children who have parents that are involved in their academics have higher achievement. The current study included 136 parents who did not view grades in 191 days. Additionally, the study included 22 parents who exceeded the mean score by 50 views which inflated the standard deviation of the sample. 40% of the sample is very inconsistent in their application of electronic monitoring of grades. To reiterate, there are two important outcomes of ESSA that directly related to electronic parent monitoring including developing and strengthening the relationship between parents and their children's school along with training parents in the learning and using of technology applied in their children's education.

The school district of study did not have any pre-service training for parents or staff, and there was no existing data that had been reviewed or synthesized. Nor was there any personal

application to develop relationally with parents. In fact, some of the relational aspects had been eliminated for the substitutionary data collection. The mechanism and the mandate for electronic monitoring exist, but research has indicated that engagement is falling short of truly fulfilling the spirit of the law (Fenton et al., 2017). It is important to differentiate between involvement and engagement because it is through parent engagement that the teacher shifts from being the expert knower to becoming a partner in a student's education (Ippolito, 2017). It represents a change in relational agency, with the relationship being between parents and schools and the object of the relationship being children's learning (Janet Goodall & Montgomery, 2014). While the law and language was extended to reflect the inconsistencies in results, the operational use of parental involvement has not been clear and consistent, as documented by unreliable outcomes in research (Eaford, 2018; JS Goodall, 2016; Ippolito, 2017; Pushor & Amendt, 2018; Wilder, 2014).

According to Bergman and Rogers (2017), enrollment defaults and enrollment simplification affect the take-up and effect of novel technology that aims to help parents improve student achievement. The process of enrollment defaults and simplification transcends not only education, but also business, government, and healthcare. By leveraging the power of technology to illicit optimal results, a school district can maximize the Student Information System tool. While subtle in theory, the changes can be profound. Technology is often adopted because of the potential to perform tasks and replace human behavior. This is a powerful yet dangerous paradigm to consider. The reality is a paradox and computers direct human behavior rather than the contrary.

Automatically enrolling parents resulted in 95% adoption; only 5% of parents in this condition withdrew from the technology at any point during the school year (Bergman & Rogers,

2017). Based on the data the optimal achievement occurred in the High Moderate classification, as noted in Chapter 4 (see Table 6). The research indicated that the High Moderate classification represented the optimal supervision and partnership of parents (M=1061.22, SD=129.215).

As a school administrator, a simple transfer of the data collection would be to process current student data at a frequency rate that would leverage the technology with a weekly message with information about the current school achievement of each child. The recommendation is based on enrollment defaults and enrollment simplification consistent with 20-29 views in the High Moderate classification over a 191 day research period or a one week average. In a convincing study by Blau & Hameri (2017), the researchers asserted that schools generate a massive amount of data but unfortunately ignore the pedagogical and administrative potential for study and change in process.

Limitations

Limitations are weaknesses that cannot be controlled by the researcher. It is very important to remember that correlation does not imply causation. This is a common mistake associated with this type of study. Correlational research merely demonstrates that one can predict the performance of a variable from the performance of another variable. If a relationship exists then there is an association between variables. Correlational research may also have limitations with respect to the generality of the findings (M. K. Simon & Goes, 2013). The current study was performed in one school district in Pennsylvania and it is uncertain whether the correlational findings will generalize to other people or situations. Therefore, the student information reported may be representative of one school district with a specific demographic and the parents who volunteered to participate in the research survey.

Another limitation in the study was the age of the students selected for the sample. Previous research on parent involvement using a digital medium used a population exclusive to secondary education (Bocian, 2016; Dries, 2014; Mathern, 2009; Watts, 2016). An elementary population was selected because this age was determined by the researcher to represent an age of dependency. Parents typically have not transitioned authority of school governance to a child of this age. As a result of the selection of the elementary sample, there are limits to comparison with other studies in previous research. Also different from the aforementioned studies was the measure used to represent student achievement. The highest level of elementary education was selected to support the necessary experience in standardized testing. The researcher considered standardized testing to be a less subjective measure of achievement than grade point average, which has been the traditional achievement measure. This was another limitation to comparison with other studies in previous research.

