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Examining the Relationship between Parental Involvement and Mobile Technology Use

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This is to certify that the doctoral dissertation by

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Walden University
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Abstract

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MA, Roosevelt University, 2004

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Dissertation Submitted in Partial Fulfillment

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Abstract

Understanding how mobile devices can enhance parent/teacher communication is important because parents play an important part in their children's learning. Research on parents' use of mobile devices to communicate with their children's teachers is limited. The purpose of this cross-sectional correlational study was to determine the relationships between parents' (a) knowledge of using mobile devices, (b) general use of mobile devices, (c) purpose for using mobile devices, (d) perceived ease of using mobile devices, (e) perceived usefulness of mobile devices, (f) attitude toward using mobile devices, and (g) use of mobile devices to communicate with teachers. The study was informed by the technology acceptance model and used a participant pool of 73 parents of high school students attending a Title I high school in a large Midwestern city in the United States. Data were collected using an online survey and analyzed using Pearson's correlations. The study results indicate significant correlations between parents' use of mobile devices to communicate with teachers and knowledge of using mobile devices, purpose for using mobile devices, perceived ease of using mobile devices, perceived usefulness of mobile devices, and attitudes toward using mobile devices. These findings suggest that parental use of mobile devices to communicate with teachers can be enhanced by administrators and school personnel using strategies that consider parents' and the school culture. Social implication includes sharing the results of this study with district and school administrators who have the power to implement programs that encourage and support the use of mobile devices as a communication tool between parents and teachers, therefore increasing parental involvement and ultimately student academic success.

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Dedication

As I pursued my interest in obtaining a degree, you all were by my side doing what need to be done to help me complete my studies. To Tracy, my love and my friend: You have been with me through the bachelor's degree, both masters' degrees, and also my Ph.D. degree. Throughout the years, you never complained about me once again going back to school to pursue yet another degree. You stood by my side through all of my decisions, good and bad, without any fuss. To you, I take off my hat and bow to honor your support and dedication. To Trey and Taylor: I love you so much for putting up with me during this time as well. Although you are young, you still knew your ma was in school and needed to do her homework. I thank you for all the kisses as well as the wishes and anxiety or your mother to be called Dr. Flowers.

To my dad Charles and stepmom Carla, my brothers Steven, Keith, Qu'Don, Earthus and LaQwan; my sisters Nickquolette and Candace; and my mother-in-law Earlean for her constant motherly love, I thank you all for your continued support and encouragement. You always asked, "How is it going in school? and said hang in there."

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Love always.

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Chapter 1: Introduction to the Study

New social practices and patterns of communication are developing with the growth of mobile technologies (Hargittai, 2008; Horrigan, 2008; Pedersen, 2008). This development is yielding potential for changes in parent/teacher communication (Hargittai, 2008; Horrigan, 2008; Pedersen, 2008). The use of mobile technologies for communication between parents and teachers, though, is a largely unresearched area. Understanding how mobile devices can enhance parent/teacher communication is important (Fan & Williams, 2010; Galindo & Sheldon, 2012; Khajehpour, 2011). This is because parents play an important part in their children's learning (Fan & Williams, 2010; Galindo & Sheldon, 2012; Khajehpour, 2011). Parental involvement in a child's learning through communication with the faculty and staff can have a positive impact on student outcomes (Crosnoe, 2009; Shayne, 2008). This study was developed to address this research gap and explore the relationship between parental involvement with their children's teachers and their mobile technology use.

Background

The main concepts explored in this study were parental involvement and the use of technology to facilitate parental involvement (parent/teacher communication). In general, prior studies have indicated that (a) technology offers a means for promoting parent/teacher communication and (b) parents are underutilizing technology as a means of communicating with teachers (Center for the Study of Educational Policy, 2004; Herrold & O'Donnell, 2008; Rogers & Wright, 2008).

There are many factors that negatively impact parental involvement in schools. Shumow, Lyutykh, and Schmid (2011) explored the demographic and psychological predictors of a parent's involvement both at home and school. The researchers found that overall parental involvement for low-income high school students was low. These researchers also found that parents of children who applied for free or reduced-price lunch were not prone to be involved in their child's science education (Shumow et al., 2011). Bower and Griffin (2011) explored reasons for low levels of parent involvement in an elementary school among Blacks and low-income families. For this research study the Epstein Model for Parental Involvement was implemented, which is a model shown to improve both parental involvement and student achievement. The researchers found that in order for activities or programs designed to enhance parental involvement to be effective, the school the researchers were studying must take into account the school's culture. Smith, Wohlstetter, Kuzin, and Pedro (2011) explored parental involvement in an urban charter school. The researchers found that the integration of technology as an alternative means of communication was beneficial and cost effective and provided instant two-way communication between teachers and parents. Parental involvement is low among Blacks and low-income families, however, the potential to increase parental involvement for Blacks through the use of mobile technologies as an alternative form of communication between parents and teachers exist.

Ethnic and gender demographics have a significant aspect on the use of mobile devices as communication tools. For example, Lee and Lee (2010) explored people's acceptance of mobile services. The researchers found that Black participants were the

most likely demographic to use mobile technologies. Of the Black participants, 83% used mobile technologies, compared to 72% of Whites, 77% of Asian Americans, and 49% of Hispanics. This information demonstrates that Blacks are using mobile technologies and it further exposes the potential to increase parental involvement for Blacks through the use of mobile technologies.

Technologies in the 21st century provide various applications that can be used for instant communication. For example, Thompson (2008) investigated the characteristics of parent/teacher email communication in elementary and high school. This study was conducted to evaluate the content of the message and obtain a complete understanding of the level of difficulty within the email discussions. Thompson found that the email worked best when parents and teachers were exchanging concrete information concerning grades or to schedule a face-to-face meeting. Although Thompson did not find a connection between parent/teacher email messages and student academic success, he did find that constant emails between parents and teachers helped build relationships between the two. The use of technologies such as email, specifically for mobile devices, provides an opportunity to create virtual spaces (Andone, Dron, & Pemberton, 2009; Hussein & Nassuora, 2011). These virtual spaces can be mobile, instantaneous, and synchronous and allow people to coexist at any time and in any place (Andone, Dron, & Pemberton, 2009; Hussein & Nassuora, 2011).

Although these technologies provide more means of communicating with others still parents fail to make the connection. Rogers and Wright (2008) explored communication between middle school parents and teachers. This research study did not

examine middle school parents and teachers use of traditional phones (landlines). Specifically, they evaluated the effect of interpersonal communication technologies such as mobile phones, email, and school websites on their communication practices. The results indicated that although 93.8% of parents/guardians owned a mobile phone, only 42.6% used their mobile phone to communicate with teachers. In addition, the researchers found that as the socioeconomic status of parents/guardians increased, use of the mobile phone to contact teachers decreased. Based on their findings, Rogers and Wright concluded that multiple lines of communication were needed for effective parent/teacher communication to occur.

Several studies have identified differences in levels of parental involvement among races and ethnicities as well as for those with low socioeconomic status. These differences include varying degrees of parental involvement and types of rules enforced in the home as well as levels of parental volunteerism at school-related functions (Graves & Wright, 2011). These differences are especially evident for Black students (Hayes, 2011). Traditional forms of communication such as newsletters, individual notes sent home, and invitations to visit the school fails to increase involvement of Black parents and parents with low socioeconomic status (Bower & Griffin, 2011).

There are significant research gaps concerning mobile device usage and parental involvement with schools. Little research has been conducted to explore how people use mobile devices (Wang, Tsai, & Lu, 2011). Less literature has been conducted with regard to parents' use of mobile devices to communicate with teachers (Rogers & Wright, 2008; Thompson, 2008). A significant amount of time has passed since the inception of the

mobile device and research designed to investigate mobile technology usage. Currently, with multiple mobile device advancements to enhance communication between individuals a gap still exist between parents and teachers use of mobile devices to communicate. This study is needed to address the gaps in the literature. In particular, the study is necessary because results can be shared with administrators in the local school district who have the power to implement programs that encourage and support parental use of mobile devices to communicate with teachers. Furthermore, the data can be shared with the administrators at the Title I focus school in this study who have the power to implement change within the school. Parental involvement is low among Blacks and low-income families, however, the potential to increase parental involvement for Blacks through the use of mobile technologies as an alternative form of communication between parents and teachers exist. Increased parental involvement can lead to increased student academic success.

Problem Statement

Research has indicated that (a) technology offers a means for promoting parent/teacher communication (Rogers & Wright, 2008; Thompson, 2008) and (b) parents are underutilizing technology as a means of communicating with teachers (Center for the Study of Educational Policy, 2004; Herrold & O'Donnell, 2008; Rogers & Wright, 2008). However, the problem is that few researchers have explored usage behaviors with regard to mobile devices, and in particular, parents' use of mobile devices to communicate with teachers is incomplete (Hill & Tyson, 2009; Thompson, 2008; Wang, Tsai, & Lu, 2011). This problem warrants attention for a variety of reasons. First,

parents play an important part in their children's learning (Bodovski, 2010; Graves & Wright, 2011; Khajehpour & Ghazvini, 2011). Second, when provided, parental involvement has positive effects on students' academic achievement (Antonopoulou, Koutrouba, & Babalis, 2011; McNeal, 2012; Topor et al., 2010). Third, a lack of communication is a major barrier between parents and teachers, which can hinder a student's academic growth (Griffin & John, 2010). Finally, research has indicated that some parents and teachers welcome digital communication such as email and text messaging because they hope it may help increase timely and direct communication between parents and teachers (Grant, 2011). In the 21st century, as rates of mobile technology use continue to rise, the potential for mobile devices to promote parent/teacher communication, and ultimately, positive student outcomes, cannot be ignored.

Purpose of the Study

The purpose of this cross-sectional correlational study was to determine the relationships between parents' (a) knowledge of using mobile devices, (b) general use of mobile devices, (c) purpose for using mobile devices, (d) perceived ease of using mobile devices, (e) perceived usefulness of mobile devices, (f) attitude toward using mobile devices and (g) use of mobile devices to communicate with teachers. Data gathered from this research study could be used to guide administrator in making decision about the potential use of mobile technologies to promote positive social change through increased parental involvement and ultimately student academic achievement. This research study was specifically designed to generate findings that would inform administrators in the

local school district who have the power to implement programs that encourage and support parental use of mobile devices to communicate with teachers. One of the study goals was to foster the implementation of district programs that improve parents' knowledge of using mobile devices and their attitudes toward using mobile devices to communicate with teachers, thereby promoting parental use of mobile devices to communicate with teachers. By providing multiple modes of communication for parents and teachers parental involvement and student success could be improved.

Research Questions and Hypotheses

The research questions and hypotheses guiding this study were as follows:

Research Question 1. Is there a significant correlation between parents' knowledge of using mobile devices and their use of mobile devices to communicate with teachers?

$H_0$1: There is no significant correlation between parents' knowledge of using mobile devices and their use of mobile devices to communicate with teachers.

H_A1: There is a significant correlation between parent's knowledge of using mobile devices and their use of mobile devices to communicate with teachers.

Research Question 2. Is there a significant correlation between parents' general use of mobile devices and their use of mobile devices to communicate with teachers?

$H_0$2: There is no significant correlation between parents' general use of mobile devices and their use of mobile devices to communicate with teachers.

H_A2: There is a significant correlation between parents' general use of mobile devices and their use of mobile devices to communicate with teachers.

Research Question 3. Is there a significant correlation between parents' purpose for using mobile devices and their use of mobile devices to communicate with teachers?

$H_0$3: There is no significant correlation between parents' purpose for using mobile devices and their use of mobile devices to communicate with teachers.

H_A3: There is a significant correlation between parents' purpose for using mobile devices and their use of mobile devices to communicate with teachers.

Research Question 4. Is there a significant correlation between parents' perceived ease of using mobile devices and their use of mobile devices to communicate with teachers?

$H_0$4: There is no significant correlation between parents' perceived ease of using mobile devices and their use of mobile devices to communicate with teachers.

H_A4: There is a significant correlation between parent's perceived ease of using mobile devices and their use of mobile devices to communicate with teachers.

Research Question 5. Is there a significant correlation between parents' perceived usefulness of mobile devices and their use of mobile devices to communicate with teachers?

$H_0$5: There is no significant correlation between parents' perceived usefulness of mobile devices and their use of mobile devices to communicate with teachers.

H_A5: There is a significant correlation between parents' perceived usefulness of mobile devices and their use of mobile devices to communicate with teachers.

Research Question 6. Is there a significant correlation between parents' attitude toward using mobile devices and their use of mobile devices to communicate with teachers?

$H_0$6: There is no significant correlation between parents' attitude toward using mobile devices and their use of mobile devices to communicate with teachers.

H_A6: There is a significant correlation between parents' attitude toward using mobile devices and their use of mobile devices to communicate with teachers.

Theoretical Framework for the Study

Davis's (1989) technology acceptance model (TAM) served as the theoretical framework for this study. The basic premise of this model is that the perceived usefulness of a technology and a person's perceived ease of using the technology will affects a person's attitude about the technology, their decision to use the technology, and, ultimately, their use of the technology (see Figure 1).

The TAM was appropriate to use in this research study for two specific reasons. First, the variables in the model matched those examined by the research questions. Second, this research study was quantitative in nature, which allowed data to be collected on factors that contribute to technology use, as well as data about actual technology use. This facilitated determining the relationships between the two sets of variables as depicted in the TAM. See Appendix D for the letter of permission to reprint Figure 1. The theoretical framework is discussed further in Chapter 2.

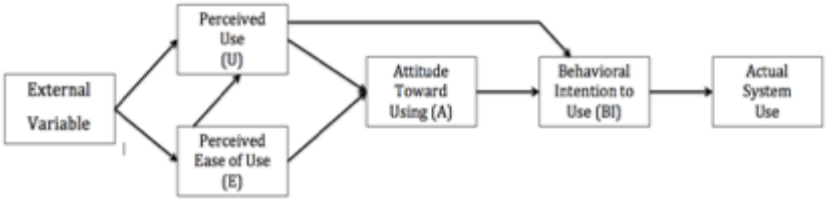

Figure 1. Technology Acceptance Model. Adapted from "User acceptance of computer technology: A comparison of two theoretical models," by F. D. Davis, R. P. Bagozzi, and P. R. Warshaw, 1989, *Management Science*, *35*(8), pp. 982-1003. Retrieved from https://www.informs.org/Pubs/ManSci. Reprinted with permission.

Nature of the Study

This study was nonexperimental in nature and used a cross-sectional correlation design. This design was especially appropriate for this research study because the intent of the study was to explore the relationships between variables without implementing a treatment or determining cause and effect. In order to investigate the relationship between these variables, due to a lack of information on the variables being examined, it was necessary to create a research instrument for this study. The research instrument was created using two existing instruments previously determined to be reliable and valid.

At the time of data collection for this study, all classes at the focus school were established. Therefore, the sample was a convenience sample selected from classes included on the school's active classroom master schedule. To collect data using the schools traditional form of communicating with parents, an invitation to participate in the research study by completing an online survey was given to students to take home for their parents/legal guardian to read and complete. The invitation was distributed to 1,529 students through the use of 57 previously scheduled classes. After collecting data for 3 weeks, the data were analyzed using descriptive statistics, scale reliability analysis

(Cronbach's alpha), and Pearson's *r* (correlation coefficient). Results of those analyses are presented in tables and scatterplots.

Definitions

This section lists the operational definitions and related explanations for terms used in this study. For most terms, a standard definition is provided followed by an operational definition. In instances where a generic TAM construct was applied to mobile devices in particular, the operational definition specific to mobile devices is provided first followed by the original definition of the TAM construct as it applies to technology in general (although that relationship is not explicitly identified).

Attitude toward using mobile devices: An individual's perceptions about the use of lightweight easily portable devices, e.g., the use of a smartphone or iPad to send an email message. This definition was based on Davis's construct attitude toward using, which, according to Davis, Bagozzi, and Warshaw (1989), "is jointly determined by perceived usefulness and perceived ease of use, with relative weights statistically estimated by linear regression" (p. 986).

Knowledge of using mobile devices: Familiarity with the functions on mobile devices that parents know how to use, whether or not they actually use them.

Mobile device legally refers to "a personal electronic device that has the capability of transmitting and receiving voice, video, or data communications by means of commercial mobile service or commercial mobile data service" (Mobile Device Privacy Act, 2012, Sect. 7). For the purposes of this study, mobile devices were further defined as lightweight easily transportable devices (smartphone, tablets, and phablets) that can be

used to (a) make calls; (b) access the Internet and operate Internet applications, and (c) send or receive electronic messages, including email, instant messages, and text messages. In cases where the literature included the term *mobile technologies*, the language was left intact.

Parent involvement refers to "the participation of parents in regular, two-way, and meaningful communication involving student academic learning and other school activities, including ensuring (a) that parents play an integral role in assisting their child's learning; (b) that parents are encouraged to be actively involved in their child's education at school; (c) that parents are full partners in their child's education and are included, as appropriate, in decision-making and on advisory committees to assist in the education of their child; [and] (d) the carrying out of other activities, such as those described in Sec. 1118" No Child Left Behind Act, 2002, Section 9101.32). For the purposes of this study, parental involvement refers to a parent's participation in his or her child's learning through communication with the child's teachers.

Perceived ease of using mobile devices: in the context of this study, the measure of how easy parents perceive it is to use the functions on their mobile device. This definition was based on Davis' (1989) construct perceived usefulness, which "refers to the degree to which a person believes that using a particular system would be free of effort" (p. 220).

Perceived usefulness of mobile devices: in the context of this study, the measure of how valuable parents perceive the functions on their mobile devices to be for communicating with their children's teachers. This definition was based on Davis' (1989)

construct perceived usefulness, which he defined "as the degree to which a person believes that using a particular system would enhance his or her job performance" (p. 220).

Purpose for using mobile devices: in the context of this study, purpose for using mobile devices measure the reasons that parents use the functions on their mobile devices.

Use of mobile devices to communicate with teachers: This concept refers to parents using their mobile devices to call, text, email, or use other device functions to make contact with parents for any reason regarding their children. This definition was based on Davis' (1989) construct usage behavior, which he defined as the "intensity of system usage" (p. 478).

Scope and Delimitations

The scope of this study was limited to the relationship between parents' (a) knowledge of using, general use of, purpose for using, perceived ease of using, perceived usefulness of, attitude toward using mobile devices and (b) parents' use of mobile devices to communicate with teachers. These aspects of the problem were chosen because research has indicated that knowledge of using, general use of, purpose for using, perceived ease of using, perceived usefulness of, and attitude toward using technology in general can affect whether or not people use any given technology (Davis, 1989; Davis et al., 1989). Thus, it was appropriate to use these same variables in this research study with regard to the use of mobile devices in particular.

The use of mobile devices was chosen to communicate with teachers as a variable because research has indicated that parental involvement in the form of parent/teacher communication has an excellent connection to students' educational goals and students' achievement (Crosnoe, 2009; Quilliams & Beran, 2009; Shayne, 2008). In addition, mobile technologies "have reshaped and redefined the ways in which information is constructed, accessed, and communicated" (Avraamidou, 2008, p. 347) as well as how people (a) use their time, spaces, and places (Bittman, Brown, & Wajcman et al., 2009; Horrigan, 2008, 2009); (b) develop social relationships; and (c) define their overall purpose of communicating (Li & Pitts, 2009; Sheldon, 2008; Urista, Dong, & Day, 2009; Wei, 2008). Also, research has indicated that although technology offers a means for promoting parent/teacher communication, parents are underutilizing technology as a means of communicating with teachers and insufficient research has been conducted in this area (Center for the Study of Education Policy, 2004; Herrold & O'Donnell, 2008; Rogers & Wright, 2008; Thompson, 2008). Based on these conditions, mobile devices can be viewed as a fundamental element of communication in the 21st century and one that should not be ignored in the educational environment. Thus, it was appropriate to include parental use of mobile devices to communicate with parents as a variable in this research study.

Data collection was delimited to the parents of students attending one high school in a large Midwestern metropolitan city in the Great Lakes region of the United States. At this time of this study, 1,529 students were enrolled in the school. Age, gender, marital

status, socioeconomic status, English language proficiency, literacy level, and educational level were not used as criteria for parental participation in the research study.

The theoretical foundation for this study was Davis' (1989) TAM. Although based on the TAM and related to the topic of study, the Unified Theory of Acceptance and Use of Technology (UTAUT) model (developed by Venkatesh, Morris, Davis, & Davis, 2003) was not used. The purpose of the UTAUT is to identify end users' behaviors and intentions to use information systems based on four constructs: performance expectancy, effort expectancy, social influence, and facilitating conditions (Venkatesh et al., 2003). In addition, the model also includes the influence of gender, age, experience, and voluntariness of use (Venkatesh et al., 2003).

Although the UTAUT has been cited in 450 studies, partially implemented in 43 studies, and completely implemented in 16 studies (Venkatesh et al., 2003), this model was not appropriate for this study. The decision not to use the UTAUT was based on the literature. According to Bagozzi (2007), the UATUT model ultimately suggests the use of 49 independent variables. Fourth-one of the variables are used to predict a person's intention to use a particular technology and the other eight variables are used to predict a person's behavioral intention to use a particular technology. Thus, the model's breadth is extensive and beyond the scope of this research study. In addition, according to van Raaij and Schepers (2008), the "UTAUT's high R^2 is only achieved when moderating the key relationships with up to four variables (gender, age, experience and voluntariness) in order to yield more significant coefficients" (p. 840). As a result, the UTAUT is narrower

in scope than the TAM (van Raaij & Schepers, 2008). For these reasons, the UTAUT was not used as a theoretical framework for this study.

Researchers often are interested in generalizing their results to a larger population from which the sample was drawn (Johnson & Christensen, 2004; Schwab, 2005). When generalizing results, the researcher applies the results of his or her study to other people or locations beyond the sample or location used in the initial study (Wallen & Fraenkel, 2001). Results typically can be generalized when the research sample is randomly selected from a specified population, and initially displays identical characteristics (Wallen & Fraenkel, 2001). However, when random selection is not possible, complete descriptions of the sample help others determine the generalizability of results to larger populations (Wallen & Fraenkel, 2001).

Results from Hayes's (2011) study on parental involvement underscores the importance of discretion when generalizing results, in particular with regard to Black parents in urban settings. In his study, Hayes examined two socially and economically diverse groups of Black parents from different urban communities to determine how a number of variables influenced levels of parental involvement (outcome variable) in the home and school. Results of the study indicated that race and location were not the sole predictors of the outcome variable and that other factors, including level of parents' education and parents' educational aspirations for their adolescent children, affected the outcome variable (Hayes, 2011). Hayes concluded, "research needs to use caution when generalizing results related to urban, Black parents when these studies are focused only

on parents from low socioeconomic backgrounds" (p. 162) because additional factors may contribute to differences within the group.

The sample population used for this study was predominantly Black. However, because the sample was not chosen randomly and because the demographic information collected about this population was limited, results from this study cannot inherently be generalized to the larger population of parents in the school district, the state, or the nation. In addition, because variables not identified in this study may have contributed to participants' decisions to complete the survey, generalizations of the study results to the larger population of parents at the school should be made with caution.

Assumptions and Limitations

During the development of this study, two major assumptions were made. The first assumption was that the participants in the study responded genuinely to the survey questions. According to Leedy and Ormrod (2005), participant honesty may be a concern when using surveys because "some people may intentionally misrepresent the facts [at least, the 'facts' as they know them] in order to present a favorable impression to the researcher" (p. 184). However, Leedy and Ormrod also indicated that using a survey could alleviate some participant concern over anonymity, thus promoting more truthful responses from participants than those who might be garnered by other means of data collection, such as face-to-face interviews. The second assumption was that all participants would have access to the Internet, which was essential for completing the online research survey used in this study. The survey was not distributed in any other format nor were data collected using any other method.

The first of two limitations recognized during the development of this study was the use of a survey to collect data. According to Creswell (2003), despite the fact that surveys can be excellent tools for collecting large amounts of data, they are fundamentally flawed because a survey by its nature measures participants' opinions. Leedy and Ormrod (2005) expressed a similar concern with regard to the self-reporting of data by participants: "people's memories for an event are often distortions of reality: What they think happened is not always what did happen" (p. 184). In this respect, all survey data could be flawed. However, survey data is routinely used and accepted as a valid means of collecting nonexperimental data about human participants. In fact, the survey data collected in this study provided valuable information about participant behaviors in this study. Creswell also expressed concern over the use of surveys because the researcher must interpret the collected data. In doing so, the researcher may introduce subjectivity and bias, which can manifest in the researchers' expression of the study the results. To reduce the chance of subjectivity and bias in the interpretation and expression of the results in this study, the role as a researcher was clearly identified. By doing so, potential avenues for bias were identified, thus reducing the potential for bias may appear in the interpretations of the data.

The second limitation recognized during the development of this study was the collection of data from only one location: a predominately Black high school. Thus, although the intention was to determine the use of mobile devices by all parents in the school, it was likely that the majority of data collected were from Black parents. Therefore, the data was not generalizable to other populations at the school. However,

because the school population is predominantly Black, any strategies the school may implement based on the results of this study would be applicable to the majority of parents whose children attend the school.

One unexpected limitation of this research study was the method for recruiting participants. Invitations were sent to parents through students in the focus school. Because some students were repeatedly absent from school, they did not receive on behalf of their parents/guardians the letter of invitation to participate in the study. Therefore, some potential participants never received an invitation to participate in the study.

Significance

The literature has indicated that barriers to high parental involvement still exist despite technological advancements in the 21st century that have made communication easier (Kim, 2009; Shayne, 2008; Turney & Kao, 2009). For this reason, it is critical to explore technology as an avenue for increasing parental involvement in the academic setting. Because the literature has indicated (a) that parents with low socioeconomic status face additional barriers to parental involvement when compared to their high socioeconomic status counterparts and (b) that parental involvement is especially influential for minority students, it is particularly critical to explore this phenomenon in Title I schools in which the population matches these demographics (Hayes, 2011; Williams & Sánchez, 2013). This study is significant because these areas of interest were investigated in a Title I school. The results provided in insight that could enhance administrators' understanding of the dynamics of parental involvement, in particular with

respect to the use of mobile devices. Such understanding has strong implications for promoting social change by creating new social practices and patterns of communication between parents and teachers, which, as Crosnoe (2009) suggested, can lead to positive attitudes for both parents and students and, ultimately, improved academic success for students.

In the 21st century, the college degree has taken the place of the high school diploma so that the economic benefits previously available to those with a high school diploma are no longer within reach (Kuh, Cruce, Shoup, Kinzie, & Gonyea, 2008). This condition is especially relevant for minority populations, who are underrepresented in college (Elliott, 2008). According to The National Center for Public Policy and Higher Education and the Southern Regional Education Board (2010), many students drop out of college because they lack readiness. Thus, underrepresentation of minority populations in college may be the result of lack of college readiness for this population. According to Roderick, Nagaoka, and Coca (2009), a student is ready to enter college after learning the content taught as well as the basic skills necessary to be productive in society such as reading and writing, essential academic skills, non-cognitive (behavioral) skills, and an understanding of the process of enrolling in college. Typically, students' behavior and evidence of their academic achievement (coursework, achievement tests, and grade point average) demonstrate or fail to demonstrate these qualities of college readiness (Roderick et al., 2009).

As a result of lower levels of educational attainment for students who do not succeed in high school and thus do not graduate from college, the potential exists that

these students may evolve into unemployed adults or adults with low paying jobs who often live below the poverty line and are reliant on state and federal aid (Sum, Khatiwada, McLaughlin, & Palma, 2011). According to the literature, Black students in particular are more likely than their peers of other races to drop out of high school (and therefore not graduate from college), be unemployed, and suffer economic hardship (Wittenstein, 2011). Results of this study could be used to change these conditions. Specifically, parents' use of mobile devices to communicate with teachers can be an avenue for increasing parent/teacher communication and thus parental involvement.

According to Quilliams and Beran (2009), when students experience low levels of parental involvement with regard to their education, they may not feel competent about learning or be motivated to do so and thus achieve only minimal academic success. Overall, "children who are at risk for poor academic achievement are likely to be seen as having low confidence, showing little motivation, and receiving little parental support" (Quilliams & Beran, 2009, p. 71). In addition, Nichols et al. (2010) found that student's perceptions of parental expectations were highly and positively related to collegial aspirations in Black youth.

Academic success as a high school student is a strong educational foundation for a successful college career as a student and adult life after college (Balfanz, 2009; Roderick et al., 2009; Schneider & Yin, 2011). Therefore, it is likely that without intervention, students' behaviors (such as lack of motivation and lowered levels of academic aspiration toward learning) and histories of poor achievement present at the high school level would be present at the college level, which, when combined with

increased academic demands of college curricula, would contribute to lack of college readiness and lead to student failure and/or dropout and decrease the potential for success in adult life for these students. However, improved teacher/parent communication and resulting increases in parental involvement could help improve student motivation, achievement, and aspirations for success in high school, which may translate to improved behavior and academic skills (college readiness) and increase the potential for student success at the college level. Thus, enhancing administrators understanding of the dynamics of parental involvement and mobile device use thereby creating new patterns, and new social practices of communication between parents and teachers could promote positive social change.

Summary

Although technology can be a means of promoting parent/teacher communication, parents are not taking advantage of this opportunity (Center for the Study of Educational Policy, 2004; Herrold & O'Donnell, 2008; Rogers & Wright, 2008). In addition, there is insufficient research on parents' use of mobile devices to communicate with teachers (Rogers & Wright, 2008; Thompson, 2008). Lack of knowledge about parental use of mobile devices to communicate with teachers is problematic because parent/teacher communication can have a positive impact on students' educational aspirations and academic outcomes (Hayes, 2011; Nichols et al., 2010; Quilliams & Beran, 2009; Topor et al., 2010), especially for Black students. Thus, lack of knowledge about parental use of mobile devices to communicate with teachers was especially relevant in this study because Black students made up the majority of the population at the focus school.

Based on these conditions, the purpose of this cross-sectional correlational study was to determine the relationship between (a) knowledge of using mobile devices, (b) general use of mobile devices, (c) purpose for using mobile devices, (d) perceived ease of using mobile devices, (e) perceived usefulness of mobile devices, (f) attitude toward using mobile devices and (g) parents' use of mobile devices to communicate with teachers. To conduct this exploration, a cross-sectional correlational design study was conducted using a survey to collect data from parents of students who attended a predominantly Black Title I school in the Great Lakes region of the United States. Both descriptive and inferential statistics were conducted on the collected data. The results of the inferential analyses were used to answer the research questions. In particular, Pearson's correlations were performed to determine the relationships between the variables.

This study was significant because results may indicate the potential for mobile devices to be used to improve parent/teacher communication, which ultimately could improve academic outcomes for students in the school. Students who are successful in high school are likely to be a success in college and adult life after college (Balfanz, 2009; Roderick et al., 2009; Schneider & Yin, 2011). This success could help these students (as adults) avoid unemployment and economic hardship (Wittenstein, 2011) and thus enjoy a satisfactory quality of life while helping them develop into independent and contributing members of society.

Chapter 2: Literature Review

Parental involvement in the form of parent/teacher communication has a positive association with students' educational aspirations and students' achievement (Casillas et al., 2012; Hayes, 2011; Nichols et al., 2010). This is especially true for Black students, those who make up the majority of the population of the students in the focus school in this study (Casillas et al., 2012; Hayes, 2011; Nichols et al., 2010). Technology can be used to promote communication between parents and teachers (Rogers & Wright, 2008; Thompson, 2008). However, parents are underutilizing technology to communicate with their child's teachers (Herrold & O'Donnekkm, 2008). In the 21st century, as rates of mobile technology use continue to rise, the potential for mobile devices to promote parent/teacher communication, increase parental involvement and ultimately, positive student outcomes, cannot be ignored.

To conduct a literature review for this research study, I searched electronic databases to obtain peer-reviewed research study articles from various scholarly journals. The databases searched included: Communications & Mass Media Complete™, EBSCOhost, Education Research Complete, ERIC®, ProQuest Central, SAGE Journals Online, and Questia. Most of the examined literature was chosen based on the publication years of 2008 to 2012. Studies conducted prior to 2009 were included because they were particularly relevant or examined technology use behavior patterns over time. Data reports such as the *Parent and Family Involvement in Education, 2006–07 School Year, From the National Household Education Surveys Program of 2007 report published by Herrold & O'Donnell in 2008* were included because they were especially useful for

providing a broad understanding of the topics discussed in this section related to the research variables. Key search terms included *parental involvement*, *student academic performance*, *student academic success*, *parent/teacher communication*, *cell phone use*, *cell phone users*, *cellular phone use*, *cellular phone users*, *mobile technologies*, *mobile technology use*, *mobile technology users*, *mobile device use*, *mobile device users*, and *Technology Acceptance Model.* The review of literature in this section is organized into five sections: (a) theoretical foundation, (b) parental involvement, (c) barriers to parental involvement, (d) technology use in 21st century, (e) technology as a communication tool, and (g) intent to use technology.

Theoretical Foundation

This research study was based on Davis' (1989) technology acceptance model (TAM). At the time of this study, Davis posited that information technology would improve a person's overall job performance; however, it was also posited that job performance improvement was hindered by the user's acceptance of the available technology. Based on these ideas and dissatisfied with existing measures of user acceptance, Davis developed a new measure as well as the TAM to understand how users accept and use a technology based on a number of factors. When Davis developed this model, aspects of various models and theories were considered such as the expectancy model, theory of self-efficacy, the cost-benefit paradigm of the behavioral decision theory, adoption of innovations theory, and the channel disposition model. Additionally, results from other studies on similar topics were included to create the basic premise of TAM.

The basic premise of TAM is that people's use of technology is directly dependent on their decision to use a particular technology (Davis, 1989). In addition, an individual's choice to use a particular technology will be influenced by his or her perceived ease of use of the technology, perceived usefulness of the technology, and attitude toward using that technology (Davis, 1989). After a rigorous process to obtain high instrument reliability and validity, Davis identified 10 items for each construct.

Several studies have used TAM as a theoretical framework for exploring people's attitude and behavioral intent to use technology in an educational setting. Each research study listed found TAM to be an excellent theoretical tool to analyze user's acceptance of a particular technology that they investigated. For example, Park (2009) used TAM to examine college students' behavioral intent to use e-learning where they found TAM to be a good theory to understand student's ultimate acceptance of e-learning. Kim, Park, and Morrison (2008) explored people's attitudes and behavioral intent to use mobile technology. They also found TAM to be a good theory to understand user acceptance of mobile tourism. They found that users experiences did influence their perceived performance and ease of use while also positively affected users attitude and intention to use their mobile device for tourism.

Mah and Er (2009) used TAM to determine if students' perceptions about writing weblogs in an ESL classroom could predict students' actual use. Results showed users accepted weblogs because they perceived the online journal to be useful. This shows that TAM is a good theory to understand users perceived ease of use, perceived usefulness, behavioral intention, and attitude toward using the technology examined. Liao and Tsou

(2009) examined the efficacy of TAM for determining SkypeOut utilization in a random sample of SkypeOut users. Also, finding TAM to be a good theory to understand user's acceptance of the SkypeOut technology. A user perceived quality affected their perceived ease of use, which affected perceived usefulness and playfulness and ultimately their attitude toward use.

Teo, Ursavas, and Bahçekapili (2010) examined the efficiency of TAM for explaining pre-service teachers' intention to use technology. The TAM proved to be a good theory to understand pre-service teachers perceived ease of use, perceived usefulness and attitude toward using technology. Shroff, Deneen, and Ng (2011) analyzed TAM for determining students' behavioral intention to use an e-Portfolio system. Looking at instructors perceived ease of use, perceived usefulness, attitude toward usage and behavioral intention the TAM was also found to be a good theory to understand user's acceptance of an e-portfolio system. Edmunds, Thorpe, and Conole (2012) used TAM to examine student attitudes towards and use of information and communication technology in course study and both work and social activities. Also, finding TAM to be a good theory to understand users acceptance of information and communication technology they found perceived ease of use and perceived usefulness, affected students' attitudes towards using the technology. Finally, Šumak, Heričko, and Pušnik (2011) conducted a meta-analysis to determine the effect user types and e-learning technology types had on e-learning technology acceptance. Also, finding TAM to be a good theory to understand user's acceptance of e-learning technologies among multiple studies it was

found that perceived ease of use and the perceived usefulness affect users attitudes toward using e-learning technology.

In each of these studies that used TAM as its theoretical framework, the researchers determined that TAM was sufficient for exploring the variable of focus in their studies. The researchers made their determinations based on differing levels of significance they found. The differing levels of significance could have been due to the type of technology being explored, the participant pool, the medium for collecting data, or the level of participant experience using mobile technologies. TAM was chosen as the foundation of this research study for several reasons.

Over time, numerous researchers have used this model to understand people's intent to use technology and their actual use of that technology. In each study, TAM was proven to be an excellent theoretical tool to analyze user's acceptance of a particular technology. Although the model has been adapted since it was developed, the essential elements are still evident, demonstrating the enduring value of those elements (perceived ease of use, perceived usefulness, and attitude toward using technology) in the discussion of technology use. Currently, due to the advancements in mobile technologies it is essential to understand if parents' use of technology is directly dependent on their decision to use a particular technology. Due to a lack of research on parents' use of mobile technologies to communicate with their child's teachers it is important to understand parents intent to use technology and actual use mobile technologies.

TAM has been validated as an instrument for measuring technology usage. In 2010, Turner, Kitchenham, Brereton, Charters, and Budgen tested the validity of the

model, claiming that earlier tests of the model's validity had been conducted on the construct behavioral intent rather than the outcome variable actual usage. This distinction, they claimed, suggested that TAM might not be a valid instrument for measuring actual usage as earlier researchers had claimed. To determine the validity of TAM as a valid measure of actual technology usage, Turner et al. conducted a systematic review of 79 studies in which the researchers measured (a) actual usage of technology and (b) the relationship between actual usage, perceived ease of use, and perceived usefulness. Turner et al. (2010) ultimately concluded that although there was a lesser likelihood that perceived ease of use and perceived usefulness were correlated with actual usage, behavioral intent was likely to be correlated with actual usage, and that TAM was a valid measure of actual usage.

The TAM has direct applicability to this study because its structural elements provide data relevant for designing programs to promote parental use of mobile technologies to communicate with teachers. Previous research has indicated that parental involvement can increase student outcomes and that mobile devices can provide an avenue for parent/teacher communication (and thus parental involvement). However, this information has little value in and of itself; unless parents' motivations for using mobile devices to communicate with teachers is made apparent, efforts to improve the use of mobile devices for this purpose are likely to be ineffective.

At the time of this study, it was unknown whether parents at the focus school used any form of mobile technology to communicate with teachers, whether parents would be willing to do so under particular conditions, or what those specific conditions might be.

In order to promote parental use of mobile devices to communicate with teachers, it was imperative to determine what these conditions might be. The research questions posed for this study provided a means for gathering the data needed to answer these questions and were based, in part, on constructs indicated in the TAM model.

General Technology Use

Communication in any form promotes positive attitudes in parents and students, which can be an important part of a successful home and school partnership (Hill & Tyson, 2009; Patterson, Webb, & Krudwig, 2009; Thompson, 2008). Additionally, communication often contributes to improved parental involvement (Crosnoe, 2009; Shirvani, 2007). However, before examining how technology can be used as a communication tool and more specifically how technology, through improved parent/teacher communication can improve parental involvement, it is valuable to have an understanding of people's general use of mobile technologies in the 21st century.

Types of Technology and Users

Recent reports on technology use showed that in 2012, 88% of adults owned a mobile (cell) phone (Rainie, 2012; Smith, 2010a, 2010b). By 2013, the rate of mobile (cell) phone ownership increased to 91%, and the rate of smartphone use was reported to be 56% (Brenner, 2013). In addition to those who owned smartphones in 2013, 34% of people owned a tablet, and 34% owned an e-reader (Brenner, 2013).

In addition to generating statistics regarding types of mobile devices people use, researchers also have described mobile device users. For example, with regard to adults in general, those who are parents of children under 18 years of age are more likely to

have a mobile phone (90%) than nonparents (78%); those who own a mobile device are likely to own a computer; and those who make the most phone calls using their mobile devices also tend to send the most text messages (Lenhart, 2010). In addition, although rates of mobile device use among people in the 30-40 year old age group are starting to increase, young adults remain the largest group of mobile data application users (Smith, 2010a). In addition, between 2009 and 2010, rates of mobile device use among low-incomes families increased (Smith, 2010a). Mobile device use also has been found to vary based on ethnicity.

According to Lee and Lee (2010), among ethnic groups, Blacks are the most frequent users of most mobile technologies. In particular, Blacks send and receive more text messages (83%) than mobile users of other ethnicities: White (72%), Hispanic (49%), and Asian American (77%; Lee & Lee, 2010). In a study of minority mobile device users, Smith (2010a) found similar results for Black mobile device users when compared to their White counterparts. Specifically, Smith found that 87% of Blacks owned a mobile cellular phone compared to 80% of Whites. In addition, Blacks, when compared to Whites, were more likely to (a) connect to the Internet (46% vs. 38%) and social network sites/applications (Facebook, Twitter, Instagram; 33% vs. 23%) and (b) send text (79% vs. 72%), email (41% vs. 30%), and instant (44% vs. 30%) messages (Smith, 2010a).

These data demonstrate that the use of mobile devices has become commonplace among people of all races in the United States. In addition, the mass adoption and use of Internet-connected smartphones has changed the way people communicate with friends,

family, and in some cases, co-workers, which includes the way people relate to the extensive amount of information to which they have access digitally (Rainie & Fox, 2012). "Users' ability to access data immediately through apps and web browsers and through contact with their social networks is creating a new culture of real-time information seekers and problem solvers" (Rainie & Fox, 2012, p. 4). These characteristics of mobile device users hint at reasons people use mobile devices.

Purpose for Using Mobile Technologies

According to Davis (1989), people's use of technology will be based on their perceptions of the technology's usefulness and ease of use. Wang, Wu, and Wang (2009) agreed with Davis with regard to ease of use (effort required to use the technology), but Wang et al. also suggested that people may use mobile technologies based on their perceptions of the technology's performance and their exposure to social influence to use the technology. Use of mobile devices also may be dependent on the purpose of use of the mobile device.