Another limitation is the method by which the survey was administered. Parents received the survey via email. In order to complete the survey in its entirety, participants were required to navigate to an external website and be willing to review the consent information and answer 17 questions. Parents who were unfamiliar with this technology were less likely to complete this form, and therefore may not have participated. Also, because the study was based on individual achievement scores, some parents may not have been comfortable completing the survey for fear of the potential impact on their child, even though the anonymity of the survey was communicated to everyone who received it. Finally, the survey was distributed with a deadline that could have been problematic for people with time constraints or who felt overworked.

Recommendations for Future Research

The current study concluded that there was a statistically significant relationship between the frequency of electronic parent monitoring and student achievement among fifth grade students. Additionally, the data collected in the digital survey associated with the Bronfenbrenner Ecological Model included information about student interactions and human development in various social contexts beyond the primary frequency of the study. In consideration of the investigation, findings, limitations, and the delimitations placed on the study, the researcher found several recommendations for future research:

1. The results in the survey suggested that parents are not offered a prescription of engagement strategies or specific instruction by the school district of how or when to monitor grades. Future research might compare electronic monitoring in one sample with a specific prescription or defined process for parent engagement using an online gradebook to a school district with similar demographics considering both race and socioeconomic status that does not orient or prescribe a process.
2. According to Bergman and Rogers (2017), enrollment defaults and simplification affect the take-up and impact of novel technology that aims to help parents improve student achievement. The current study could be replicated to include a population required to opt out of a prescriptive level of communication set by a school district compared to an opt in process model in the current study. In the current study the sample is required to opt in to the Student Information System in order to view grades or receive reoccurring gradebook updates. There was no prescribed time provided for the day of the week, frequency of view counts, or schedule of electronic delivery. This change in the study

may support a more normal distribution of frequency rates and eliminate the skewness of data that seemed to be caused by the "no views" of the gradebook and extreme outliers.

3. This study was implemented in a suburban school district located in central Pennsylvania and contained some limitations. These limitations included the size and scope of the student population, the use of only one school district, a demographic which included limited diversity and socioeconomic impact, and a preferred grade level. Duplication of this study with larger, more diverse samples throughout additional districts across the country would be beneficial and provide further information to the current pool of research. Additional research may also consider completing this study simultaneously in two districts that have distinctly different demographics to identify how students from different samples with divergent backgrounds are supported through electronic parent monitoring.
4. Future research could involve conducting a study using the mixed method approach or qualitative method to allow a researcher an opportunity to interview parents to gather greater understanding of what and where grading information is accessed and how it is used to support student achievement. In addition, interviewing parents allows the researcher opportunity to ask probing questions to gather more information, as well as allow parents to elaborate on their response by giving clarity versus selecting a choice on a survey.

The mechanism and the mandate for electronic monitoring exist but research indicates that authentic engagement is falling short of truly fulfilling the spirit of the law (Fenton et al., 2017). The results of the survey suggested that parents interact with their children following the antecedent of an educational experience, such as electronic monitoring. The survey also

indicated that parents who were engaged in a school activity showed the tendency to increase the overall time spent with their child after viewing grades. Epstein (2001, 2005) focused on overlapping spheres of influence between the home, school, and community that increase involvement. Technology should not be considered in isolation as simply a subtle cultural experience, but rather each application should be studied as a guiding influence to a theory of interconnectivity. According to the Theory of Technology Determinism by Blau & Hameiri (2017), technologies change the way that people function and interact. They are autonomous forces that compel society to change. The use of an online gradebook is an example of a guiding technology that neglects the relational engagement required by law, mandated by biblical truth, and influenced by theoretical study. The limited prescription lends to non-normal distributions for the frequency of parent involvement and there is no industry standard for the application of study. Theory of enrollment defaults and enrollment simplification by Bergman and Rogers (2017) supported a prescribed process that can be studied in association with the school method of parent engagement to produce data valuable for future educators faced with the challenge of fostering parental engagement.

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APPENDIX A: Parent Survey and Consent Form

Title of Research: Correlation between the frequency of electronic parent monitoring of grades and elementary student achievement.

Michael Robinson
Liberty University
School of Education

You are invited to be in a research study on the effects of electronic parent monitoring of grades. You were selected as a possible participant because you were a parent or guardian of a fifth grade student during the 2017-2018 school year in the Cornwall-Lebanon School District. Please read this form and ask any questions you may have before agreeing to be in the study.

Michael Robinson, a doctoral candidate in the School of Education at Liberty University, is conducting this study.

Background Information: The purpose of this study is to determine whether a relationship exists between the frequency of electronic parent monitoring and student achievement.

Procedures: If you agree to be in this study, I would ask you to do the following things:

1. Complete a 15 question online survey instrument that requires a Yes/No response to determine how parents/guardians utilize the information available in an electronic gradebook. The survey is brief and will take 5-10 minutes. All participant information will be anonymous to the researcher and not be used in any individual student application but rather to support educational program improvements.

Risks: The personal information in this study is anonymous. The risks involved in this study are minimal, which means they are equal to the risks you would encounter in everyday life.

Benefits: Participants should not expect to receive a direct benefit from taking part in this study. Benefits to the educational community include a more complete understanding of the usefulness of online gradebooks to parent engagement and enhanced student achievement.

Compensation: Participants will not be compensated for participating in this study.

Confidentiality: The records of this study will be kept private. Research records will be stored securely, and only the researcher will have access to the records. Participants will be assigned a random numerical identifier and personal identity will not be known to the researcher.

Conflicts of Interest Disclosure: The researcher serves as supervisor in the Cornwall-Lebanon School District. To limit potential conflicts the study will be anonymous, so the researcher will not know who participated.

Voluntary Nature of the Study: Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with Liberty University or the Cornwall-Lebanon School District. If you decide to participate, you are free to not answer any question or withdraw from the survey at any time.

How to Withdraw from the Study: If you choose to withdraw from the study, please exit the survey and close your internet browser. Your responses will not be recorded or included in the study.

Contacts and Questions: The researcher conducting this study is Michael Robinson. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact him at mrobinson@clsd.k12.pa.us. You may also contact the researcher's faculty chair, Dr. Jaunine Fouche, at jfouche@liberty.edu.

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, **you are encouraged** to contact the Institutional Review Board, 1971 University Blvd., Green Hall Ste. 2845, Lynchburg, VA 24515 or email at irb@liberty.edu.

Please notify the researcher if you would like a copy of this information for your records.

Statement of Consent: I have read and understood the above information. I have asked questions and have received answers. I consent to participate in the study.

☐ The researcher has my permission to use the feedback from the survey as part of my participation in this study.

_____

Signature of Participant Date

_____

Signature of Investigator Date

Survey Instrument: Parental Engagement through Electronic Grade Monitoring

1. Have you accessed your student's grades using the on-line gradebook account during the school year (Bio-ecological System Theory – Exosystem)?

____Yes

____No

2. A parent who checks their child's on-line gradebook regularly have a positive influence on student achievement (Bio-ecological System Theory – Exosystem).

____Strongly Agree ____Strongly Disagree _____Neutral

____Agree ____Disagree

3. Have you set up an automatic email notification from your on-line gradebook account to be delivered to you on a regular basis during the school year (Bio-ecological System Theory – Exosystem)?

____Yes

____No

4. Do you check grades using the mobile application on your cell phone (Bio-ecological System Theory – Exosystem)?

____Yes

____No

5. Do you check your child's grades while at work? (Bio-ecological System Theory – Exosystem)?

____Yes

____No

6. Information received from social media has caused me to access my child's on-line grade book (Bio-ecological System Theory – Exosystem)?

____Strongly Agree ____Strongly Disagree _____Neutral

____Agree ____Disagree

7. I discuss the information available about my child's grade located in the on-line gradebook with other parents/guardians (Bio-ecological System Theory – Exosystem)?

____Strongly Agree ____Strongly Disagree _____Neutral

____Agree ____Disagree

8. Viewing the on-line gradebook is a way to stay involved in my child's education and a form of parent engagement in school (Bio-ecological System Theory – Exosystem).

____Strongly Agree ____Strongly Disagree _____Neutral

____Agree ____Disagree

9. The on-line gradebook has influenced the amount of time I spend with my child on schoolwork (Bio-ecological System Theory – Microsystem).

____Yes

____No

10. The information in the on-line gradebook affects my relationship with my child after viewing grades (Bio-ecological System Theory – Microsystem).

____Strongly Agree ____Strongly Disagree _____Neutral

____Agree ____Disagree

11. Access to the on-line gradebook has influenced how I support your child with rewards or privileges at home (Bio-ecological System Theory – Microsystem).

____Strongly Agree ____Strongly Disagree _____Neutral

____Agree ____Disagree

12. Access to the on-line gradebook has influenced how I support my child through the application of discipline at home (Bio-ecological System Theory – Microsystem).