People use mobile technologies to access various forms of information (Brenner, 2013). One important aspect with regard to obtaining information is that mobile technologies allow people to access information worldwide regardless of space and time (Hussein & Nassuora, 2011). Mobile technologies also allow people to stay connected with friends and family (Hussein & Nassuora, 2011; Lenhart, 2010). People may use smartphones in particular because they offer a convenient means of retrieving information quickly (Smith, 2010a). Additionally, smartphones help improve

communication between users and their family, friends, and colleagues (Horrigan, 2012). See Appendix E for the letter of permission to quote Dr. Horrigan's 2012 research study.

In a Pew Research Center report based on data from Princeton Survey Research Associates International, Lenhart (2010) found that people most used their mobile phones to make voice calls and send text messages. With regard to voice functions in particular, when compared to nonparents, parents were more likely to use the voice function on their phones to check in with someone (17% vs. 28%), to have long personal conversations (7% vs. 13%) and to coordinate a physical meeting (13% vs. 18%), respectively (Lenhart, 2010). With regard to text messages, Lenhart (2010) found that young adults sent five times more text messages than adults sent, although rates of text messaging among adults increased 7% between September 2009 and May 2010 (from 65% to 72%). In addition, Black mobile device users were found to send more texts than their Hispanic and White mobile device users (Lenhart, 2010).

Of adults who used both voice and text functions in 2010, 88% used the functions to contact friends and family in order to make plans (Lenhart, 2010). Among individuals who reported using their phones several times a day to make calls or send texts, purposes of use varied: say hello (26%), discuss work-related issues (23%), report their location to someone or find out the location of someone else (21%), coordinate a meeting (11%), and discuss important personal matters (9%; Lenhart, 2010).

Based on data from the same Pew Research Center source used by Lenhart, Smith (2010a) found that in 2010, 40% of adults accessed the Internet using mobile devices, send email, or use instant messaging, an 8% increase in use from 2009. In addition, 2010

rates of mobile phone use to connect to the Internet, send email, or use instant messaging had increased when compared to 2009 rates: 25% versus 38%, 35% versus 34%, and 20% versus 30%, respectively (Smith, 2010a).

Based on the Pew Research Center data, Lenhart (2010) also found that, when compared to those under the age of 18, adults were not prone to use their mobile phone as a source of entertainment when they were bored; 39% of adults said they used their phones to prevent boredom, while almost 70% of teens said they did. As a group, young adults (18-29 year olds) used their phones at a rate similar to teens; 72% of those in the young adult group used their phones to prevent boredom (Lenhart, 2010). Low-income mobile phone users also were likely to use their phones to prevent boredom; of those earning less than $30,000, 50% used their phones for entertainment purposes (Lenhart, 2010). In addition, compared with other races and ethnicities, Black and Hispanic mobile phone users were more likely than others to use their phones for entertainment purposes (Lenhart, 2010). Finally, when compared to those who demonstrate moderate or low mobile phone use, heavy mobile phone users (those who daily use their cellular phones to access the Internet, send 50 or more text messages, or have more than 30 incoming or outgoing calls) were likely to use their phones for entertainment purposes (Lenhart, 2010).

Among faculty (n = 99) at Jordan University, Hussein and Nassuora (2011) determined (based on both primary and secondary data) that 75.3% of the faculty used a mobile phone to connect to the Internet. The researchers also reported mobile phone functions utilized by the faculty: voice calling (100%), texting (98%), emailing (42%).

These data hint at possible uses of mobile devices as a means of communication in educational institutions.

Hussein and Nassuora (2011) in particular suggested a number of benefits of using mobile devices in the field of education. For example, in the academic setting, mobile technology not only can provide users easy access to information but also (a) opportunities for collaboration and the elimination of barriers among academics in and outside of the school environment; (b) a means of communicating and accomplishing tasks irrespective of place, space, or time; and (c) the ability to share knowledge among interested individuals (Hussein & Nassuora, 2011). The most vital of these benefits in an educational setting is the creation of virtual spaces (Andone, Dron, & Pemberton, 2009; Hussein & Nassuora, 2011). These virtual spaces can be mobile, instantaneous, and synchronous and allow people to coexist at any time and in any place (Andone, Dron, & Pemberton, 2009; Hussein & Nassuora, 2011). Benefits of mobile devices recognized among the general population and, in particular, in the university setting, may be applicable at the secondary level as well. However, for benefits to be realized at the secondary level, both parents and teachers must decide to use mobile technologies to communicate (Rogers & Wright, 2008). The topic of using mobile technology to increase parental involvement is discussed in a subsequent section.

Study Variables Associated with the Technology Acceptance Model

In the TAM model, external variables, perceived use, and perceived ease of use affect attitude toward using, which in turn affects behavioral intent to use, and finally actual (technology) use (Davis et al., 1989). Researchers have explored various aspects of

this model. In this section, literature on aspects of the TAM used as variables in this study are presented, specifically, perceived ease of use, perceived usefulness, and attitude toward using technology.

Perceived Ease of Use

Researchers have explored the concept of perceived ease of use with various technologies and have found similar positive connections. For example, Liao and Tsou (2009) used the SkypeFind engine to examine 211 SkypeOut users' perceptions with regard to the playfulness and quality of the technology. The researchers found that the perceived quality of the technology was related to perceived ease of use and that perceived ease of use affected perceived usefulness and perceived playfulness of the technology. In the Kim et al. (2008) study on people's attitudes and behavioral intent to use mobile technology, the researchers found a positive relationship between the level of the technology user's experience and perceived ease of use (ß = 0.44) at the $p < 0.01$ level. In addition, perceived ease of use was positively related to a user's attitude toward mobile technology use. In the Teo (2010) study conducted to explain the intention to use technology among 239 preservice teachers in Singapore, perceived ease of use was found to be a significant factor of the intention to use technology. In a similar study of Turkish preservice teachers by Teo, Ursavas, and Bahçekapili (2011), the researchers also found that perceived ease of use was significantly related to attitude towards using a computer (and perceived usefulness).

Finally, Lu, Lu, Yu, and Yao (2014) examined factors associated with the use of mobile technologies to access the Internet. Using survey responses from 128 students

enrolled in an MBA-level e-commerce course in Beijing, China, the researchers described the participants as mobile phone users with prior experience using mobile technology to access the Internet. Based on correlative analysis, Lu et al. determined that perceived ease of use was correlated with both perceived usefulness (ß = 0.36) and acceptance of (intent to use) mobile technology to access the Internet (ß = 0.36).

Perceived Usefulness

As with the concept of perceived ease of use, researchers have explored the concept of perceived usefulness with various technologies and have found similar positive connections. For example, based on correlative analysis in the Lu et al. (2014) study, the researchers determined that, like perceived ease of use, perceived usefulness was correlated with the use of mobile technology to access the Internet (0.36). Aharony (2013) found similar results when he examined Isreali librarians' (*n* = 153) attitudes toward the use of mobile technology to access data and resources in the library (m-services). Specifically, Aharony found that perceived usefulness of m-services was directly related to intent to use that technology. "People will use m-services only if they perceive that such usage would help them perform their desired task" (Aharony, 2013, p. 366). Overall, it was found that librarians with higher levels of usefulness also had higher levels of behavioral intention to use the libraries m-services.

Antón, Camarero, and Rodriquez (2013) also found a positive relationship between perceived usefulness and attitude toward using technology. Specifically, Antón et al. examined perceived usefulness with regard to the use of the eBook reader program. Using data collected from 662 non-eBook users via an online survey delivered through

social networks on reading, bookshop, and e-book forums related to new technologies, Antón et al. determined that perceived usefulness of the eBook reader program was a significant factor, both directly (ß = 0.14) and indirectly (ß = 0.30), in participants' intent to use the eBook reader technology.

In the Kim et al. (2008) study on people's attitudes and behavioral intent to use mobile technology, the researchers found a positive relationship between the level of the technology user's experience and perceived usefulness (ß = 0.39) at the $p < 0.01$ level. In addition, perceived usefulness was positively related to a user's attitude toward mobile technology use and a significant predictor of a person's attitude toward mobile technology and behavioral intent to use mobile technologies. Finally, Teo (2010) and Teo et al. (2011) found that perceived usefulness was a significant factor of both attitude towards computer use and intention to use computers.

Attitude Toward Using Technology

Researchers who have explored the concept of attitude toward using technology have found in general, that people have positive attitudes toward using technology. For example, in Hussein and Nassuora's (2011) study of the use of mobile devices for knowledge sharing in college, 75.3% of the respondents had a positive attitude toward connecting to the Internet using their personal mobile phone. Specifically, the majority of respondents indicated that they strongly agreed that using mobile phones (a) is/might be an excellent idea (54.5%), (b) is/might be a pleasant experience (41.4%), (c) is/might be beneficial (54.5%), (d) increases their knowledge in their field (23.2%), (e) increases

their motivation towards work (33.3%), and (f) increases their communication with colleagues (63.6%; Hussein & Nassuora, 2011).

Lenhart (2010) also demonstrated that mobile phone users in general have a positive attitude toward mobile device use. For example, Lenhart reported that 91% of mobile phone users feel safer because their mobile phone affords them the capacity to call for help if needed, and 88% of mobile phone users believed having a mobile phone makes it easier to connect with others to coordinate plans. In the Aharony (2013) study, the researcher found that the librarian participants who already had experience accessing the Internet using their mobile phones had favorable attitudes toward using the m-services technology. The researchers suggested that this condition resulted from the librarians' understanding of the value the technology had for fostering improvement in access to information among the diverse populations in their schools as well as those who prefer virtual library services to physical libraries services.

Although researchers have demonstrated that people have positive attitudes towards technology, this is not always the case. For example, Lenhart found that some mobile phone users expressed negative attitudes toward mobile phone use. In particular, 86% of mobile phone users felt that mobile phones often rudely interrupt conversations when people are talking to each in person, and two of every five people felt that mobile phones often interrupt them personally (Lenhart, 2010).

Again, as with the concepts of perceived ease of use and perceived usefulness, researchers have explored the concept of attitude toward using technology with various technologies and have found similar positive connections. Specifically, Teo (2010) found

that attitude toward computer use was positively related to intent to use computers, and Kim et al. (2008) found that tourists' attitude towards mobile technologies affects behavioral intention to use those technologies. In addition, the more positive the tourist's attitude toward using a particular mobile technology the greater the behavioral intention to use the mobile technology. Finally, Lu et al. (2014) found that attitude toward using mobile devices to access the Internet was positively related to actual use of the technology.

Parental Involvement

Multiple research studies have been conducted to understand the effect various forms of parental involvement have on students' academic success. In particular, Bridgeland, Balfanz, Moore, and Friant (2010) indicated that students who are not engaged in their education tend to drop out of school, while others have demonstrated that parental involvement has positive effects (Hill & Tyson, 2009; Sanders, 2008; Tan & Goldberg, 2009). In some studies, researchers have found that the positive impacts of parental involvement are evident across differing races/ethnicities and socioeconomic backgrounds (Floyd & Vernon-Dotson, 2009; Houtenville & Conway, 2008; Turney & Kao, 2009). However, studies have shown that parental involvement among low-income and minority parents in general lacks (Bower & Griffin, 2011; Shumow et al., 2011).

Levels of Parental Involvement Among Minority Parents

Results of research on parental involvement have indicated that minority parents are either completely uninvolved (Williams & Sanchez; 2012) or involved at a lower rate than other parents of other ethnicities (Shumow et al., 2011). For example, Williams and

Sànchez (2012) examined levels of parental involvement of minority parents at an inner-city high school. For 3 months, the researchers collected data from school personnel and parents of Black descent who had some form of contact with school personnel within the 3 months prior to the start of the study. In particular, Williams and Sànchez conducted interviews over the phone, in face-to-face meetings, and in open group discussions.

Using an inductive approach to data analysis, Williams and Sànchez (2012) identified three types of uninvolved parents: the unconcerned parent, the busy parent, and the previously involved parent. “The general depiction of an unconcerned parent was a mother who did not care and was unconcerned about [the] child’s attendance or performance at school” (Williams & Sànchez, 2012, p. 642). Unconcerned parents did not attend meetings or school events, were typically unemployed, and had children who consistently failed classes (Williams & Sànchez, 2012). Busy parents were those who in some way may have been interested in participating in their child’s learning but who often were kept from doing so by other activities or obligations at home (Williams & Sànchez, 2012). The busy parents typically were employed and wanted to be involved (Williams & Sànchez, 2012). Work was the most often referenced reason for being unable to participate in their children’s learning (Williams & Sànchez, 2012). Previously involved parents were those “who were once involved, but who eventually became uninvolved parents because the situations with their child and the school were consistently negative” (Williams & Sànchez, 2012, p. 644). Previously involved parents sensed their presence did not help to curtail their children’s behavior or improve their academic performance (Williams & Sànchez, 2012).

In the Williams and Sànchez study, no comparisons were made between minority and nonminority parents with regard to parental involvement. However, other researchers have explored this and other variables in relation to parental involvement. The concepts are discussed next collectively as barriers to parental involvement.

Barriers to Parental Involvement

Barriers to parental involvement often are defined according to parents' perspectives of what they consider a barrier (Turney & Kao, 2009). In various studies, researchers have identified common barriers to parental involvement, including (a) educational level of the parent, (b) teachers perceptions of parents (Kim, 2009), (c) uncomfortable requests or demands from the school, (d) child care difficulties (Turney & Kao, 2009), (e) inflexible work schedules (Turney & Kao, 2009), (f) work commitments (Turney & Kao, 2009), (g) lack of transportation (Turney & Kao, 2009), (h) lack of time (Bridgeland et al., 2010; Williams & Sànchez, 2013), (i) language barriers (Crosnoe, 2009), (j) lack of awareness of school policies (Williams & Sànchez, 2012), (k) minority status (Shumow et al., 2011; Williams & Sanchez, 2012), (l) low-income status (Shumow et al., 2011), and (m) an overall lack of ongoing (Crosnoe, 2009; Turney & Kao, 2009; Williams & Sanchez, 2012) and positive communication (Kim, 2009) between the school and parents. Because communication is an essential element of parental involvement and because minority and low-income status are elements directly associated with the population of focus in this study, these barriers to parental involvement are discussed in more detail in this section.

Lack of communication. Griffin and Galassi (2010) suggested an indirect relationship between parent/teacher communication and parental involvement mitigated by "parents' perceptions of the barriers to academic success faced by their adolescents and their knowledge about and ability to access the resources and services needed to foster student success" (p. 88). In their study of 29 parents of middle school students in the rural South, one theme the researchers found was parent/teacher/interaction barriers distinguished by insufficient communication between parents and teachers. The parents in the study indicated that teachers should (a) have proactive measures for communicating with parents and (b) produce more timely progress reports with even quicker correspondence when their children were behaving inappropriately (Griffin & Galassi, 2010).

In a literature review of 69 studies on minority parental involvement and school barriers dating from 1980, Kim (2009) found that communication as a barrier to parental involvement was related to the nature of the communication. Specifically, minority parents do not like the type of communication atmosphere they encounter during normal parent/teacher conferences as well as the time restriction enforced during the conferences (Kim, 2009). Parents indicated that the time restrictions limit how much they are able to communicate about their children, leaving them feeling as if the purpose of the conference has not be fulfilled (Kim, 2009). Furthermore, because time to communicate during conferences is limited, discussion about the child often centers on current issues but future plans to help the child are never addressed (Kim, 2009). Parents indicated they wanted more positive communication from teachers and described such communication

as personal, informal, and timely (Kim, 2009). Finally, parents indicated they preferred that teachers communicate with them using a variety of methods; in addition to the traditional face-to-face, telephone, and print methods of communicating, parents appreciated communication supported by technology (Kim, 2009).

Minority status. Minority status has been found to be indicative of low parental involvement. Therefore, minority status can be interpreted as a barrier to parental involvement. For example, in Shumow et al.'s (2011) study in which the researchers explored demographic and psychological predictors of parental involvement at home and in school. The researchers found that minority parents were not prone to be involved in their children's academic affairs than were White parents. Specifically, the mean level of parental involvement for nonWhite parents was .33 (*SD* = .35), while the mean level of parental involvement for White parents was .65 (*SD* = .36; Shumow et al., 2011). According to results of the regression analyses, however, minority status was not a predictor of parental involvement in school (Shumow et al., 2011).

The Shumow et al. (2011) study was based on responses of 244 science students in the average track in a large metropolitan area high school. The population was diverse with regard to ethnicity: "42% White, 37% Latino, 12% African American, 2% Asian, 1% Native American, and 6% multiracial" (Shumow et al., 2011, p. 85). Students completed a 14-item survey ranking items on a 4-point scale: 0 (*never*) to 3 (*often*; Shumow et al., 2011). Of the total items, four were specific to parental involvement in school (Shumow et al., 2011).

Low-income status. Like minority status, low-income status is a barrier to parental involvement. With regard to the effects of low-income on parental involvement, Shumow et al. (2011) found that, among the 244 parents of low-income high school students, the overall level of parental involvement was low. The participant breakdown was 42% White, 37% Latino, 12% Black, 2% Asian, 1% Native American, and 6% multicultural (Shumow et al., 2011). Of the students in the school, 43% were qualified to receive free or reduced-price lunch (used as a proxy measure of low-income; Shumow et al., 2011). Data analysis revealed a .28 correlational relationship between parental involvement at school and parental involvement at home (Shumow et at., 2011). Based on these results, Shumow et al. concluded that the parents of students receiving free or reduced-priced lunch were significantly less prone to be involved in their children's learning when compared to the parents of students who did not receive a free or reduced-priced lunch.

Another lifestyle characteristic inherent in low-income families is financial instability. In a study of parental involvement, Williams and Sànchez (2013) found that "some parents thought their participation in their child's education was uninvited and unwanted because they did not have the money to pay their child's school fees" (p. 64). Based on these perspectives, parents would be unlikely to involve themselves in their children's learning.

Parental uniqueness. With regard to minority status and low-income status, respectively, results of the Williams and Sànchez (2012) and Shumow et al. (2011) studies are indicative of conditions evident at the Title I high school under study.

However, according to researchers, ethnicity and socioeconomic status are not necessarily precursors to lack of parental involvement. Therefore, when researchers study parental involvement in children's learning, they must "recognize the variability across individuals, school settings and communities" (Howard & Reynolds, 2008, p. 94). After studying parental involvement in an urban charter school, Smith et al. (2011) came to a similar conclusion. In addition, school administrators and teachers need "to take into account the myriad cultural differences that can impact how parents demonstrate parental involvement" (Bower & Griffin, 2011, p. 84). Specifically, school administrators and teachers "need to realize that parents from low-income families may care about and value their children's learning in a different way, and this different way of involvement needs to be recognized, promoted [and supported in multiple formats]" (Zhang, Hsu, Kwok, Benz, & Bowman-Perrott, 2011, p. 36). Taken together, these perspectives underscore the concept of parental uniqueness with regard to factors that contribute to parental involvement.

Understanding parental uniqueness, including ethnic and socioeconomic characteristics, associated with barriers to parental involvement is essential for school administrators when considering methods for improving parental involvement (Graves & Wright, 2011). Specifically, strategies implemented to involve parents should be tailored to the needs of the school's culture (Bower & Griffin, 2011). Among low-income Black parents, for example, the most common barriers are (a) lack of time, (b) lack of awareness of school policies, (c) lack of physical access to the school, and (d) lack of financial resources (Williams & Sànchez, 2012). By tailoring strategies implemented to

improve parental involvement in the school culture, school administrators may be more successful in promoting parental involvement. In addition, technology may offer a means of increasing parental involvement for those parents who typically demonstrate low parental involvement.

Increasing Parental Involvement Using Technology

By improving levels of parental involvement, school-based parental involvement programs can have positive effects on a student's academic achievements at the elementary and high school level (Jeynes, 2012). Although the No Child Left Behind Act has encouraged parents to be involved in their children's lives, ultimately it is the school's responsibility to provide parents with meaningful opportunities to become more involved (Smith et al., 2011). An individual school's effort to communicate with parents can increase involvement and student achievement, therefore, benefiting the school, parent, and more importantly, the students (Fan & Williams, 2010; Galindo & Sheldon, 2012; Jeynes, 2012).

Researchers have suggested there may not be a universal means of promoting parental involvement but rather that the promotion of parental involvement may need to be tailored to parents based on their particular situations and geographic locations (Bower & Griffin, 2011; Hayes, 2011). However, results of Smith et al.'s (2011) study support the concept that technology can be used to improve parental involvement, especially among low-income populations. This relationship is possible because technology can be used to enhance communication between parents and teachers, which can contribute to improved parental involvement.

In Smith et al.'s (2011) study, the researchers investigated the use of technology to improve involvement among low-income parents in urban charter schools. In the Smith et al. study, three charter schools integrated technology as an alternative mode to communicate with parents. Noted benefits of using technology to communicate with parents included instant communication as well as a reduction in time and costs associated with communication via phone and newsletters (Smith et al., 2011). The use of technology to communicate with parents also allowed for improved two-way communication such that parents were able to initiate communication with teachers and school personnel rather than be passive recipients of information, as is the case when schools communicate with parents via letters (Smith et al., 2011). According to Smith et al., "these findings suggest the emergence of new strategies to increase parent involvement" (p. 88). The results of Smith et al.'s study provide support for the perspective posed in this study. It is possible that the use of technology, and more specifically the use of mobile technologies, may be used to improved parental involvement at the Title I focus school in this study.