____Strongly Agree ____Strongly Disagree _____Neutral

____Agree ____Disagree

13. I have consulted with my child's teacher after viewing the on-line gradebook (Bio-ecological System Theory – Mesosystem).

____ Yes

____ No

14. Access to the on-line gradebook has improved communication with my child's teacher (Bio-ecological System Theory – Mesosystem).

____Yes

____No

15. Access to the on-line gradebook has provided a greater knowledge of the school curriculum (Bio-ecological System Theory – Exosystem).

____Strongly Agree ____Strongly Disagree _____Neutral

____Agree ____Disagree

16. Has your child's teacher made personal contact with you during the school year by phone or in person other than the school wide parent conferences (Bio-ecological System Theory – Mesosystem)?

____Yes

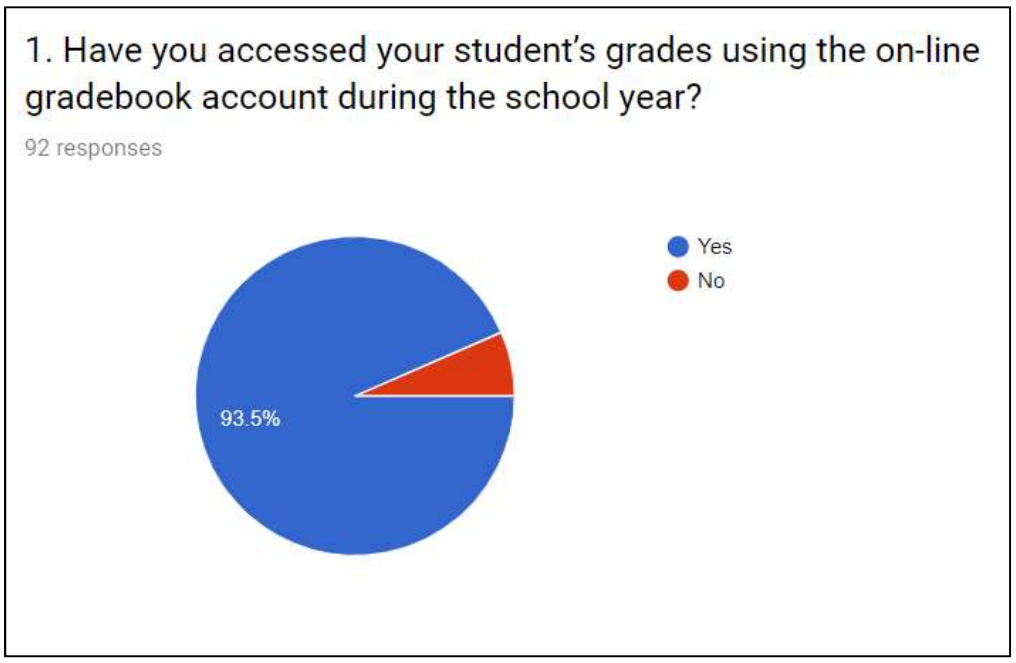
____No

17. The on-line gradebook is my preferred method of involvement into my child's education (Bio-ecological System Theory – Exosystem).

____Strongly Agree ____Strongly Disagree _____Neutral

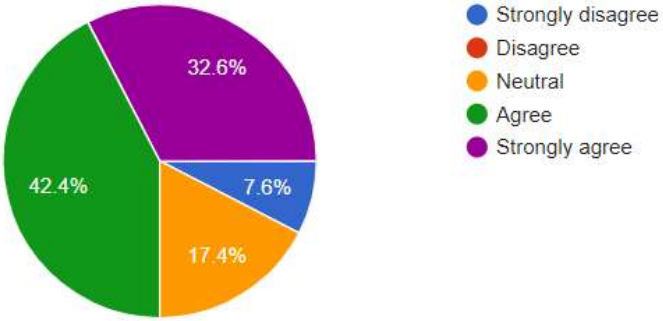
____Agree ____Disagree

Results: Survey Instrument: Parental Engagement through Electronic Grade Monitoring



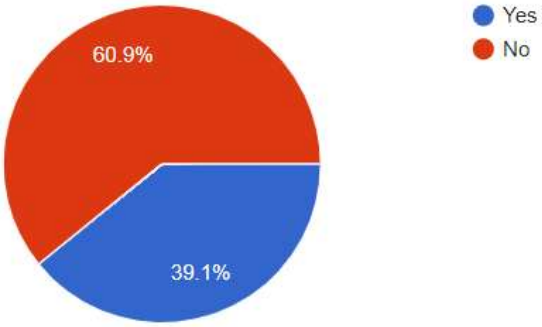
2. Parents who check their child's on-line gradebook have a positive influence on student achievement.

92 responses



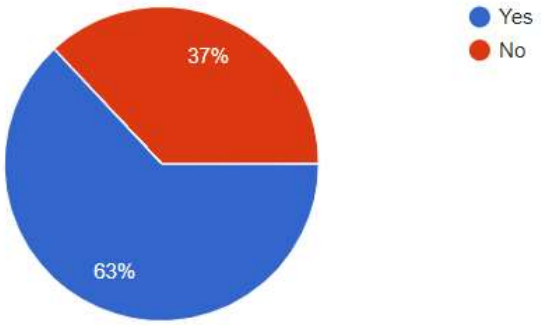
3. Have you set up an automatic email notification from your on-line gradebook account to be delivered to you on a regular basis during the school year?

92 responses



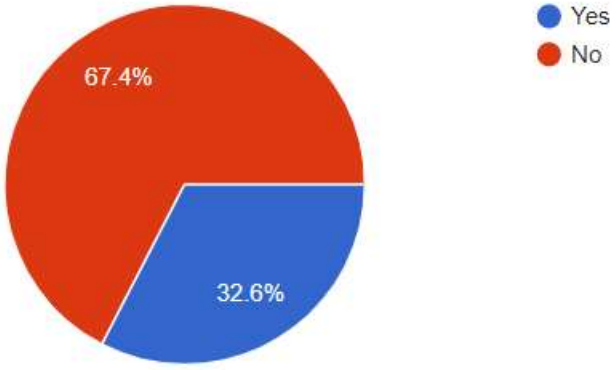
4. Do you check grades using the mobile application on your cell phone?

92 responses



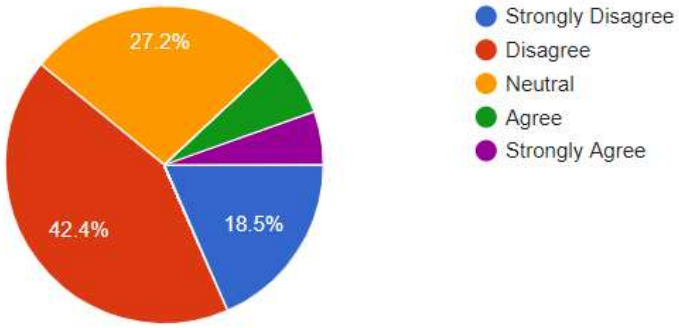
5. I check my child's grades throughout the workday.

92 responses



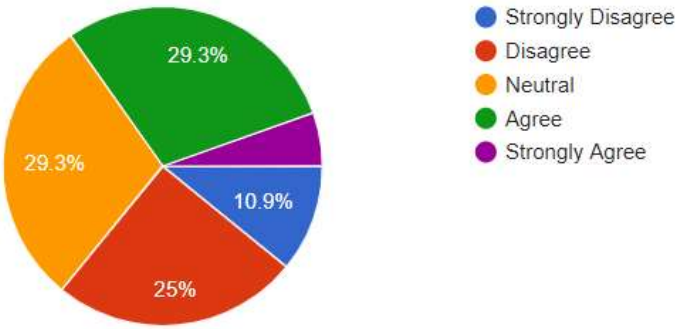
6. Information received from social media has caused me to access my child's on-line grade book.

92 responses



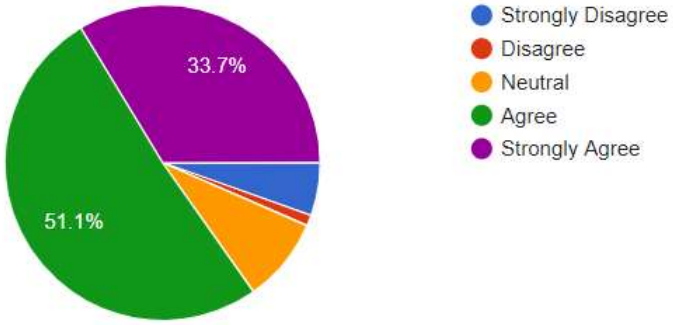
7. I discuss the information available about my child's grade located in the on-line gradebook with other parents/guardians.