Others have expressed similar sentiments. According to Feenberg (2005), computers, mobile technologies, and "the Internet open fantastic new opportunities for human communication" (p. 62). When barriers exist, and a parent need to reach out to their child's schools for support, the use of technologies for the sole purpose of communication can be used as a foundation to build a partnership between parents and teachers (Barrera & Warner, 2006). However, "for family-school partnerships to benefit from technology, both parents and teachers must be willing to embrace technology as a

communication tool" (Rogers & Wright, 2008, p. 47). Understanding how people in general use technology in the 21st century and how the variables associated with Davis's (1989) TAM can affect intent to use technology could be helpful for school administrators when considering how to use technology to improve parental involvement.

Summary

At the time of this study, it was unknown whether parents at the focus school used any form of mobile technology to communicate with teachers, whether parents would be willing to do so under particular conditions, or what those particular conditions might be. In order to promote parental use of mobile devices to communicate with teachers, it was imperative to determine what these conditions might be. The research questions posed for this study provided a means for gathering the data needed to answer these questions and were based, in part, on constructs indicated in Davis's TAM model, the basic premise of which is that people's use of technology is directly dependent on their decision to use a particular technology (Davis, 1989).

Results from numerous studies have supported Davis' model. In particular, researchers have shown that perceived ease of use and perceived usefulness are directly related to a person's overall attitude toward and behavioral intention to use a particular technology (Mah & Er, 2009; Teo, Ursavas, & Bahçekapili, 2010; Edmunds, Thorpe, & Conole, 2012). In addition, perceived ease of use may be correlated with perceived usefulness dependent upon the technology that a person decides to use. Typically, researchers also have found that attitude toward using technology is correlated with intent to use technology, which is correlated with actual technology use.

Researchers have described various types of technology and technology users. Smartphones are the most widely used technology, and among ethnic groups, Blacks are the most frequent users of most mobile devices (Lee & Lee, 2010; Smith, 2010a). Users of mobile devices most often use the voice function on their phone, followed by the text function (Hussein & Nassuora, 2011; Lenhart, 2010). Younger and low-income Black mobile phone users tend to send and receive more texts and more often use their mobile devices to relieve boredom than older adults and mobile phone users of other ethnicities, respectively (Lenhart, 2010). Mobile phone users indicated they used their devices for a variety of reasons, including accessing information and keeping in contact with family, friends, and colleagues (Lenhart, 2010).

The mass adoption and use of Internet-connected smartphones have changed the way people communicate and access various forms of information (Brenner, 2013; Rainie & Fox, 2012). The ability to access data immediately regardless of space and time "is creating a new culture of real-time information seekers and problem solvers" (Rainie & Fox, 2012, p. 4). However, despite the prevalence of communication technologies in this digital age, mobile devices are not being used widely as a means of promoting parent/teacher communication.

Parental involvement is important in the school setting because it can promote improved student achievement. However, barriers to parental involvement exist, and low levels of parental involvement are especially prevalent among minority parents. The use of mobile devices offers a means of improving parental involvement among this population. However, "for family-school partnerships to benefit from technology, both

parents and teachers must be willing to embrace technology as a communication tool" (Rogers & Wright, 2008, p. 47). As important, strategies implemented to involve parents should be tailored to the needs of the school's culture.

Chapter 3: Research Method

Prior research has indicated that parent/teacher communication has a positive association with students' educational aspirations and students' achievement (Crosnoe, 2009; Quilliams & Beran, 2009; Topor et al., 2010). This association is especially strong for Black students (Hayes, 2011). Although current mobile devices provide a means to communicate via email, text message, instant message, and the Internet, little is known about parents' use of mobile devices to communicate with teachers.

At the time of data collection for this study, all classes at the focus school were established; therefore, this research study was non-experimental in nature and the cross-sectional correlational research design was chosen. The cross-sectional research design allowed data to be collected and analyzed quickly without continuous measures (Cohen et al., 2000). Using the convenience sampling method participants were selected from the active classroom master schedule. To collect data from these participants, the school's traditional form of communicating with parents was implemented. An invitation to participate in the research study by completing an online survey was given to students to take home for their parents/legal guardian to read and complete. The invitation was distributed to 1,529 students through the use of 57 previously scheduled classes.

After 1 1/2 weeks there were not enough completed surveys to obtain significance. Therefore, a follow-up letter was distributed for students to take home to remind their parent/legal guardian to complete an online survey. After collecting data for 3 weeks the data were analyzed using descriptive statistics, scale reliability analysis

(Cronbach's alpha), and Pearson's *r* (correlation coefficient). Results of those analyses are presented in tables and scatterplots.

Research Design and Rationale

This study was developed using a cross-sectional, correlative design. Correlations are used to examine "the extent to which differences in one characteristic or variable are related to differences in one or more other characteristics or variables" (Leedy & Ormrod, 2005, p. 180). Correlations, however, are not used to establish a cause and effect relationship (Maitland & Hannah, 2008). This design was appropriate for this research study because it allowed the ability to determine the magnitude and direction of the relationship between six indicator variables and one criterion variable (using Pearson's *r*), without attempting to determine cause and effect. The indicator variables (that formed the basis for each of the six research questions, respectively) were parents' (a) knowledge of using mobile devices, (b) general use of mobile devices, (c) purpose for using mobile devices, (d) perceived ease of using mobile devices, (e) perceived usefulness of mobile devices, and (f) attitude toward using mobile devices. The criterion variable was parents' use of mobile devices to communicate with teachers was the same for all research questions.

Using a cross-sectional sample data collected could be analyzed at one specific point in time (Cohen et al., 2000). Additionally, data was gathered and analyze quickly without continuous measures (Cohen et al., 2000). One benefit of implementing a cross-sectional sample is that it allowed the researcher to obtain a snapshot of a predetermined population using a sample drawn from the population (Wallen & Fraenkel, 2001). Other

benefits of this research study included first, the ability to collect data from multiple participants quickly, inexpensively, and simultaneously (Cohen et al., 2000). Second, an increased likelihood of participation from parents (because data are collected only once) (Cohen et al., 2000). The final benefit of this research study was a decreased likelihood of experiencing difficulties with regard to control effects (Cohen et al., 2000).

A cross-sectional sample was appropriate in this study because it allowed data to be collected inexpensively and in a time frame feasible for meeting the institutional obligations. In addition, because participant changes over time were not explored, there was no need to collect longitudinal data. A cross-sectional sample also was useful in this study because it allowed for the collection of data about the current conditions at the focus school, providing insight with immediate relevance for the focus school administrators. For these reasons, a nonexperimental study was appropriate for this research study.

Population

This study examined two populations: students and parents. The description of students in the focus school is presented to provide an overview of the school setting. The description of the parents of the students in the focus school is presented because they represent the sample population in this study. Because no demographic data were directly available for the parents of students in the focus school, the statistics for parents were taken from the general demographic data for the zip code in which the focus school is located. The general demographic data for the focus school zip code are listed in Table 1

Table 1

General Demographic Data for the Focus School Zip Code

60620 Zip Code Population and Races	%	Total
Student		
Ethnicity		
Black	98	
Multiracial	0.6	
Hispanic	0.4	
White	0.1	
Not identified	0.1	
School enrollment for 2011-2012 (district)		
Nursery school, preschool, kindergarten	75 (public) 25 (private)	2,680
Elementary school (Grades 1-8)	94 (public) 6 (private)	8,674
High school (Grades 9-12)	91 (public) 9 (private)	5,708
College	70 (public) 30 (private)	3,589
Graduate school	30 (public) 70 (private)	781
Focus School Student enrollment for 2012-2013 academic year		1,529
Parent		
Ethnicity		
Black	98	70,815
Hispanic	0.9	672
White	0.48	347
Asian	0.07	50
Native American Indian, Alaska Native, Hawaiian Native, etc.	0.17	122
Other (one race)	0.3	186
Two or more races	0.96	696
Gender		
Male	44	31,816
Female	56	40,400
Age		
Median age (male and female parents combined)		38.4 years old
Median age (male parents)		35 years old
Median age (female parents)		40.4 years old

(table continued)

60620 Zip Code Population and Races	%	Total
Education for parents 25 years old and older		
Less than high school	18	8,382
High school graduate	32	15,037
Some college or associate degree	36	17,021
Bachelor's degree	9	4,206
Master's degree, doctorate, or professional degree	4	2,097
Marital status (male residents 15 years old and over)		
Never married	53	13,323
Married	32	8,107
Widowed	4.4	1,099
Divorced	10	2,497
Marital status		
Never married	50	16,858
Married	24	8,036
Widowed	13	4,464
Divorced	13	4,209

Sampling Method

Convenience sampling was used to recruit participants in this study. When using convenience sampling, researchers make "no pretense of identifying a representative subset of a population" (Leedy & Ormrod, 2005, p. 206) but rather "include[s] in their sample people that [sic] are available or volunteer or can be easily recruited and are willing to participate in the research study" (Johnson & Christensen, 2004, p. 214) and thus are convenient for selection In order to answer the specific research questions posed in this study, particular participants were necessary, which were the parents of actively enrolled students at the focus high school. Parents were easy to access using the school's traditional way of communicating with parents, which was to distribute the letter of invitation to students. Students were asked to take the letter of invitation home for their parent/legal guardian to read and complete. Thus, convenience sampling was appropriate to ensure these unique participants were recruited.

Johnson and Christensen (2004) stated that when researchers use convenience sampling, they are unable to generalize to the larger population because the study sample may not adequately represent that larger population. Johnson and Christensen suggested that researchers thoroughly describe the characteristics of the study sample. Only parents or legal guardians of a child actively attending the focus school during the 2013–2014 academic year were eligible to participate in this study. Age, gender, marital status, socioeconomic status, English language proficiency, literacy, and educational level were not used as criteria for parental participation in the research study because the sample size is small and there are no subgroups to examine differences and similarities between subgroups in the population.

To determine the number of participants needed to achieve statistical significance for data analysis in this study an a priori power analysis was conducted for an *F*-test using G*Power 3.1.5. Cohen (1992) recommended using a moderate effect size (f^2) of .15, an alpha error of probability of .05 and a power of no less than .80. A power of .80 is necessary to appropriately reject the null hypothesis in this research study, which indicated that there is no relationship between parents' (a) knowledge of using mobile devices, (b) general use of mobile devices, (c) purpose for using mobile devices, (d) perceived ease of using mobile devices, (e) perceived usefulness of mobile devices, (f) attitude toward using mobile devices, and (g) use of mobile devices to communicate with teachers. The power analysis also helped to determine how many participants were necessary for this research to be meaningful and produce statistical significance.

A power analysis provides information for determining the minimum number of subjects you need to collect in order to make your study worthwhile. All quantitative studies should conduct a power analysis to ensure that certain conditions are met to reject the null hypothesis correctly. However, a more rigorous power of .95 was selected for this study to increase the chance of finding a statistically significant difference to reject the null hypothesis appropriately. For six indicators, the required sample size was 138 participants.

Research has indicated that response rates can vary based on the type of delivery method (e.g., mail, internal mail, in person, email, phone, and web) and type of participant (e.g., those at the individual level vs. those at the organizational level; Baruch & Holtom, 2008). When all delivery methods of past research studies were combined, the average response rate for individuals was 52.7% (min. 3.0, max. 91.2), and when both groups were combined, the average response rate was 44.7% (min. 19.7, max. 94.0) for mail surveys and 38.9% (min. 10.6, max. 69.5) for web-based surveys (Baruch & Holtom, 2008). When applying this logic to this research study, to obtain data from 138 participants using the average response rate of 52.7%, 262 surveys needed to be distributed. To get data on 138 participants for this research study, using the average response rate of 44.7% 309 surveys needed to be distributed. Finally, to get data on 138 participants for this research study, using the average response rate of 38.9%, 355 surveys needed to be distributed. However, because these response rates were based on conditions that did not mirror exactly those in this study (the use of a mailed invitation to invite participation in a web-based survey) and the survey was long and involved, the researcher

anticipated that the response rate would be low. In order to ensure the collection of at least 138 surveys, it was necessary to overcompensate by distributing invitations to participate in the research study to all students in the school (1,529 students).

At the time of data collection for this study, all classes at the focus school were established. For this reason, the school's master class schedule was used to select potential participants. The school's master classroom schedule included information regarding classroom location within the school building, classroom teacher, and subject taught in the classroom, which was used to determine the grade level of the students. The average class size in the focus school was 30 students. To eliminate redundancy in the distribution of 1,529 invitations to participate in the study, letters were distributed to (a) sophomore, junior, and senior students during their major (vocational) classes or during other classes if the students were non-majors and (b) freshman students during physical education classes (see Appendix A). There were 47 sophomore, junior, and senior classes taught by 22 teachers, and 10 freshman classes taught by two teachers for a total of 57 classes among 24 teachers.

Data Collection

Prior to conducting this study, all appropriate permissions were obtained, including permission from (a) Walden University's Institutional Review Board (#04-21-14-0106035) to conduct this study, (b) the school administrators (see Appendix B) to recruit participants at the study site, and (c) the creators of the two instruments on which the research instrument for this research study was based, Rainie and Keeter (2006) and Holden (2009). See Appendix C for the letters of permission to use the instruments. Upon

receiving approval, the data collection process began, which was completed in one phase. Details about the data collection instrument are provided in the Instrumentation section.

Data were collected on parents'/legal guardians' (a) knowledge of using mobile devices, (b) general use of mobile devices, (c) purpose for using mobile devices, (d) perceived ease of using mobile devices, (e) perceived usefulness of mobile devices, and (f) attitude toward using mobile devices. In addition, demographic data were collected. In particular, data were collected on the parents'/legal guardian's relationship to the student, ethnicity, marital status, age range, and income. Also, data were collected about what technology parents or legal guardians own, how long they have owned particular devices, and how they access their devices. Finally, data were collected on the student's gender and grade level.

The participant recruitment process began with an email announcement (see Appendix F) to teachers inviting them to attend a 15-minute informal information session on this doctoral research study. The information sessions were conducted 2 days after sending the invitational email to the selected teachers. During the information session, the doctoral student status at Walden University was explained and that currently, the corresponding research study for the doctoral program was in progress. Finally, specific details were given regarding the research study, including the invitation-distribution process. In addition, it was explained to the teachers that no research would be conducted in their classrooms, the teachers would not be expected to participate in the research process in any way and only the teachers permission was needed to enter their classrooms to present a similar information session to their students and distribute the invitations

during the last 15 of one class session (the presentations were not likely to take more than 5 minutes). After the teacher presentation, as a group teachers were asked for their individual permission to enter their classes to conduct the student information session. All teachers in the group provided permission, giving 100% permission from the teachers. The following full school day, invitations to participate in this research study were distributed.

Three days were scheduled to conduct the student information sessions and distribute invitations. Presentations were made in classrooms on the first floor on Day 1, classrooms on the second floor on Day 2, and classrooms on the third floor on Day 3. As in the teacher information session, the doctoral student status at Walden University was explained and that currently, the corresponding research study for the doctoral program was in progress. Finally, specific details were given regarding the research study, including the invitation-distribution process. Then the letters of invitation were distributed to the students (see Appendix G) and as they were directed to (a) deliver the letters to their parents/legal guardians, (b) ask their parents/legal guardians to read the letter, and (c) ask their parents/legal guardians to complete the online survey.

The letter of invitation included an introduction of the background as a Walden student and as a teacher in the school. The purpose of the study was identified, as was the intent of using the collected data to promote new patterns communication between parents and teachers. Finally, the survey website address and password to access the online survey were provided.

Once parents navigated to the survey site, they were provided with a statement of informed consent (see Appendix H). They were asked to check a statement indicating agreement to the terms outlined in the informed consent. This process served as their electronic signature agreeing to participate in the study. Those who did not agree to the terms of participation were not given access to the survey and routed to a thank you letter, which asked the parent to reconsider participating in the research study. After 8 seconds, the web page automatically returned the possible participant to the online statement of informed consent for acceptance. Those who agreed to the terms of participation were routed to the survey. Participants were able to exit the study at any time by closing the survey.

Due to a low rate of return after 1 1/2 weeks of data collection, a follow-up letter of invitation (see Appendix I) was distributed to the entire student body using the same distribution process used for the initial recruitment effort. During this secondary recruitment effort, the first student presentation was repeated. After the second recruitment effort, the survey remained active online for an additional 1 1/2 weeks. All data received through the online survey were stored online under a personal username and password until data was retrieved for analysis.

Because no interventions or treatments activities were implemented in this research study, follow-up meetings with participants to review interview transcripts, performing member check-ins or both were not conducted. However, after the study was complete, the study results were disseminated using two methods. First, a letter was distributed to the entire student body using the same distribution process used for the

initial and follow-up recruitment efforts. The letter included a link to access the research findings online. Second, a hard copy of the results was placed in the school's main office for review by participants and stakeholders. The results remained in the school's main office for 2 weeks.

Instrumentation

The instrument used in this study was an amalgamation of concepts and questions from two other survey instruments: Raine and Keeter's (2006) Americans and Their Cell Phones survey and Holden's (2009) Teachers' Technology Acceptance and Usage Questionnaire (see Appendix J). These instruments were appropriate to use in this research study because these surveys provided questions directly related to variables examined in this research study: knowledge of using mobile devices, general use of mobile devices, purpose for using mobile devices, perceived ease of using mobile devices, perceived usefulness of mobile devices, and attitude toward using mobile devices as a form of communication with other individuals. In this section, there is a brief explanation of the two instruments and how they were utilized in this research study.

Instrument descriptions. Rainie and Keeter (2006) developed the Survey of Cell Phone Users instrument to describe how Americans use their cellular phones in emergencies and the effect cellular phones have on how people devote their time. Specifically, Raine and Keeter designed the 41-item, multiple choice survey to measure nine constructs: feelings toward technology, use of cellular phone when minutes were free, when cellular phone call were made, safety while driving and using the cellular phone, when calls were answered, amount of monthly bills, the locations in which

participants used their cellular phone, number of calls due to owning a cellular phone, and features that they use on their mobile devices such as the camera, email, text messaging, and music applications (for listening to music). The researchers used unique scales for each construct.

Holden (2009) developed the Teachers' Technology Acceptance and Usage Questionnaire to examine the correlation between a teacher's acceptance of technology and the use of technology in his or her classroom. Holden based the survey questions on four constructs from Davis's (1989) TAM: perceived usefulness, perceived ease of use, attitude toward using, and usage behavior. The survey was made up of six demographic questions, 96 statements, and one open comment field. The statements were divided into six sections: personal factors, general perceptions, current classroom technology usage, usefulness and ease-of-use, attitudes/perceptions, and usage behavior.

For Holden's survey, the construct Personal Factors represented a teacher's personal knowledge and use of technology. The construct *general perception* represented a teacher's personal feelings when using technology. The construct *current classroom technology usage* represented a teacher's use of instructional/educational technology offered by the school district. The constructs *usefulness and ease of use* represented a teacher's ability to use technology to enhance his or her job performance and a teacher's belief that using a particular technology would be easy. The construct *attitude/perceptions* represented a teacher's feeling toward using technology. Finally, the construct *usage behavior* represented a teacher's interaction with technology. For each section, Holden used one of three 7-point Likert-type scales. One scale ranged from 1

(*strongly disagree*) to 7 (*strongly agree*). A second scale ranged from 1 (*low*) to 7 (*high*). A third bi-modal scale ranged from 1 (*extremely*; for each given negative description) to 7 (*extremely*; for each given positive description). Between the negative and positive descriptions, 4 represented a neutral statement.

In the survey for this study, the demographic data questions made up Section 1. Section 2 was made up of one question on knowledge, Question 11, which was based on Item 6 from Rainie and Keeter's (2006) study. Section 3 was made up of three questions on general use, Questions 12-14. Question 12 was based on Item 6 of Rainie and Keeter's survey, Question 13 was based on Item 6b of Holden's (2009) survey, and Question 14 was based on Item 22 of Rainie and Keeter's survey. Section 4 was made up of four questions on purpose of use, Question 15-18, all of which were based on Item 10 of Rainie and Keeter's survey. Section 5 was made up of two questions on perceived usefulness, Questions 19 and 20, which were based on questions from the usefulness and ease-of-use section of Holden's survey. Specifically, Subitems 19a-19c were based on Item 1, Subitem 19d was based on Item 15, Subitems 19e-19f were based on Item 19, and Subitems 20a-20d were based on Item 18.

Section 6 was made up of one question on perceived ease of use, Question 21, which was based on questions from the usefulness and ease-of-use section of Holden's (2009) survey. Specifically, Subitems 21a and 21h were based on Item 14, Subitem 21b was based on Item 15, Subitems 21c and 21g were based on Item 16, Subitem 21d was based on Item 12, Subitem 21j was based on Item 17, and Subitems 21e, 21f, 21i, and 21k were based on Item 1. Section 7 was made up of two questions on attitude, Questions

22 and 23. Subitems for Question 22 were based on questions from the usage behavior section of Holden's survey. Specifically, Subitems 22a-22c were based on Items 8-10. The 11 Subitems for Question 23 were based on Items 1-1 to 1-11 from the attitudes/perceptions section of Holden's survey.

Section 8 was made up of 14 items about the use of mobile devices to communicate with teachers, Questions 24-37. Question 24 was based on Item 2 from the usage behavior section of Holden's (2009) survey. Question 25 was based on Item 6 of Rainie and Keeter's (2006) survey. Subitems for Question 26 were based on questions from the general perceptions section of Holden's survey. Specifically, Subitems 26a-26f were based on Items 3-8, and Subitems 26g-26i were based on Items 10-12. Questions 27-30 were based on Item 10 of Rainie and Keeter's survey. Questions 31-37 were based on Item 6 of Rainie and Keeter's survey.

Questions presented in section two through six required answers to every question. A table demonstrating (a) how each survey item corresponded to the original instrument item from which it was adapted and (b) how each survey item corresponded to the variables identified in the research questions is presented in Appendix K.

Instrument validity and reliability. Because the Rainie and Keeter (2006) study was descriptive in nature and the purpose was not to make inferences, the researchers did not conduct instrument reliability or validity testing. However, both Davis (1989) and Holden (2009) conducted tests to determine instrument validity and reliability. Davis used the scale refinement process to determine convergent, discriminant, and factorial validity of the constructs perceived ease of use and perceived usefulness.

Davis (1989) found that items in the perceived ease of use construct correlated more highly with other items in the same construct (convergent validity) than with items in the perceived usefulness construct (divergent validity). Holden (2009) established factorial validity of both the usage behavior and attitudes on using constructs. The smallest factor loading for items on either construct was .524. Because the instrument in this study was composed of several established instruments, determining the construct validity of the instrument using correlations would be beyond the scope of this doctoral-level study. However, because some questions on the survey were adapted from the original survey instruments or developed based on the concepts found in the original survey instruments, prior to implementing the survey, it was reviewed for apparent substantiveness and cohesion by experts in the field (two educational technology experts and one measurement and evaluation expert).

Holden (2009) reported the following Cronbach's alpha values (a measure of scale reliability): usage behavior, .916; perceived ease of use, .899; perceived usefulness, .864; and attitude toward using, .937. A Cronbach's alpha of .70 or greater is considered acceptable for research (Field, 2009). Scale reliability analysis was also conducted to evaluate the internal reliability of Holden's same scales but with the dataset for this research study. The same process was used to evaluate the internal reliability of the scales adapted from the Rainie and Keeter (2006) instrument as well.

Use of the instruments. Other researchers have used the instruments used in this research study. For example, Keeter and Kennedy (2006) used Raine and Keeter's (2006) Americans and Their Cell Phones survey to assess the possibility of conducting a phone

survey with cellular phone users. Two doctoral students used Holden's (2009) Teachers' Technology Acceptance and Usage Questionnaire. Heffernan (2012) used Holden's instrument to explore motivators of classroom technology use among elementary school teachers in Gwinnett County, Georgia as well the types of technology the teachers used. Stone (2014) used Holden's instrument to explore teacher technology acceptance and usage among middle school teachers in South Carolina.

Operationalization of variables. Variables were measured using six different ordinal scales. The numerical values from these scales were used to interpret the data, answer the research questions, and draw conclusions. Two scales on the survey were numerically based: 1 (*low*) to 6 (*high*) and 1 (*not confident at all*) to 6 (*very confident*). A third scale was a bimodal scale for sets of negative and positive conditions: 1 (*extremely*), 2 (*quite*), and 3 (*slightly*) negative; 4 (*neutral*); and 5 (*slightly*), 6 (*quite*), and 7 (*extremely*) positive. For the other three scales, only the scale anchors were provided on the survey. For these scales, Google Survey automatically assigned the appropriate scale values when calculating response frequencies and other statistics for analysis. A fourth scale was 0 (*not at all*), 1 (*somewhat*), 2 (*mostly*), and 3 (*very well*). A fifth scale was 0 (*never*), 1 (*about once a semester*), 2 (*about once a month*), 3 (*every other week*), 4 (*weekly*), 5 (*daily*), and 6 (*multiple times a day*). A sixth scale was 1 (*strongly disagree*), 2 (*moderately disagree*), 3 (*mildly disagree*), 4 (*mildly agree*), 5 (*moderately agree*), and 6 (*strongly agree*).

Knowledge of using mobile devices was defined as an individual's understanding of lightweight easily portable devices and the multiple features used for electronic

communication. This variable was measured using the scale 0 (*not at all*) to 3 (*very well*). Responses to knowledge questions about parents' use of mobile devices functions were considered reflective of their knowledge about those functions. Mean values between 0 and .75 were indicative of poor overall participant understanding of mobile device features, mean values greater than .75 and less than or equal to 1.5 were indicative of fair overall participant understanding of mobile device features, mean values greater than 1.5 and less than or equal to 2.25 were indicative of good overall participant understanding of mobile device features, and mean values greater than 2.25 and less than or equal to 3 were indicative of very good understanding of mobile device features. Thus, a response of *somewhat* on the question, "I can use the following on my mobile device: email" was scored as a 3 and indicated that the parent was knowledgeable about the technology.

General use of mobile devices was defined as an individual's basic use of lightweight easily portable devices to communicate with others. This variable was measured using three survey items. The first two survey items, general use of particular features of the device and how often the device was used, were measured on the scale 0 (*never*) to 6 (*multiple times a day*). Responses to questions about parents' general use of particular features of the device and how often the device is used were considered reflective of their general use of mobile devices. Mean values between 0 and 2 were indicative of rare usage of the function, mean values greater than 2 and less than or equal to 4 were indicative of moderate use of the function, and mean values greater than 4 and less than or equal to 6 were indicative of frequent use of the function. Thus, a response of *multiple times a day* to the question "I use the following function on my mobile device:

Instant messaging" was scored as a 5 and indicated that the parent frequently used Instant messaging on his or her mobile device.

The third survey item used to measure general use of mobile devices, was general skill using mobile devices, which refers to how often parents use their mobile device. This survey item was measured using the scale 1 (*low*) to 6 (*high*). Participant responses for this scale were interpreted directly as numerical values. Mean values between 1 and 2.66 were indicative of low skill level, mean values greater than 2.66 and less than or equal to 4.232 were indicative of moderate skill level, and mean values greater than 4.32 and less than or equal to 6 were indicative of high skill level. Thus, a response of 2 on the question "How would you rate your skill level in using mobile device?" was scored as a 2 and indicated a low level of skill.

Frequency of use of mobile devices refers to how often parents use their mobile device and was measured using the scale 0 (*never*), 1 (*about once a semester*), 2 (*about once a month*), 3 (*every other week*), 4 (*weekly*), 5 (*daily*), 6 (*multiple times a day*). Participant responses for this scale were interpreted as numerical values. Responses to questions about parents' frequency of general use of their mobile devices were considered reflective of their actual frequency of use of the devices. Mean values between 0 and 2.5 were indicative of low use of mobile devices for any particular purpose, mean values greater than 2.5 and less than or equal to 4.5 were indicative of moderate use of mobile devices for any particular purpose, and mean values greater than 4.5 and less than or equal to 6 were indicative of frequent use of mobile devices for any particular purpose. Thus, a response of *multiple times a day* to the question "I use my

mobile device" would be scored as a 6 and indicate that the parent frequently used email on his or her mobile device to communicate with teachers.

Purpose of using mobile devices was defined as an individual's reason for using lightweight easily portable devices to communicate with others. This variable was measured using the scale 0 (*never*) to 6 (*multiple times a day*). Responses to questions about parents' purpose for using particular features of the device were considered reflective of their actual purpose for using those functions. Mean values between 0 and 2.5 were indicative of low use of mobile devices for any particular purpose, mean values greater than 2.5 and less than or equal to 4.5 were indicative of moderate use of mobile devices for any particular purpose, and mean values greater than 4.5 and less than or equal to 6 were indicative of frequent use of mobile devices for any particular purpose. Thus, a response of *multiple times a day* to the question "I use email on my mobile device to: talk with my child's teachers" would be scored as a 6 and indicate that the parent frequently used email on his or her mobile device to communicate with teachers.

Perceived ease of using mobile devices was defined as how easy parents perceive it is to use the functions on their mobile device. This variable was measured using the scale 1 (*strongly disagree*) to 6 (*strongly agree*). Responses to perceived ease of use questions about parents' perceptions that a device is easy to use was considered reflective of their actual perceptions that using a particular function on their mobile device would be free of effort. Mean values between 1 and 2.66 were indicative of low ease of use, mean values greater than 2.66 and less than or equal to 4.32 were indicative of moderate ease of use, and mean values greater than 4.32 and less than or equal to 6 were indicative

of high ease of use. Thus, a response of *strongly agree* on the question "Currently, I feel that: using mobile devices is very easy for me" would be scored as a 6 and indicate that the participant perceived that using a particular system would be highly free of effort and thus easy to use.

Perceived usefulness of mobile devices was defined as how valuable (useful) parents perceive the functions on their mobile devices to be. This variable was measured using the scale 1 (*strongly disagree*) to 6 (*strongly agree*). Responses to questions about the usefulness of the functions of parents' mobile devices were considered reflective of parents' actual perspectives about the usefulness of those functions. Mean values between 1 and 2.66 were indicative of a low level of usefulness, mean values greater than 2.66 and less than or equal to 4.32 were indicative of a moderate level of usefulness, and mean values greater than 4.32 and less than or equal to 6 were indicative of a high level of usefulness. Thus, a response of *strongly agree* to the question "Currently, I feel that: using mobile devices helps me communicate with others" would be scored as a 6 and indicate that the participant perceived the functions on his or her mobile device to be highly useful for communicating with others.

Attitude toward using mobile devices was defined as an individual's perceptions about the use of lightweight easily portable devices. Responses to questions about parents' attitudes towards using mobile devices were considered reflective of their actual perceptions about the use of the mobile devices. This variable was measured using two scales. For the first scale, 1 (*strongly disagree*) to 6 (*strongly agree*), mean values between 1 and 2.66 were indicative of a negative attitude toward the use of mobile

devices, mean values greater than 2.66 and less than or equal to 4.32 were indicative of a neutral attitude toward the use of mobile devices, and mean values greater than 4.32 and less than or equal to 6.0 were indicative of a positive attitude toward the use of mobile devices. Thus, a response of *strongly agree* to the question "Currently, I am addicted to using mobile devices" would be scored as a 6 and indicate that the participant had a highly positive attitude about his or her use of mobile device.

The second scale was a bimodal scale made up of sets of negative and positive conditions: 1 (*extremely*), 2 (*quite*), and 3 (*slightly*) negative; 4 (*neutral*); and 5 (*slightly*), 6 (*quite*), and 7 (*extremely*) positive. Mean values between 1 and 1.85 were indicative of a highly negative attitude toward the negative condition, mean values greater than 1.85 and less than or equal to 2.7 were indicative of a moderately negative attitude toward the negative condition, and mean values greater than 2.7 and less than or equal to 3.55 were indicative of a slightly negative attitude toward the negative condition. Mean values greater than 3.55 but less than or equal to 4.4 were indicative of a neutral attitude toward both the negative and positive conditions. Mean values greater than 4.4 and less than or equal to 5.25 were indicative of a slightly positive attitude toward the positive condition, mean values greater than 5.25 and less than or equal to 6.1 were indicative of a moderately positive attitude toward the positive condition, and mean values greater than 6.1 and less than or equal to 7 were indicative of a highly positive attitude toward the positive condition. Thus, a response of *extremely* (toward the positive condition) to question "All things considered, my using mobile device is bad/good" would be scored as

a 7 and indicate that the parent had a highly positive attitude about his or her use of mobile device and perceived the use of mobile device to be extremely good.

Use of mobile devices to communicate with teachers was defined as the degree to which parents use their personal mobile devices to communicate with their children's teachers. Responses to items about parents' use of mobile devices to communicate with teachers were considered reflective of their use of mobile devices for that purpose. This variable was measured using three scales.

For the first scale, 0 (*never*) to 6 (*multiple times a day*), mean values between 0 and 2.5 were indicative of infrequent use of a mobile device to communicate with teachers, mean values greater than 2.5 and less than or equal to 4.5 were indicative of moderate use of a mobile device to communicate with teachers, and mean values greater than 4.5 and less than or equal to 6 were indicative of frequent use of a mobile device to communicate with teachers. Thus, a response of *multiple times a day* to the question "How often do you: respond to teachers using your mobile device" would be scored as a 6 and indicate that the parent frequently uses his or her mobile device to communicate with teachers.

For the second scale, 1 (*not confident at all*) to 6 (*very confident*), mean values between 1 and 2.66 were indicative of a low level of confidence, mean values greater than 2.66 and less than or equal to 4.32 were indicative of a moderate level of confidence, and mean values greater than 4.32 and less than or equal to 6 were indicative of a high level of confidence. Thus, a response of 4 to the question "I could contact a teacher using mobile devices if: there was no one around to tell me what to do as I go" would be scored

as a 4 and indicate the parent was moderately confident that he or she could use his or her mobile device to contact a teacher without assistance.

For the third scale, 1 (*strongly disagree*) to 6 (*strongly agree*), mean values between 1 and 2.66 indicated a parent did not prefer the identified means of communication, mean values greater than 2.66 and less than or equal to 4.32 indicated a parent moderately preferred the identified means of communication, and mean values greater than 4.32 and less than or equal to 6 indicated a parent strongly preferred the identified means of communication. Thus, a response of *strongly disagree* to the question "I prefer to communicate with teachers about my child's attendance: on the phone" would be scored as a 1 and indicate that the parent did not prefer to speak to teachers using their mobile device with regard to his or her child's attendance.

Data Analysis

Both descriptive and inferential analyses were conducted on the data collected for this study. Descriptive statistics were conducted for the sample and survey data. Frequencies, means, and standard deviations were also reported. In order to answer the research questions, inferential statistics were conducted on the survey data using SPSS Version 21. Surveys that were returned without any responses were discarded. Surveys with a large portion of the questions unanswered also were discarded.

Parents' (a) knowledge of using mobile devices, (b) general use of mobile devices, (c) purpose for using mobile devices, (d) perceived ease of using mobile devices, (e) perceived usefulness of mobile devices, and (f) attitude toward using mobile devices

were the indicator variables. Parents' use of mobile devices to communicate with teachers was the criterion variable. The research questions were as follows:

Research Question 1. Is there a significant correlation between parents' knowledge of using mobile devices and their use of mobile devices to communicate with teachers?

$H_0$1: There is no significant correlation between parents' knowledge of using mobile devices and their use of mobile devices to communicate with teachers.

H_A1: There is a significant correlation between parent's knowledge of using mobile devices and their use of mobile devices to communicate with teachers.

Research Question 2. Is there a significant correlation between parents' general use of mobile devices and their use of mobile devices to communicate with teachers?

$H_0$2: There is no significant correlation between parents' general use of mobile devices and their use of mobile devices to communicate with teachers.

H_A2: There is a significant correlation between parents' general use of mobile devices and their use of mobile devices to communicate with teachers.

Research Questions 3. Is there a significant correlation between parents' purpose for using mobile devices and their use of mobile devices to communicate with teachers?

$H_0$3: There is no significant correlation between parents' purpose for using mobile devices and their use of mobile devices to communicate with teachers.

H_A3: There is a significant correlation between parents' purpose for using mobile devices and their use of mobile devices to communicate with teachers.

Research Questions 4. Is there a significant correlation between parents' perceived ease of using mobile devices and their use of mobile devices to communicate with teachers?

$H_0$4: There is no significant correlation between parents' perceived ease of using mobile devices and their use of mobile devices to communicate with teachers.

H_A4: There is a significant correlation between parents' perceived ease of using mobile devices and their use of mobile devices to communicate with teachers.

Research Questions 5. Is there a significant correlation between parents' perceived usefulness of mobile devices and their use of mobile devices to communicate with teachers?

$H_0$5: There is no significant correlation between parents' perceived usefulness of mobile devices and their use of mobile devices to communicate with teachers.

H_A5: There is a significant correlation between parents' perceived usefulness of mobile devices and their use of mobile devices to communicate with teachers.

Research Questions 6. Is there a significant correlation between parents' attitude toward using mobile devices and their use of mobile devices to communicate with teachers?

$H_0$6: There is no significant correlation between parents' attitude toward using mobile devices and their use of mobile devices to communicate with teachers.

H_A6: There is a significant correlation between parents' attitude toward using mobile devices and their use of mobile devices to communicate with teachers.

Prior to analyzing the data using Pearson's *r*, three conditions must be met. First, there must be a linear relationship between each indicator variable and the criterion variable. Using SPSS, a scatter plot was created to test for linearity for each set of variables. In a scatter plot, a straight line indicates linearity while a curved line indicates nonlinearity (Triola, 2004). Second, outliers must be identified and removed from the data set. Using the same scatter plot, a test for outliers was conducted by looking for data points that rested outside the pattern created by the rest of the data set as described by Triola (2004). Third, normality of the data set must exist (Triola, 2004). For a successful test of normality to be conducted, the data must have bivariate normality (Triola, 2004). When bivariate normality exists, all variables will be normally distributed (Triola, 2004). To determine normality, an analysis of the data was conducted by construct to determine the means and standard deviations and thereby determine normality. Finally, Pearson's correlations were conducted to answer all the research questions. Specifically, this analysis was used to determine the strength and direction of the relationships between the variables. By conducting this analysis, the data was generated to determine whether the null hypotheses should be accepted or rejected.

Threats to Validity

Because this study was based on a cross-sectional correlative design, it was non-experimental in nature. Therefore, no intervention was assessed, and no pre- and posttests were be implemented. For this reason, risk to the study's internal validity was confined to issues associated with the study instrument and participant selection. However, all participants completed the same survey using the same online format, and the participants

were asked to complete the survey once during a 3-week period; therefore, little risk to internal validity existed with regard to the inconsistencies in implementing the instrument or changes in the instrument or participants over time. In addition, because all parents of students at the focus school were invited to participate in this research study, there was little likelihood of selection bias resulting in the return of surveys from only a portion of the population with a specific characteristic.

Threats to external validity are selection interaction, reactive arrangement, and small sample size. Because this study was nonexperimental in nature and no treatment was implemented, there was no risk of an interaction effect based on participant selection or treatment. Because participants completed the survey online, they did so in a space and time of their choosing. Thus, there was no risk of reactive arrangement. A small sample size may jeopardize a study's external validity by affecting a researcher's ability to generalize results to the larger population. Based on the sample size achieved for this study, the results were not generalizable to the larger population outside of the focus school. However, because parents of all students in the focus school were invited to participate in the study, it was fair to assume that the study sample was a relatively accurate representation of the larger population at the focus school.

Ethical Considerations

Federal law requires the protection of all study participants from harm throughout the research process. In any research study that involves the use of human subjects, it is the researcher's responsibility to be aware of the potential harm any participating subject may incur regardless of the administration of a treatment (Cohen et al., 2000). To ensure

an understanding of the ethical considerations of participants in this study, an online course Protecting Human Research Participants sponsored by the National Institutes of Health was completed. Besides the completion of the NIH course, ethical research practices were followed to protect the rights of all participants. Additionally, prior to engaging human participants in the data collection process, approvals were obtained from Walden University and the focus school administrator.

After these approvals were obtained and before the participants were allowed to participate in the actual research study, participants were asked to read the online consent form and agree to the conditions of participation as suggested by Cohen et al. (2000). The consent form included a short synopsis of the study with details about the study's purpose, instructions on how to participate in the study, and the participants' ability to refuse to participate and withdraw from the study at any time.

For this research study, participants' privacy was respected, their identities were protected, and confidentiality was maintained throughout the research study to ensure ethical treatment of all participants. Ethical treatment was ensured in these capacities because (a) only one invitation letter and one follow-up letter was sent to recruit participants, (b) only one person had access to the school's master log of student names, and (c) the invitation included a unique username and password to ensure authentication of the participant. In addition, all data were collected using an online form that captured and stored data without tracking individual IP or email addresses. Furthermore, after the study was completed, all data and the results were erased from the personal computer and

stored on a password protected external hard drive for 5 consecutive years before being erased according to Walden University guidelines.

As a concerned teacher and mother, a specific place was chosen to conduct the research study (a place of employment - the focus school) to gain a better understanding of the use of mobile devices to communicate with parents, insight that could be used to improve parental involvement within the school, especially for Black students. However, there were no direct interactions with parents prior to or during the research process. Because there was no connection with parents, parents should not have felt pressured to participate in the study in any way. Although some teachers have children who attend the focus school, there was no authoritative power over these teachers or authority in the school that may have otherwise caused a coworker who is a parent to participate in the research study. Additionally, participation was not expected based on employment status, meaning that coworkers were not coerced to participate.

Summary

In this cross-sectional, correlative study, the indicator variables were parents' (a) knowledge of using mobile devices, (b) general use of mobile devices, (c) purpose for using mobile devices, (d) perceived ease of using mobile devices, (e) perceived usefulness of mobile devices, and (f) attitude toward using mobile devices. The criterion variable was parents' use of mobile devices to communicate with teachers. The six research questions for this study were generated from the six indicator variables.