92 responses



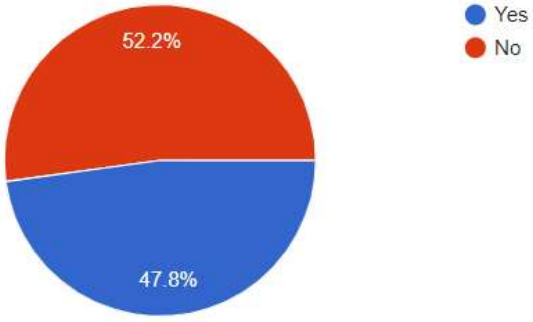
8. Viewing the on-line grade book is a way to stay involved in my child's education and a form of parent engagement in school.

92 responses



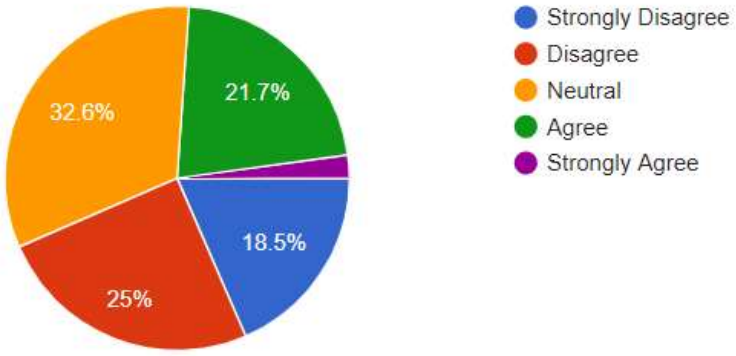
9. The on-line grade book has influenced the amount of time I spend with my child on schoolwork.

92 responses



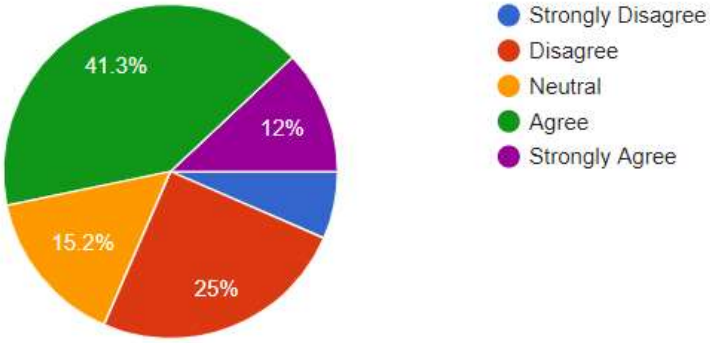
10. The information in the on-line grade book affects my relationship with my child after viewing grades?

92 responses



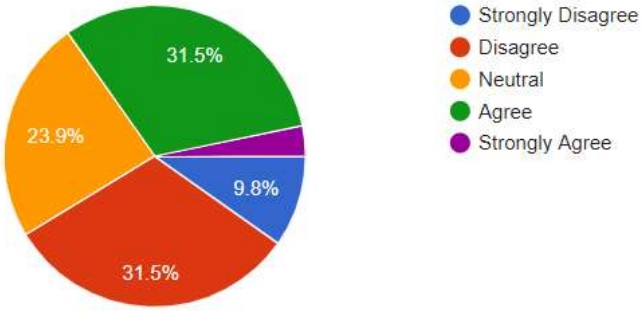
11. Access to the on-line grade book has influenced how I support my child with rewards or privileges at home.

92 responses



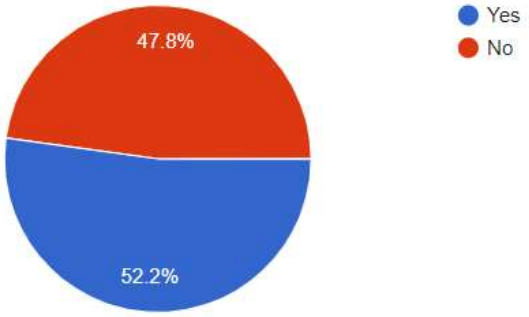
12. Access to the on-line grade book has influenced how I support my child through the application of discipline at home.