Invitations to participate in the study were distributed to the parents of the 1,529 students in the focus school. Data were collected using an online survey, which included

items from the research study of Raine and Keeter's (2006) Americans and Their Cell Phones survey and Holden's (2009) Teachers' Technology Acceptance and Usage Questionnaire. Participant responses to survey items were measured using six difference scales. Both descriptive and inferential statistics were performed. Specifically, Pearson's correlations were performed to determine the relationships between the indicator variables and the criterion variable and thus answer the research questions. Results of the analyses are presented in Chapter 4.

Chapter 4: Results

The purpose of this cross-sectional correlational study was to determine the relationships between parents' (a) knowledge of using mobile devices, (b) general use of mobile devices, (c) purpose for using mobile devices, (d) perceived ease of using mobile devices, (e) perceived usefulness of mobile devices, (f) attitude toward using mobile devices (the indicator variables) and (g) use of mobile devices to communicate with teachers (the criterion variable). The six research questions encompass the six indicator variables with relation to the one criterion variable and are addressed individually later in this chapter where the results for each research question are discussed. Likewise, the null and alternate hypotheses indicating the lack of or existence of a significant relationship between the variables are addressed individually later in this chapter where the results for each research question are discussed.

Data analysis indicated there was a positive correlation between five of the indicator variables (knowledge of using mobile devices, purpose for using mobile devices, perceived ease of using mobile devices, perceived usefulness of mobile devices and attitude toward using mobile devices) and the criterion variable. At the time of data analysis, an error in the survey directions was discovered for the variable general use of mobile devices. Rather than instructing parents to respond to the general use items based on their general use of mobile devices, the directions instructed parents to respond to the general use items based on their general use of mobile devices to communicate with their child's teachers. For this reason, these data were not included in the analyses.

Each of the five indicator variables (knowledge of using mobile devices, purpose for using mobile devices, perceived ease of using mobile devices, perceived usefulness of mobile devices and attitude toward using mobile devices) was statistically significant. The levels significance provided support to accept the alternative hypothesis indicating that there was a significant correlation between the variables. This indicated that as the indicator variable increased, so did the use of mobile devices to communicate with teachers for all three scales. Specifically, moderate to strong positive correlations were found between Scale 3 of the criterion variable and the five-indicator variables: (a) knowledge of using mobile devices, $r = .42$, $p < .001$; (b) purpose for using mobile devices, $r = .48$, $p < .001$; (c) perceived ease of using mobile devices, $r = 46$, $p = < .001$; (d) perceived usefulness of mobile devices, $r = .61$, $p < .001$; and attitude toward using mobile devices, $r = .57$, $p < .001$.

This chapter begins with a discussion of aspects associated with data collection. The remainder of the chapter is a presentation of the study results. Results of both descriptive and inferential statistics are presented.

Data Collection

Invitations to participate in the study were distributed to 1,529 parents. By the end of the second week of data collection, only 56 parents had completed the survey. To obtain additional participants, a second planned invitation to participate in the research study was distributed to students to take home to their parents. Although 102 parents accessed an survey online, ultimately, only 73 parents completed the survey during the 3-week data collection period between April 29, 2014 and May 20, 2014. This data

represents a 4.87% response rate, a rate considerably lower than what was anticipated and too low to determine the significance of the analyses. During the 3-week data collection period, after 1 1/2 weeks passed, there were not enough completed surveys to obtain significance. Therefore, a follow-up letter was distributed for students to take home to remind their parent/legal guardian to complete the online survey. Distribution of the follow-up letters generated additional responses, but not enough to increase the overall response rate

The findings presented in this chapter represent only the opinions expressed by parents or legal guardians who participated in the research study. Therefore, it cannot be concluded from the results that the opinions of the sample represent the opinions of those who are in the population (i.e., including the parents/legal guardians who elected not to participate in the research study by completing the survey). In general, the majority of parents/legal guardians responding to the survey were biological relatives of a child attending this school, Black/non-Hispanic, and married. The respondents were all between the ages 40 and 49 and parents or legal guardians of 12th-grade students.

Results

Data were gathered using a survey created in Google Forms. After collecting data for 3 weeks, the data were analyzed using descriptive statistics, scale reliability analysis (Cronbach's alpha), and Pearson's *r* (correlation coefficient). Each of the five indicator variables (knowledge of using mobile devices, purpose for using mobile devices, perceived ease of using mobile devices, perceived usefulness of mobile devices and attitude toward using mobile devices) was statistically significant. The level's

significance provided support to accept the alternative hypothesis indicating that there was a significant correlation between the variables. This result indicated that as the indicator variable increased, so did the use of mobile devices to communicate with teachers for all three scales. Results of those analyses are presented in this section. First, descriptive statistics for participant demographics are presented. Second, results of the scale reliability analysis are presented. Finally, results pertaining to the research questions and hypothesis testing are presented.

Descriptive Statistics

The descriptive statistics for the participants' demographics are listed in Table 2. Of the 73 participants in this research study, 56 were biological parents (76.7%), 72 were Black/non-Hispanic (98.6%), 29 were never married (39.7%), and 35 were between the ages 40-49 years old (47.9%). The majority of the participants (n = 29) were the parent/legal guardians of 12th grade students (39.7%).

The descriptive statistics for the participants' technology characteristics are listed in Table 3. Of the participants, 42 (57.0%) indicated that they owned a device with 4G speed (a 4th -generation mobile device protocol that allows mobile devices faster access to information on the Internet and 46 (63.0%) of the participants could access their mobile devices 100% of the time). In addition, 66 (90.4%) owned a laptop or desktop computer.

Table 2

Descriptive Statistics for Parent/Legal Guardian (Personal Characteristics)

Variable	*n*	%
Relationship to student		
Aunt	1	1.4
Biological parent	56	76.7
Legal guardian	15	20.5
Other	1	1.4
Ethnic group		
American Indian/Native American	1	1.4
Black/non-Hispanic	72	98.6
Marital status		
Divorced	7	9.6
Married	24	32.9
Never married	29	39.7
Separated	7	9.6
Widowed	6	8.2
Age range		
30 - 39	23	31.5
40 - 49	35	47.9
50 - 59	13	17.8
60 and over	2	2.7
Child's gender		
Female	46	63.0
Male	27	37.0
Grade level		
9	1	1.4
10	19	26.0
11	24	32.9
12	29	39.7

Table 3

Descriptive Statistics for Parent/Legal Guardian (Technology Ownership)

	n	%
The speed of my mobile device is		
2G	5	6.8
3G	26	35.6
4G	42	57.5
I own a laptop or desktop computer		
No	7	9.6
Yes	66	90.4
I also own a		
iPad/Android tablet	16	21.9
iPhone	15	20.5
Personal Digital Assistant (PDA)	3	44.1
Smartphone	39	53.4
I can access my mobile device		
20% of the time	4	5.5
40% of the time	2	2.7
60% of the time	6	8.2
80% of the time	15	20.5
100% of the time	46	63.0

Scale Reliability Analysis

When surveys are used to collect data, instrument reliability should be established using a measure of internal consistency before inferential data analysis is performed. To determine internal consistency of the instrument for this study, SPSS was used to calculate Cronbach's alphas on all constructs of the survey. Cronbach's alpha is a coefficient of reliability indicating a level of internal consistency for the items in a scale (Laerd, 2013). A reliability coefficient of .70 or higher is recommended and accepted by most researchers (Field, 2009; Laerd, 2013).

Descriptive statistics and the Cronbach's alphas for mobile device use constructs are presented in Table 4. All constructs had acceptable internal consistency (> .70). The lowest alpha coefficient obtained for the indicator variables was .770 for the construct knowledge of mobile devices (survey item 11), which consisted of four sub-items. The indicator variable scale with the highest alpha value (.973) was the construct attitude toward using mobile devices (survey item 23), which consisted of 11 sub-items. The construct use of mobile devices to communicate with teachers (criterion variable) had the highest Cronbach's alpha scores of all scales, with a value of .987. The corresponding survey questions about use of mobile devices to communicate with teachers were survey items 24, 25, and 32-36.

Table 4

Descriptive Statistics and Cronbach's Alphas for Mobile Device Use

Construct	*n*	Min.	Max.	*M*	*SD*	α
Knowledge of using mobile devices						
Parents understanding how to use their mobile device	73	.00	3.00	2.22	.819	.770
General use of mobile devices						
Parents basic use of their mobile device	73	.00	6.00	4.42	1.66	.818
Parents skill level using their mobile device	73	1.00	6.00	4.43	1.11	
Purpose for using mobile devices						
Parents reason for using their mobile devices	73	.00	6.08	2.90	1.49	.888
Perceived ease of use						
Parents opinion toward using their mobile devices	73	1.18	6.00	4.74	1.11	.944
Perceived usefulness of mobile devices						
Value parents place on the functions on their mobile devices	73	2.00	6.00	4.48	1.13	.877
Attitude toward using mobile devices						
Parents favorable opinion toward using their mobile devices	73	1.00	6.00	3.33	1.69	.880
The positive/negative scale toward using their mobile device	73	1.00	7.00	3.53	1.45	.973

(*table continues*)

Construct	*n*	Min.	Max.	*M*	*SD*	α
Use of mobile devices to communicate with teachers						
Parents frequent use of mobile technology	73	.00	6.00	1.67	1.68	.987
Parents confidence using their mobile device	73	1.00	6.00	3.78	1.60	.950
Parents preference toward using their mobile device	73	1.00	6.00	3.61	1.06	.942

Hypothesis Testing

To test the six hypotheses, the Pearson product-moment correlation coefficient was calculated. There was more than one response choice scale for clusters of survey items measuring some variables. Therefore, three of the indicator variables (general use of, purpose for using, and attitude toward using mobile devices) yielded two separate scales each, and the criterion variable yielded three separate scales.

Research Question 1. Survey item 11 was used to answer Research Question 1, "Is there a significant correlation between parents' knowledge of using mobile devices and their use of mobile devices to communicate with teachers?" Table 5 shows the results of the correlation analysis between participants' knowledge of using mobile devices and their use of mobile devices to communicate with teachers.

Table 5

Correlations Between Knowledge of Using Mobile Devices and Use of Mobile Devices to Communicate With Teachers

Use of Mobile Devices to Communicate with Teachers	*r*	*p*
Parents frequent use of mobile technology	.20	.089
Parents confidence using their mobile device	.24*	.042
Parents preference toward using their mobile device	.42**	< .001

*$p < .05$. **$p < .01$.

There was a very weak, positive correlation between the knowledge of using mobile device*s* scale and the use of mobile devices to communicate with teachers, Scale 1, $r = .20$, $p = .089$; however, as indicated by the *p* value, the correlation was not statistically significant. There was also a weak, positive correlation between the knowledge of using mobile devices scale and the use of mobile devices to communicate with teachers, Scale. 2, $r = .24$, $p = .042$, and this relationship was statistically significant. There was a moderate, positive statistically significant correlation between the knowledge of using mobile devices scale and the use of mobile devices to communicate with teachers, Scale 3, $r = .42$, $p < .001$. As knowledge of using mobile devices increased, so did use of mobile devices to communicate with teachers. The *p* values of the last two correlation coefficients were less than .05; therefore, there was support to accept the alternate hypothesis that there is a significant correlation between parents' knowledge of using mobile devices and their use of mobile devices to

communicate with teachers and reject the null hypothesis. This relationship is shown graphically in Figure 2.

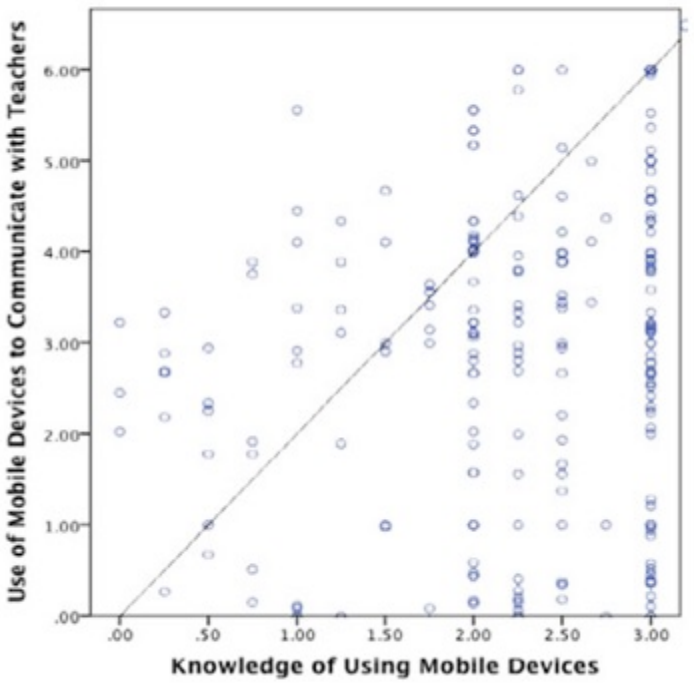

Figure 2. Scatter plot of the correlation between knowledge of using mobile devices and use of mobile devices to communicate with teachers (Research Question 1).

Research Question 2. Survey Items 12-14 were used to answer Research Question 2, which was, "Is there a significant correlation between parents' general use of mobile devices and their use of mobile devices to communicate with teachers?" At the time of data analysis, an error in the survey directions was discovered for the construct general use of mobile devices. Rather than instructing parents to answer the general use items based on their general use of mobile devices, the directions instructed parents to answer the general use items based on their general use of mobile devices to

communicate with their child's teachers. It is possible that parents did not read the directions and addressed the items directly assuming they were related to their general use of mobile devices rather than their general use of mobile devices to communicate with teachers. However, it also is possible that parents did read and follow the directions, in which case the collected data would not represent parents' general use of mobile devices. For this reason, these data were not included in the analyses or subsequent discussion of the results in Section 5.

Research Question 3. Survey Items 15, 16, 17, and 18 were used to answer Research Question 3, which was, "Is there a significant correlation between parents' purpose for using mobile devices and their use of mobile devices to communicate with teachers?" Table 6 shows the results of the correlation analysis between the purpose for using mobile devices and the use of mobile devices to communicate with teachers' scales.

Table 6

Correlations Between Purpose for Using Mobile Devices and Use of Mobile Devices to Communicate With Teachers

Use of Mobile Devices to Communicate with Teachers	*r*	*p*
Parents frequent use of mobile technology	.46**	< .001
Parents confidence using their mobile device	.23*	.045
Parents preference toward using their mobile device	.48**	< .001

*p < .05. ** p < .01

There was a moderate, positive correlation between the purpose for using mobile devices scale and the use of mobile devices to communicate with teachers Scale 1, $r = .46$ $p < .001$. As indicated by the p value, the correlation was statistically significant. There was also a weak, positive correlation between the purpose for using mobile devices scale and the use of mobile devices to communicate with teachers Scale 2, $r = .23$, $p = .045$. This correlation was statistically significant. Finally, there was a moderate, positive correlation between the purpose for using mobile devices scale and the use of mobile devices to communicate with teachers Scale 3, $r = .48$, $p < .001$. This relationship was statistically significant. As the purpose for using mobile devices increased, so did the use of mobile devices to communicate with teachers. The p-values of all three correlation coefficients were less than .05; therefore, there was complete support to accept the alternative hypothesis, that there is a significant correlation between a parent's purpose for using mobile devices and their use of mobile devices to communicate with teachers and reject the null hypothesis. This relationship is shown graphically in Figure 3.

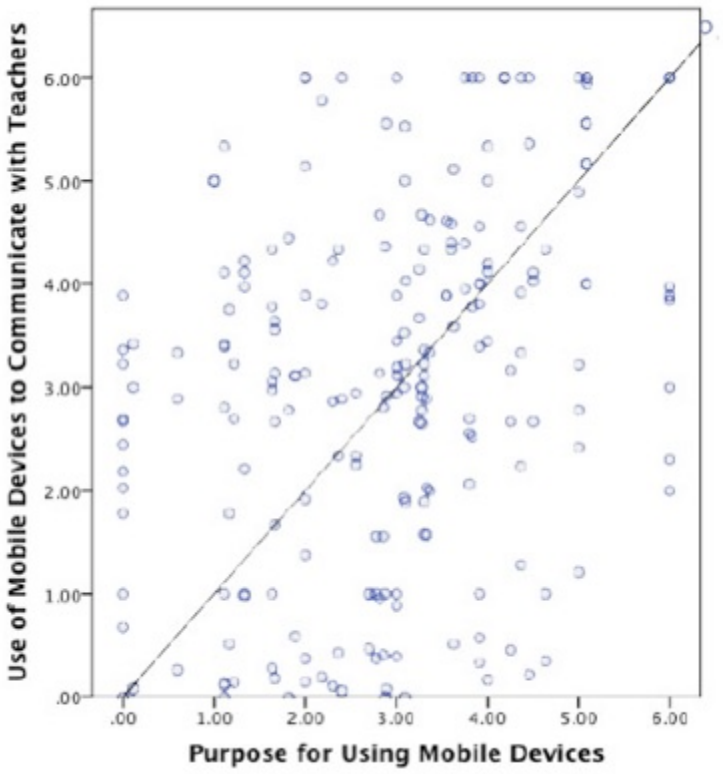

Figure 3. Scatterplot of the correlation between purpose for using mobile devices and use of mobile devices to communicate with teachers (Research Question 3).

Research Question 4. Survey Item 21 was used to answer Research Question 4, which was, Is there a significant correlation between parents' perceived ease of using mobile devices and their use of mobile devices to communicate with teachers. Table 7 shows the results of the correlation analysis between the perceived ease of using mobile devices and the use of mobile devices to communicate with teachers' scales.

Table 7

Correlations Between Perceived Ease of Using Mobile Devices and Using Mobile Devices to Communicate With Teachers

Use of Mobile Devices to Communicate with Teachers	*r*	*p*
Parents frequent use of mobile technology	.18	.118
Parents confidence using their mobile device	.38**	.001
Parents preference toward using their mobile device	.46**	< .001

*$p < .05$. **$p < .01$.

There was a very weak, positive correlation between the perceived ease of using mobile devices scale and the use of mobile devices to communicate with teachers Scale 1, $r = .18$ $p = .118$; however, as indicated by the p value, the correlation was not statistically significant. Nevertheless, there was also a moderate, positive correlation between the perceived ease of using mobile devices scale and the use of mobile devices to communicate with teachers Scale 2, $r = .38$, $p = .001$. This relationship was statistically significant. Finally, there was a moderate, positive correlation between the perceived ease of using mobile devices scale and the use of mobile devices to communicate with teachers Scale 3, $r = .46$, $p = < .001$. The relationship was statistically significant. As perceived ease of using mobile devices increased, so did use of mobile devices to communicate with teachers. The p values of the last two correlation coefficients were less than .05; therefore, there was support to accept the alternate hypothesis that there is a significance correlation between parents' perceived ease of

using mobile devices and their use of mobile devices to communicate with teachers and reject the null hypothesis. This relationship is shown graphically in Figure 4.

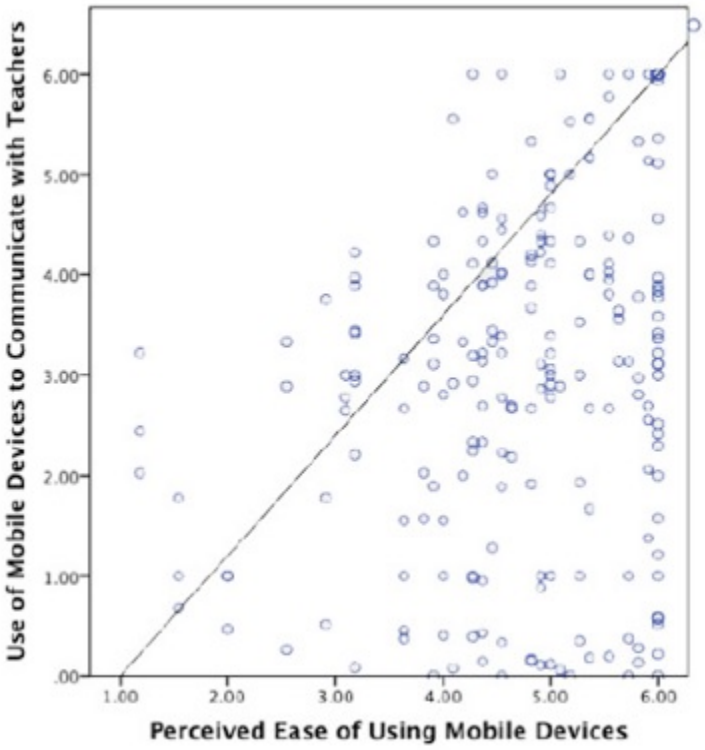

Figure 4. Scatterplot of the correlation between perceived ease of using mobile devices and use of mobile devices to communicate with teachers (Research Question 4).

Research Question 5. Survey Items 19 and 20 were used to answer Research Question 5, which was, Is there a significant correlation between parents' perceived usefulness of mobile devices and their use of mobile devices to communicate with teachers? Table 8 shows the results of the correlation analysis between perceived usefulness of mobile devices and use of mobile devices to communicate with teachers.

Table 8

Correlations Between Perceived Usefulness of Mobile and Use of Mobile Devices to Communicate With Teachers

Use of Mobile Devices to Communicate with Teachers	*r*	*p*
Parents frequent use of mobile technology	.38**	< .001
Parents confidence using their mobile device	.30**	.010
Parents preference toward using their mobile device	.61**	< .001

*$p < .05$. **$p < .01$.

There was a moderate, positive correlation between the perceived usefulness of mobile devices scale and the use of mobile devices to communicate with teachers Scale 1, $r = .38$ $p = < .001$. As indicated by the p value, the correlation was statistically significant. There was also a moderate, positive correlation between the perceived usefulness of mobile devices scale and the use of mobile devices to communicate with teachers Scale 2, $r = .30$, $p = .010$. This relationship was statistically significant. Finally, there was a strong, positive correlation between the perceived usefulness of mobile devices scale and the use of mobile devices to communicate with teachers Scale 3, $r = .61$, $p < .001$. This relationship was statistically significant. As perceived usefulness of mobile devices increased, so did use of mobile devices to communicate with teachers. The p values of the last two correlation coefficients were less than .05; therefore, there was support to accept the alternate hypothesis that there is a significant correlation between parents' perceived usefulness of mobile devices and their use of mobile devices

to communicate with teachers and reject the null hypothesis. This relationship is shown graphically in Figure 5.

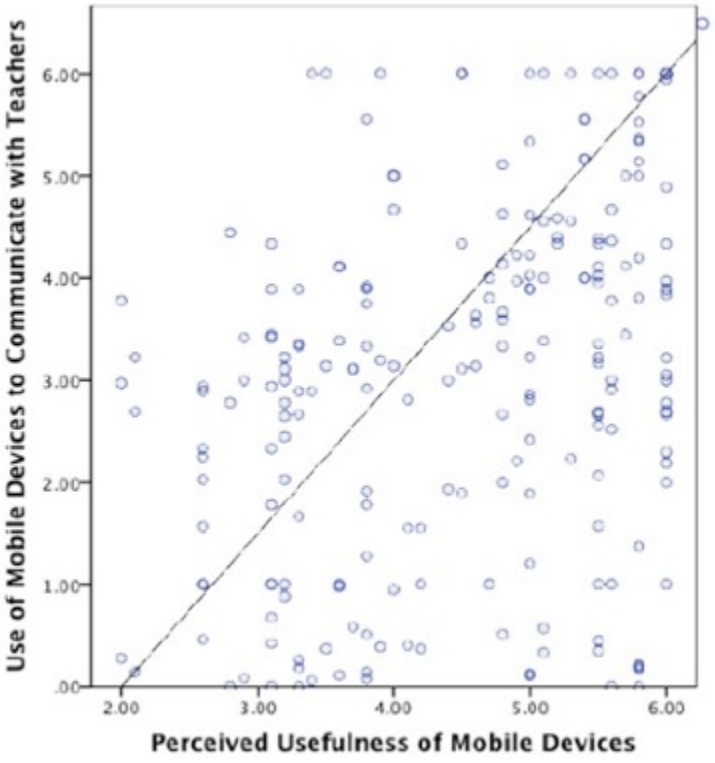

Figure 5. Scatterplot of the correlation between perceived usefulness of mobile devices and use of mobile devices to communicate with teachers (Research Question 5).

Research Question 6. Survey Items 22 and 23 were used to answer Research Question 6, which was, Is there a significant correlation between parents' attitude toward using mobile devices and their use of mobile devices to communicate with teachers? There are two scales for the construct attitude toward using mobile devices. Table 9 shows the results of the correlation analysis between the attitude toward using mobile

devices Scale 1 and the three uses of mobile devices to communicate with teachers' scales.

Table 9

Correlations Between Attitude Toward Using Mobile Devices, Scale 1 and Use of Mobile Devices to Communicate With Teachers

Use of Mobile Devices to Communicate with Teachers	*r*	*p*
Parents frequent use of mobile technology	.32**	.005
Parents confidence using their mobile device	.29*	.011
Parents preference toward using their mobile device	.57**	< .001

*$p < .05$. **$p < .01$.

There was a moderate, positive relationship between attitude toward using mobile devices Scale 1 and the use of mobile devices to communicate with teachers Scale 1, $r = .32$, $p = .005$. This relationship was significant. Additionally, there was a weak, positive correlation between attitude toward using mobile devices Scale 1 and the use of mobile devices to communicate with teachers Scale 2, $r = .29$, $p = .011$, which also was statistically significant. Finally, there was a strong, positive correlation between the attitude toward using mobile devices Scale 1 and use of mobile devices to communicate with teachers Scale 3, $r = .57$, $p < .001$. This relationship was statistically significant.

Table 10 shows the results of the correlation analysis between attitude toward using Mobile devices Scale 2 and the three uses of mobile devices to communicate with teachers scales. For the attitude toward using mobile devices Scale 2, there was a weak,

positive correlation between and the use of mobile devices to communicate with teachers Scale 1, $r = .29$, $p = .012$. This relationship was statistically significant.

Table 10

Correlations Between Attitude Toward Using Mobile Devices, Scale 2 and Use of Mobile Devices to Communicate With Teachers

Use of Mobile Devices to Communicate With Teachers	*r*	*p*
Parents frequent use of mobile technology	.29*	.012
Parents confidence using their mobile device	.31**	.006
Parents preference toward using their mobile device	.30**	.010

*$p < .05$. **$p < .01$.

Furthermore, there was a moderate, positive correlation between attitude toward using mobile devices Scale 2 and the use of mobile devices to communicate with teachers Scale 2, $r = .31$, $p = .006$, which was not statistically significant. Finally, there was a moderate, positive correlation between the attitude toward using mobile devices Scale 2 and the use of mobile devices to communicate with teachers Scale 3, $r = .30$, $p = .010$. This relationship was statistically significant. As attitude toward using mobile devices increased, so did use of mobile devices to communicate with teachers. Overall, the *p* values of six correlation coefficients were less than .05; therefore, there was support to accept the alternate hypothesis that there is a significant correlation between parents' attitude toward using mobile devices and their use of mobile devices to communicate with teachers and reject the null hypothesis. These relationships are shown graphically in the scatterplots in Figures 6 and 7.

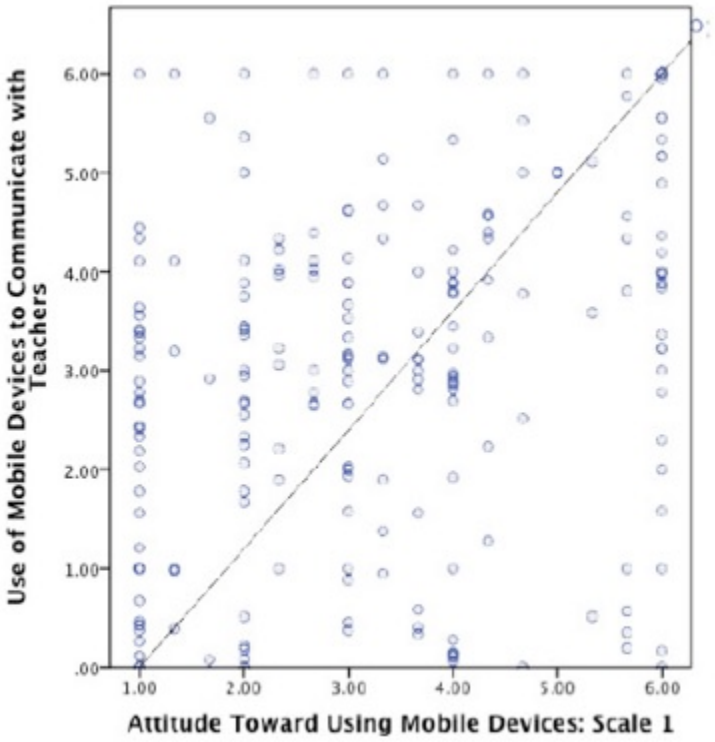

Figure 6. Scatterplot of the correlation between attitude toward using mobile devices, Scale 1 and use of mobile devices to communicate with teachers (Research Question 6).

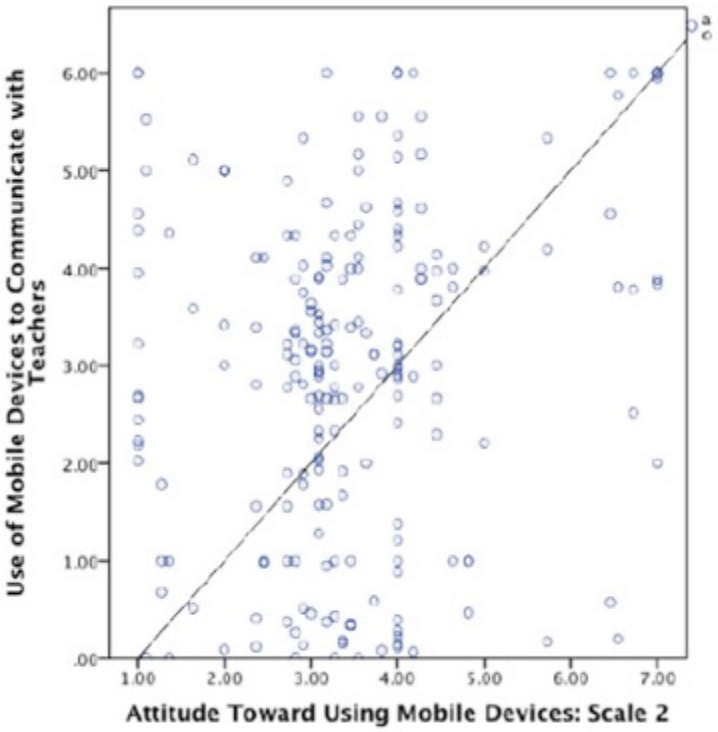

Figure 7. Scatterplot of the correlation between attitude toward using mobile devices (Scale 2) and use of mobile devices to communicate with teachers (Research Question 6).

Summary

The results of this study indicated that the higher the knowledge of using mobile devices, general use of mobile devices, purpose for using mobile devices, perceived ease of using mobile devices, perceived usefulness of mobile devices, and attitude toward using mobile devices, the greater the parental use of mobile devices to communicate with teachers. Although 102 parents accessed the survey online, ultimately, only 73 parents completed the survey. Giving a response rate of 4.87%, a rate considerably lower than what was anticipated and too low to determine the significance of the analyses. Results of correlational analyses for all research questions were significant.

Chapter 5 begins with a brief review of this research study. The review is followed by interpretation of the findings, limitations of the study, recommendations, and implications. The chapter concludes with final thoughts related to the study findings and potential for social change.

Chapter 5: Discussion, Conclusions, and Recommendations

The purpose of this cross-sectional correlational study was to determine the relationships between parents' (a) knowledge of using mobile devices, (b) general use of mobile devices, (c) purpose for using mobile devices, (d) perceived ease of using mobile devices, (e) perceived usefulness of mobile devices, and (f) attitude toward using mobile devices, the indicator variables and (g) parents' use of mobile devices to communicate with teachers. The hope was to understand whether programs that encourage and support parental use of mobile devices to communicate with teachers would be acceptable and helpful.

Data analysis indicated there was a positive correlation between five of the indicator variables (knowledge of using mobile devices, purpose for using mobile devices, perceived ease of using mobile devices, perceived usefulness of mobile devices and attitude toward using mobile devices) and the criterion variable. At the time of data analysis, an error in the survey directions was discovered for the variable general use of mobile devices. Rather than instructing parents to respond to the general use items based on their general use of mobile devices, the directions instructed parents to answer the general use items based on their general use of mobile devices to communicate with their child's teachers. For this reason, these data were not included in the analyses.

Each of the five indicator variables (knowledge of using mobile devices, purpose for using mobile devices, perceived ease of using mobile devices, perceived usefulness of mobile devices and attitude toward using mobile devices) was statistically significant. The levels significance provided support to accept the alternative hypothesis indicating

that there was a significant correlation between the variables. This result indicated that as the indicator variable increased, so did the use of mobile devices to communicate with teachers for all three scales. Specifically, moderate to strong positive correlations were found between Scale 3 of the criterion variable and the five-indicator variables: (a) knowledge of using mobile devices, $r = .42$, $p < .001$; (b) purpose for using mobile devices, $r = .48$, $p < .001$; (c) perceived ease of using mobile devices, $r = 46$, $p = < .001$; (d) perceived usefulness of mobile devices, $r = .61$, $p < .001$; and attitude toward using mobile devices, $r = .57$, $p < .001$.

This study used a new research instrument created by combining two pre-existing instruments. This was necessary because few researchers have explored usage behaviors with regard to mobile devices (Wang et al., 2011). A significant research gap existed on parents' use of mobile devices to communicate with teachers (Hill & Tyson, 2009; Rogers & Wright, 2008; Thompson, 2008). Due to the limited amount of research, instruments specifically designed for measuring these variables were not readily available, leading me to create a new research instrument for this study by using two existing instruments previously determined to be reliable and valid. I distributed invitations to participate in this study by completing an online survey to all 57 classes of students at the local high school used in the study. The sample was a convenience sample selected from classes included on the school's active classroom master schedule. One hundred and two parents accessed the survey online, 73 of whom completed the survey. The results show parents have a preference to use mobile technologies to communicate

with teachers; however, parents are underutilizing mobile technologies to communicate with teachers.

The positive and statistically significant findings within this research study indicate that there is a correlation between five of the indicator variables (knowledge of using, general use of, purpose for using, perceived ease of using, perceived usefulness of, attitude toward using mobile devices) and criterion variable (parents' use of mobile devices to communicate with teachers). It is possible that findings from this research study could enhance administrators' understanding of the dynamics of parental involvement and mobile device use thereby using the data to help guide decisions that could implement social change. Change could be in the form of the creation and implementation of district programs that encourage and support parental use of mobile devices to communicate with teachers. Using mobile devices as an alternative mode communication parents and teachers could begin creating new social practices and new patterns of communication that could ultimately increase parental involvement and eventually student academic success. This chapter contains an explanation of the research findings, discussion of limitations, social implementations, policy and practitioner recommendations, and conclusion.

Interpretation of the Findings

Virtual spaces can be instantaneous, mobile, synchronous and asynchronous, allowing people to coexist at any time and in any place (Andone, Dron, & Pemberton, 2009; Hussein & Nassuora, 2011). This coexistence creates new social practices and patterns of communication. One such practice is the use of mobile technologies to reduce

the lack of communication between parents and teachers (Rogers & Wright, 2008). Current research indicates that over the years, Americans have increased their use of mobile devices to communicate and keep in touch with people (Horrigan, 2008; Lenhart, 2010; Smith, 2012). As a result, some parents and teachers welcome digital communication such as email and text messaging to increase timely and direct communication with teachers (Grant, 2011). For example, Smith, Wohlstetter, Kuzin, and Pedro (2011) found that the integration of technology as an alternative means of communication was beneficial and cost effective and provided instant two-way communication. Therefore, schools may have to develop strategies for involving parents that work better with the population of their individual school (Bower & Griffin, 2011). Understanding the possibilities mobile devices offer for enhancing parent/teacher communication cannot be ignored because mobile device ownership and usage is increasing.

Due to the rise in mobile device usage among adults and people of color (Lenhart, 2010; Smith, 2010a), it was expected that the majority of participants (73.9%) owned an iPhone or other smartphone; a majority had mobile devices operating at 4G speeds (57.5%). Over half (63.0%) of the parents were able access their mobile device 100% of the time while 20.0% indicated they could access their mobile device at least 80% of the time. It was also expected that parents not only owned mobile devices, but they knew how to use mobile devices and were using them to communicate and stay in touch with someone. This expectation was based on research that indicated Blacks are the most frequent users of most mobile technologies compared to their White counterparts (Lee &

Lee, 2010; Smith, 2010a). The findings of this study suggest that parents at the local school are using mobile technologies to communicate and stay in touch with others. The findings also suggest that parents are not taking full advantage of mobile devices to communicate with their child's teacher(s). Parents seem to be overlooking the convenience and quickness that mobile devices offer to communicate with their child's teacher(s).

The collected data revealed a pattern where parents who indicated higher levels of knowledge of using mobile devices, purpose for using mobile devices, perceived ease of using mobile devices, perceived usefulness of mobile devices, and attitude toward using mobile devices also indicated a higher preference for using mobile devices to communicate with their child's teacher(s). Specifically, parents' knowledge of using mobile devices showed a moderately strong positive correlation ($r = .42$) with their use of mobile devices to communicate with teachers. This correlation suggests that parents with more knowledge about using mobile technologies tend to prefer using their mobile devices to communicate with their child's teacher(s). Their purpose for using mobile devices indicated a moderately strong positive correlation ($r = .48$) with their use of mobile devices to communicate with teachers. This suggests that parents with a higher purpose for using mobile technologies tend to prefer to use their mobile devices to communicate with their child's teacher(s).

Parents' who responded to the survey's perceived ease of using mobile devices indicated a moderately strong positive correlation ($r = .46$) with their use of mobile devices to communicate with teachers. This suggests that parents who perceived mobile

devices as easy to use tend to prefer to use their mobile devices to communicate with their child's teacher(s). Perceived usefulness of mobile devices indicated a strong positive correlation (r = .61) with their use of mobile devices to communicate with teachers. This suggests that parents who perceived mobile devices as useful tend to prefer to use their mobile devices to communicate with their child's teacher(s). Finally, attitude toward using mobile devices indicated a strong positive correlation (r = .57) with their use of mobile devices to communicate with teachers. This suggests that parents who had a favorable attitude toward using mobile devices tend to prefer to use their mobile devices to communicate with their child's teachers. Similarly, parents with lower levels of knowledge of using mobile devices, purpose for using mobile devices, perceived usefulness of mobile devices, perceived ease of using mobile devices, and attitude toward using mobile devices tend to have lower preferences for using mobile devices to communicate with teachers.

The results of this study are important because data show that parents at the focus school have a preference to use mobile technologies to communicate with teachers, but that they are also not using mobile devices to communicate with teachers. Therefore, something is deterring parents' use of mobile technologies to communicate with their child's teachers. It is important to understand why parental involvement at the focus school is low although parents show a preference for using mobile devices to communicate with teachers.

The results of this research study suggest some possible reasons for the lack of mobile device use in parent-teacher communication. To summarize, first it is suggested

that a barrier to parents using mobile devices to communicate with teachers is the cost involved, the availability of both the parent and teacher, or the overuse of mobile phone minutes to carry out and complete the conference. Second, it is suggested that parents are not using mobile devices to communicate with teachers because the opportunity to use mobile devices has not been presented to them by their child's school or teacher. It is also suggested that teachers have not initiated using mobile devices to communicate with parents or have not provided their mobile phone numbers. Additionally, parents may not have provided a mobile phone numbers to the school or teacher. Third, although a mobile number has been provided, parents may not have received a message from a teacher on their mobile device. It could also be that parents still prefer to communicate with teachers in person for face-to-face conferences rather than speaking on the telephone. Fourth, a lack of mobile device use between parent and teachers could also be due to an administrative recommendation for teachers not to use mobile devices to communicate with parents. Finally, it is also possible that mobile devices are not being used in part because all school buildings are equipped with landline telephones available to the teachers to make outgoing calls to parents. The availability of landline telephones makes teachers' use of mobile devices only necessary in emergencies when a landline telephone is not available.

Data indicates parents have a preference for communicating with teachers. The use of technologies such as email, specifically on mobile devices, provides the opportunity to create virtual spaces, which can be mobile, instantaneous, and synchronous and which allows people to coexist at any time and in any place (Andone,

Dron, & Pemberton, 2009; Hussein & Nassuora, 2011). Barriers to high parental involvement still exist despite technological advancements in the 21st century that have made communication easier (Kim, 2009; Shayne, 2008; Turney & Kao, 2009). Using mobile devices to communicate with parents provides instant and improved two-way communication leaving room for parents and teachers to interact consistently with each other (Smith et al., 2011). Some parents and teachers welcome digital communication such as email and text messaging because they hope it may help increase timely and direct communication between parents and teachers (Grant, 2011). However, "For family-school partnerships to fully benefit from technology, both parents and teachers must be willing [and able] to embrace [mobile] technology as a communication tool" (Rogers & Wright, 2008, p. 47).

The finding of high-level mobile technology use among Blacks and a low percent of parents using their mobile technologies to communicate with teachers replicates the findings of Smith (2010a) and Roger and Wright (2008). For example, comparisons of the mobile device ownership and mobile device use to communicate with teachers with Smith (2010a) and Rogers and Wright (2008) shows similar responses from parents. Smith (2010a) found that 8z7% of Blacks owned a mobile cellular phone, Rogers and Wright (2008) found that 93.8% of parents owned a mobile phone, and finding in this study indicate 73.9% owned an iPhone or other mobile device. The findings of all three studies showed that well over 50% of parents in each study are mobile device owners. Additionally, this demonstrates that Americans are using their cell phones (Rainie & Keeter, 2006).

By 2010, fifty-nine percent of American adults were able to access the Internet using a mobile wireless connection (Smith, 2010a). Additionally, 72% of the American adults sent or received a text message, 38% accessed the Internet, 34% sent or received an email, 30% sent or received an instant message and 23% used a social networking website (Smith, 2010a). Therefore, indicating that parents have a variety of ways to access information and to communicate and stay in touch with others. This was consistent with Horrigan (2010), who found that people use their mobile devices to improve communication among their family, friends, and colleagues. Additionally, Lenhart (2010) found people used their mobile device to make plans with others. However, Rogers and Wright (2008) found that out of the 93.8% owners, only 42.6% of the parents used the mobile phone to communicate with teachers. Parents are using their mobile devices to communicate, stay in touch, and make plans with others but not with their children's teachers.