92 responses



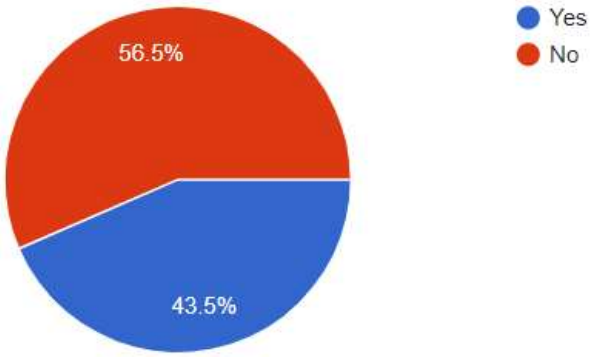
13. I have consulted with my child's teacher after viewing the on-line grade book.

92 responses



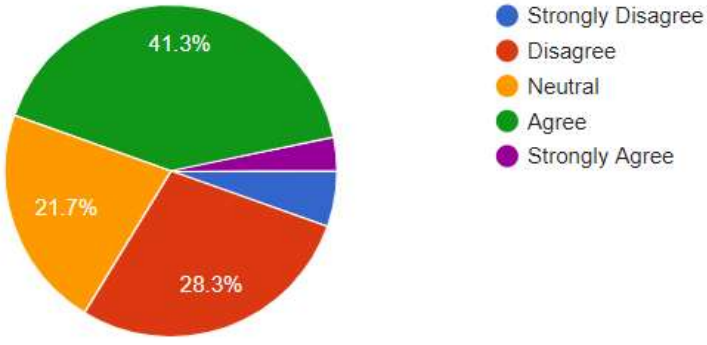
14. Access to the on-line grade book has improved communication with my child's classroom teacher.

92 responses



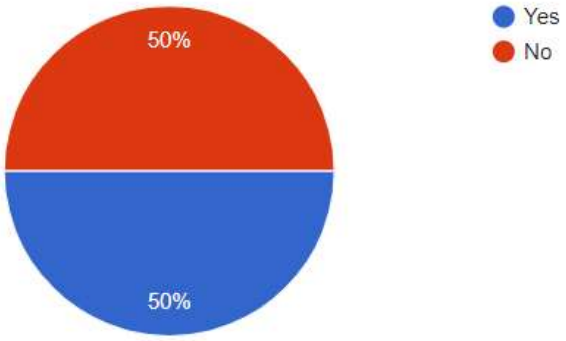
15. Access to the on-line grade book has provided greater knowledge of the school curriculum.

92 responses



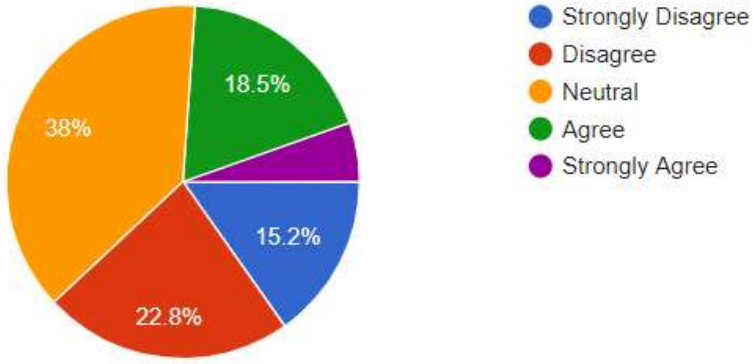
16. Has your child's teacher made personal contact with you during the school year by phone or in person other than the school wide parent conferences?

92 responses

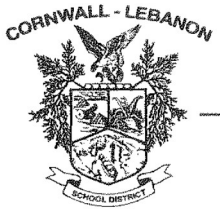


17. The on-line gradebook is my preferred method of involvement into my child's education.

92 responses



APPENDIX B: Research Site Permission



Cornwall-Lebanon School District

Philip L. Domencic, Ed.D.
Superintendent

November 9, 2018

Dear Institutional Review Board:

The purpose of this letter is to inform you that I give Mr. Michael Robinson permission to conduct the research titled Correlation between the Frequency of Electronic Parent Monitoring of Grades and Elementary Student Achievement in the Cornwall-Lebanon School District. This also serves as assurance that this school complies with requirements of the Family Educational Rights and Privacy Act (FERPA) and the Protection of Pupil Rights Amendment (PPRA) and will ensure that these requirements are followed in the conduct of this research. Mr. Robinson has permission to complete the following research activities: utilize test data and parent involvement information that has been electronically collected using the school district Student Information System and conduct an electronic survey of sixth grade parents as a follow up to review and synthesis of the student information.

It is my hope that Mr. Robinson has a meaningful experience with his professional research.

Sincerely,

[redacted]

Philip Domencic, Ed.D.
Superintendent

105 East Evergreen Road, Lebanon PA 17042-7595 ❖ (717) 272-2031 ❖ FAX: (717) 389-1866 ❖ www.clsd.k12.pa.us

APPENDIX C: Research Site Permission

Cornwall-Lebanon School District Technology Services
Jason W. Murray, D.CS
District Technology Coordinator

Monday, November 12, 2018

Mr. Michael Robinson
Director of Secondary Education and Federal Programs
Cornwall-Lebanon School District
105 East Evergreen Rd
Lebanon, PA 17042

Dear Mr. Robinson:

As the District Technology Coordinator of the Cornwall-Lebanon School District who supervises all district technology and data services, you have my permission and support to continue with your research. I will pull the data from our student information system, Skyward, and present the information in manner where the data attributes cannot be traced back to individual students.

I will verify that all student identifiers are removed and the data attributes are anonymized throughout a Microsoft Excel spreadsheet using a variety of randomization algorithms and functions. The method in which I will extract the data will follow the Office for Human Research Protections Electronic Code of Federal Regulations (e-CFR) with a focus on Subpart D, Additional Protections for Children involved as Subjects in Research. In accordance with the Liberty University Institutional Review Board Handbook, the extracted data will have no identifiable markers and will comply with the Belmont Report, federal regulations, Liberty University policies, Pennsylvania Information Management System guidelines, and Cornwall-Lebanon School District policies.

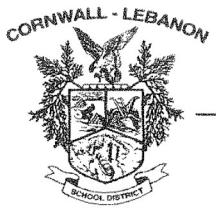
Sincerely,

[redacted]

Jason W. Murray, D.CS
District Technology Coordinator
Cornwall-Lebanon School District
105 East Evergreen Rd.
Lebanon, PA 17042

The Cornwall-Lebanon School District exists to empower students to reach their individual potential.

APPENDIX D: Research Site Permission



Cornwall-Lebanon School District

Philip L. Domencic, Ed.D.
Superintendent

November 13, 2018

Dear Institutional Review Board:

The purpose of this letter is to inform you that Mr. Michael Robinson has my permission to conduct his proposed research titled "Correlation Between the Frequency of Electronic Parent Monitoring of Grades and Elementary Student Achievement" in the Cornwall-Lebanon School District. Our school district complies with the requirements listed within the Family Educational Rights, Privacy Act (FERPA) and the Protection of Pupil Rights Amendment (PPRA).

I support Mr. Robinson's research of the following areas:

- utilizing student test data
- analyzing parent involvement information collected from our Student Information System
- conducting an electronic survey of sixth grade parents on their usage of the Student Information System

Please feel free to contact me should you have any questions or if I can be of further assistance to you. May Mr. Robinson's desire to conduct research in the Cornwall-Lebanon School District make a positive impact to his educational journey.

Sincerely,

[redacted]

Tracie L. M. Clemens, Ed.D.
Director of Elementary Education

105 East Evergreen Road, Lebanon PA 17042-7595 ❖ (717) 272-2031 ❖ FAX: (717) 389-1866 ❖ www.clsd.k12.pa.us

APPENDIX E: Institutional Review Board Permission

January 4, 2019

Michael S. Robinson

IRB Exemption 3598.010419: Correlation between the Frequency of Electronic Parent Monitoring of Grades and Elementary Student Achievement

Dear Michael S. Robinson,

The Liberty University Institutional Review Board has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study to be exempt from further IRB review. This means you may begin your research with the data safeguarding methods mentioned in your approved application, and no further IRB oversight is required.

Your study falls under exemption category 46.101(b)(2,4), which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46:101(b):

> (2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless:
> (i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.
>
> (4) Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects.

Please note that this exemption only applies to your current research application, and any changes to your protocol must be reported to the Liberty IRB for verification of continued exemption status. You may report these changes by submitting a change in protocol form or a new application to the IRB and referencing the above IRB Exemption number.

If you have any questions about this exemption or need assistance in determining whether possible changes to your protocol would change your exemption status, please email us at irb@liberty.edu.

Sincerely,

G. Michele Baker, MA, CIP
Administrative Chair of Institutional Research