Results for this study show parents reported higher frequencies of using mobile devices to talk with friends and family than they did with teachers. Specifically, less than 23% of the parents reported using email, text messaging, instant messaging, and other mobile Internet applications such as Facebook, Twitter, Instagram, or other applications to communicate with their child's teacher(s). As in Rogers and Wright's (2008) research study, it can be concluded that parents still do not take full advantage of newer mobile technologies to communicate with teachers in the current study. It can be concluded that although some parents are using mobile devices to communicate with others, they are

overlooking the benefits of the convenience and quickness of mobile devices to communicate with their child's teacher(s).

According to Bower and Griffin (2011), schools may have to develop strategies for involving parents that work better with the population of their individual school. It will be beneficial for the focus school to provide opportunities for parents and teachers to use mobile devices as an alternative means of communicating to create new social practices and patterns of communication. Using mobile devices to communicate with parents provides instant and improved two-way communication leaving room for parents and teachers to interact consistently with each other (Smith et al., 2011).

Mobile devices could be integrated into the field of education as an alternative means of communication. The integration of mobile devices could create new social practices and new patterns of communication between parents and teachers, potentially increase parental involvement, and ultimately student academic success. The objective of this quantitative correlational study was to determine the relationship between parents' knowledge of using mobile devices, general use of mobile devices, purpose for using mobile devices, perceived ease of using mobile devices, perceived usefulness of mobile devices, and attitude toward using mobile devices, and parents' use of mobile devices to communicate with teachers. Data collected revealed a pattern where parents who indicated higher levels of knowledge of using mobile devices, purpose for using mobile devices, perceived ease of using mobile devices, perceived usefulness of mobile devices, and attitude toward using mobile devices also indicated a higher preference to use mobile devices to communicate with their child's teachers. It can be concluded that parents are

using mobile devices to communicate, stay in touch, and make plans with other but are overlooking the convenience and quickness that mobile devices offer to communicate with their child's teacher(s). The findings of this research study should not be construed as conclusive, but rather that the results create a foundation for future and more comprehensive experimental research studies on the parents/guardians' use of mobile devices to communicate with teachers.

Limitations of the Study

This research study was based on the use of mobile devices to communicate. The survey created to collect data was an online survey. The survey was not distributed in paper form to any participants. Overall, from a solicitation of 1,529 of participants, 102 participants accessed the online survey but only 73 of those participants completed the survey.

A limitation of this research study was the collection of data from only one location, a predominately Black high school. Future research should include multiple races and at least two high schools. However, one unexpected limitation of this research study was the method for recruiting participants. Invitations were sent to parents through students in the focus school. Because some students were repeatedly absent from school, they did not receive on behalf of their parents/guardians the letter of invitation to participate in the study. Therefore, some potential participants never received the invitation to participate in the study and this could have had an effect on the number of completed surveys. The ability for all parents to participate in this research study could possibly have had an effect on the results of this research study. More participants could

have produced better or strong correlations. It is recommended that future research include sending a letter of invitation using the traditional postal system or email system where addresses are available.

Recommendations

The objective of this quantitative correlational study was to determine the relationship between the indicator variables parents' knowledge of, general use, usage behavior, perceived ease of use, perceived usefulness, and attitude toward using mobile devices and the criterion variable parents' use of mobile devices to communicate with their child's teachers. Although parents'/legal guardian's use of mobile devices to communicate with teachers should be further examined, teachers' use of mobile devices to communicate with parents should be discussed. To understand further the effect of (a) parents' knowledge of using mobile devices, general use of mobile devices, purpose of using mobile devices, perceived ease of using mobile devices, perceived usefulness of mobile devices, and attitude toward using mobile devices on (b) parents' use of mobile devices to communicate with teachers, a researcher might consider investigating the relationship between parent use of one particular mobile device (e.g., iPad/Android tablet phablet, iPhone, or smartphone) and the parents use of that particular device to communicate with teachers regarding their child's attendance, homework, grades, behavior or discipline, and overall progress in the course. A researcher might also consider including the relationship between teacher's use of one particular mobile device (e.g., iPad/Android tablet phablet, iPhone, or smartphone) and the teachers' use of that particular device to communicate with parents regarding the students' attendance,

homework, grades, behavior or discipline, and overall progress in the course. Because mobile device use is increasing with more people leaning toward mobile device use exclusively as well as the integration of tablets and laptops in the classrooms, a larger and more diverse sample may be available to study. Using the findings from this research study as a foundation, it is recommended that the future researcher use random sampling to select participants for the research study. The sample should include participants from different ethnic groups, with different socioeconomic backgrounds, and from different age groups.

Although Americans have increased their use of mobile devices to communicate and keep in touch with people, with new social practices and patterns of communication developing, there is a potential for changes in parent/teacher communication to occur. One important aspect with regard to accessing information is that mobile technologies allow people to access information worldwide regardless of space and time (Hussein & Nassuora, 2011). Mobile technologies also allow people to stay connected with friends and family (Hussein & Nassuora, 2011; Lenhart, 2010). Therefore, "When introduced, supported and used appropriately, technology can improve links between home and school learning and close the gap between parents, teachers and learners" (Lewin & Luckin, 2010, p. 756). Communication can be effective when provided in a manner that is easily accessible and convenient to use (Liao & Tsou, 2009; Patterson, Webb, & Krudwig, 2009) by both parents and teachers. Findings from this study could assist administrators in the school district who have the power to implement programs in public

education to develop strategies for improving parent knowledge of and attitude toward using mobile devices to communicate with teachers.

Alternative ways of communicating with parents that include the use of mobile devices must be implemented by those who have the power to implement programs of change. For example, the school's administration could require parents to provide home, mobile, and email information during the child's registration. Or the administration could require teachers to ask for a parent's email address and cellular phone number at the beginning of the school year. Additionally, administration could require teachers to ask parents for permission to use mobile email, text messaging, and instant messaging. This offer would indicate that the teacher, the school or both are initiating multiple forms of communication with the parent. Therefore, developing strategies for involving parents that work better with the population of their individual school (Bower & Griffin, 2011).

During the course of the school day, the teacher is not able to make or answer calls at all times. Therefore, with the implementation of alternative ways of communicating with parents using mobile devices, administration must also provide teachers a time and place to make, answer and return missed calls. Daily office hours should be scheduled for all teachers. Regular office hours could provide a comfort zone for both parents and teachers to communicate. Additionally, teachers should be offered a community office to make, answer, or return any missed calls.

It is recommended that all school administrators not only allow but also require teachers to obtain alternative ways of communicating with their students' parents. It is also recommended that all teachers take the initiative to request permission from parents

to communicate with them using mobile email, text messaging, and instant messaging. Education in the 21st century lends itself to the integration and accurate use of technology to teach and learn. Now it is recommended that these same technologies be integrated into the daily work regimen of all teachers not only to increase parental involvement but ultimately to improve student academic success and promote social change by creating new social practices and patterns of communication between parents and teachers in the 21st century.

Implications

According to Feenberg (2005), technology can influence parental practices with regard to communication with teachers. "Mobile devices . . . have reshaped and redefined the ways in which information is constructed, accessed, and communicated among individuals and societies" (Avraamidou, 2008, p. 347). The widespread use of mobile technology is reconfiguring how individuals use time, spaces, and places (Bittman, Brown, & Wajcman, 2009; Horrigan, 2008, 2009). The widespread use of mobile technologies has restructured social relationships and the purpose of communicating with others (Li & Pitts, 2009; Urista, Dong & Day, 2009; Wei, 2008). Newer mobile technologies provide opportunities to communicate faster, create new social practices, and new patterns of communication (Hargittai, 2008; Horrigan, 2008; Pedersen, 2008) and helps people to stay connected. Mobile devices are designed to:

1. Make the communication faster, flexible, easier, and convenient.
2. Reduce the need for traveling to and from the school when time is of the essence.

3. Allow the information about students to travel quickly, allowing for decisions, solutions or both to be made faster in certain situations.
4. Double if not triple parental involvement, communication, and possibly student academic success.

Because the literature has indicated that barriers to high parental involvement still exist (Kim, 2009; Turney & Kao, 2009) despite the fact that technological advancements in the 21st century have made communication easier (Chang & Wang, 2008; Jones & Fox, 2008; Shayne, 2008), exploring mobile devices as an avenue for increasing parental involvement in the academic setting is of critical importance. Doing so has strong implications for promoting social change by enhancing administrators understanding of the dynamics of parental involvement and mobile device use, thereby creating new social practices and new patterns of communication between parents and teachers. According to the literature, Black students in particular have a higher possibility than their peers of other races to leave high school before their anticipated a graduation date (i.e., not graduate from high school), be unemployed, and suffer economic hardship (Wittenstein, 2011). Results of this study could be used to change these conditions. Specifically, parents' use of mobile devices to communicate with teachers can be an avenue for increasing teacher/parent communication and thus parental involvement. Thus, positive social change could be achieved by enhancing administrators understanding of the dynamics of parental involvement and mobile device use, thereby creating new social practices and new patterns of communication between parents and teachers. This study was significant because results revealed the potential for mobile devices to be used to

improve parent/teacher communication. It is possible for students who are successful in high school to be successful in college and adult life after college (Balfanz, 2009; Roderick et al., 2009; Schneider & Yin, 2011). This success could ward off unemployment and economic hardship (Wittenstein, 2011), thus improving the overall quality of life for students and fostering independent and contributing members of society, therefore fostering social change within a community, city, state and eventually the world.

Policy Recommendations

Mobile technologies have redefined the way information is communicated (Avraamidou, 2008, p. 347); how we use our time (Bittman, Brown, & Wajcman et al., 2009; Horrigan, 2008, 2009); how we construct relationships, and our overall purpose of communicating (Li & Pitts, 2009; Sheldon, 2008; Urista et al., 2009; Wei, 2008). Newer mobile technologies provide opportunities to communicate faster, while creating new social practices and patterns of communication (Hargittai, 2008; Horrigan, 2008; Pedersen, 2008) for people to stay connected. Findings from this study revealed small to moderate correlations and should be used to enhance administrators understanding of the dynamics of parental involvement and mobile device use for creating new social practices and new patterns of communication between parents and teachers.

Parental involvement in the focus school is low. However, the reason for low parental involvement was unknown at the time of the research study. Parents may be working, commuting long hours or both each day causing them to be unavailable for frequent visits to the focus school. Providing an alternative form of communicating may

help bridge the communication gap between parents and teacher. The traditional forms of communicating with parents have not increased parental involvement. Schools need to provide multiple ways to communicate with parents if they want to increase parental involvement and possibly increase academic success for students (Topor, Keane, Shelton, & Calkins, 2010). Therefore, to help foster the idea that encourages and support parental use of mobile devices to communicate with teachers' it is recommended that district administrators, school administrators or both:

1. Update student information databases to include mobile phone number, email address, an alternative email address, instant message screen name, and social media contact information.
2. Require parent's to provide mobile phone number, email address, an alternative email address, instant message screen name, and social media contact information along with the standard information required for school enrollment.
3. Request parent's to provide a preference for mode of communication: cellular phone, email, text message, instant message, social media or multiple forms.
4. Create an implementation plan to update mobile phone number, email address, an alternative email address, instant message screen name and social media contact information along with other emergency information at the turn of each school semester to ensure the most current information is logged into the student database.

5. Develop a concise online tutorial, for parents, regarding the use of the notes tool embedded in the online grading (Gradebook) system to communicate with teachers.
6. Develop concise online tutorials, for parents, regarding the use of the district/school email system to communicate with teachers.
7. Create school based email addresses for parents to use for communicating with teachers.
8. Require regular contact with parents using traditional and mobile forms of communication.
9. Require regular contact with parents to provide information on attendance, homework, grades, behavior or discipline problems, and overall progress in class.
10. Make teacher contact information readily available to parents in hard copy (in the school main office and by traditional mail) and electronic (web based) forms.

Practitioner Recommendations

Communication in any form is effective and can be a very important part of a successful home and school partnership (Hill & Tyson, 2009; Patterson, Webb, & Krudwig, 2009; Thompson, 2008). "For family-school partnerships to benefit from technology, both parents and teachers must be willing to embrace technology as a communication tool" (Rogers & Wright, 2008, p. 47). When barriers exist, and parents need to reach out to the schools for assistance, the use of communication technologies

can be the foundation for building a solid partnership between parents and teachers (Barrera & Warner, 2006).

Parents of high school students may find it beneficial to use their personal mobile devices to communicate with their child's teachers regarding attendance, homework, grades, behavior or discipline problems, and overall progress in their high school courses. Additionally, teachers may find it equally beneficial to use their personal mobile device to communicate with their students' parents regarding attendance, homework, grades, behavior or discipline problems, as well as overall progress in their classroom. To build or enhance parent/teacher partnerships, teachers must consider the following suggestions:

1. Obtain information from the students' parent(s) regarding communication preferences and appropriate information to allow regular communication.
2. Make a request to parent(s) to use alternative forms of communication when traditional forms have failed.
3. Make a request to parent(s) to initiate communication on a regular bi-weekly basis.
4. Advocate for all teachers to use their mobile devices to communicate with parents' for instant two-way communication.

Conclusions

Parental involvement is critical to student success, and technologies that can be used to increase parental involvement are being underused. Additionally, traditional forms of communicating are not successful in increasing parental involvement with Black and low socioeconomic status families, those who represent the population in this study.

If schools put forth considerable effort to establish strong connections with their students' parents, parents are prone to get involved with their children's learning, and students are prone to make greater academic achievements (Galindo & Sheldon, 2012; Lloyd-Smith & Baron, 2010). Such effort is especially critical at the Title I focus school in this study, where Black students make up the majority of the population.

Despite the requirements of Section 1118 (Parental Involvement) of the No Child Left Behind Act, which require schools receiving Title I funds to design parental involvement plans that encourage and sustain active parental involvement, parental involvement still remains low. Therefore, it was necessary to conduct a study devoted to parent/legal guardian use of mobile devices to communicate with teachers because parents play an important part in their children's learning (Graves & Wright, 2011; Rogers, Theule, Ryan, Adams, & Keating, 2009; Zhang et al., 2011). Parental involvement in a child's education through communication with the faculty and staff who interact with the child can have a positive impact on student outcomes (McNeal, 2012; Quilliams & Beran, 2009; Shayne, 2008). A limited amount of research has been conducted with regard to parents' use of mobile devices to communicate with teachers (Rogers & Wright, 2008; Thompson, 2008). Findings could enhance administrators' understanding of the dynamics of parental involvement and mobile device use, thereby creating new social practices and new patterns of communication between parents and teachers, which could increase parental involvement and ultimately student academic success.

Rogers and Wright (2008) advocated that parents and teachers are not taking full advantage of technology to communicate with each other. This quantitative cross-sectional correlational study was designed to determine the relationship between parents' knowledge of using, general use of, perceived ease of use, perceived usefulness, and attitude toward using mobile devices and parents' use of mobile devices to communicate with their child's teachers'. The literature review was geared toward understanding recent findings on parental involvement, parent/legal guardian's use of technologies to communicate with school faculty and staff and the use of mobile devices within society as a whole.

Data collected from an online survey were used for analysis. Seventy-three parents/legal guardians of actively enrolled students in a predominantly Black Title I high school located in a large Midwestern metropolitan city in the United States comprised the sample for this research study. Moderate correlations were found indicating parents/legal guardians do not take full advantage of newer mobile devices to communicate with teachers. Parents/legal guardians' responses to the survey items indicated moderate perceived usefulness, perceived ease of use and attitude toward using mobile devices to communicate with teachers. Ultimately, they indicated some interest in using mobile devices to communicate with teachers. Therefore, further research is necessary to help increase parental involvement to raise achievement and close achievement gaps.

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Appendix A: Class Selection Table

	1st Period	2nd Period	3rd Period	4th Period	5th Period	6th Period	7th Period	8th Period
1st Floor Classrooms		CR-1	CR-2		CR-3		CR-4	CR-5
			CR-6	CR-7	CR-8		CR-9	CR-10
		CR-11			CR-12		CR-13	
		CR-14			CR-15		CR-16	
		CR-17			CR-18		CR-19	
		CR-20			CR-21		CR-22	
		CR-23			CR-24		CR-25	
		CR-26			CR-27		CR-28	
		CR-29			CR-30		CR-31	
		CR-32					CR-33	
2nd Floor Classrooms					CR-34			
		CR-35						
								CR-36
		CR-37			CR-38		CR-39	
							CR-40	
				CR-41				
							CR-42	
3rd Floor Classrooms		CR-43			CR-44		CR-45	
	CR-46							
		CR-47			CR-48		CR-49	
						CR-50		
		CR-51			CR-52			
		CR-53			CR-54			
							CR-55	

Note. CL = Class

Appendix B: Letter of Permission to Conduct Study in the Focus School

January 09, 2014

Dear Toinette M. Flowers,

Based on my review of your research proposal, I give permission for you to conduct the study entitled Examining the Relationship between Parental Involvement and Mobile Technology Use (parent survey regarding knowledge of, general use of, usage behavior, perceived ease of use, perceived usefulness, and attitude toward using mobile devices to communicate with teachers) within . As part of this study, I authorize you to distribute letters of invitation to students who in turn will deliver the letter of invitation to their parent or legal guardian. Individuals' participation will be voluntary and at their own discretion.

We understand that our organization's responsibilities include: Allowing the researcher to distribute letters of invitation to students. We reserve the right to withdraw from the study at any time if our circumstances change.

I confirm that I am authorized to approve research in this setting.

I understand that the data collected will remain entirely confidential and may not be provided to anyone outside of the research team without permission from the Walden University IRB.

Sincerely,

Walden University policy on electronic signatures: An electronic signature is just as valid as a written signature as long as both parties have agreed to conduct the transaction electronically. Electronic signatures are regulated by the Uniform Electronic Transactions Act. Electronic signatures are only valid when the signer is either (a) the sender of the email, or (b) copied on the email containing the signed document. Legally an "electronic signature" can be the person's typed name, their email address, or any other identifying marker. Walden University staff verify any electronic signatures that do not originate from a password-protected source (i.e., an email address officially on file with Walden).

Appendix C: Letters of Permission to Use Instruments

From: Internet Permission (permissions@pewinternet.org)
To: [redacted]
Date: Wed, September 9, 2009 1:26:10 PM
Cc:
Subject: RE: Request to use a survey tool

Dear Ms. Flowers,
We are happy to hear you find our work useful. You have the permission of the Pew Internet & American Life Project to use the survey tool from our "Americans and their cell phones" survey of 2006 for your academic work at Walden University. Please be careful not to construct the study a way that it could be interpreted as an association with or endorsement by the Pew Internet & American Life Project.

Thanks for taking the time to check,
Cornelia Carter-Sykes
Manager, Pew Internet
Pew Research Center

Gmail by Google

Toinette Flowers <tmflowers1@gmail.com>

My Dissertation Survey Tool

Heather Holden [redacted] Wed, Apr 10, 2013 at 4:34 PM
To: [redacted]

Hi Ms. Flowers,

I received an email requesting that you would like to use my dissertation questionnaire. Can you let me know a bit about your research? Yes, you have my permission by the way.

Best Regards,
Heather K. Holden, PhD
Intelligent Technologies Researcher
Army Research Laboratory

Appendix D: Letter of Permission to Reprint Figure 2

Gmail by Google

Toinette Flowers [redacted]

RE: Permission to reprint a figure in a dissertation
3 messages

Anoweck, Kimberly [redacted] Tue, Jun 4, 2013 at 8:27 AM
To: [redacted]
Cc: "Tucker, Kara" [redacted]

Dear Toinette Flowers,

Permission is granted to use the following material in your dissertation at no charge:

RE: Figure 2 from: Davis FD, Bagozzi, RP, Warshaw PR (1989) User acceptance of computer technology: A comparison of two theoretical models. *Management Science* 35(8):982-1003.

Please use the following credit line:

"Reprinted by permission, (author), (title of article), (title of journal), volume (#), number (#), (month, year). Copyright (year), the Institute for Operations Research and the Management Sciences, 7240 Parkway Drive, Suite 300, Hanover, Maryland 21076 USA."

Sincerely,

Kimberly

Kimberly Anoweck

Production Editor

Institute for Operations Research and the Management Sciences (INFORMS)

7240 Parkway Drive

Appendix E: Letter of Permission to Quote a Research Document

Gmail by Google

Toinette Flowers

Request for permission to quote your research findings

3 messages

Toinette Flowers Wed, Dec 17, 2014 at 6:47 PM
To:

Dear Dr. Horrigan,

If possible, may I have permission to quote you in my current dissertation?

Thank you in advance for your consideration,

Toinette M. Flowers

John Horrigan Thu, Dec 18, 2014 at 3:50 AM
To: Toinette Flowers

Yes Ms. Flowers, you have my permission to quote the paper. Thanks for asking and best of luck.
John Horrigan

Appendix F: Announcement of Doctoral Study Information Session

Research Study Announcement
1 message

Flowers, Toinette Wed, Apr 23, 2014 at 10:58 PM
To:

Dear Teacher,

I am Toinette M. Flowers, a doctoral student in the Educational Technology doctoral program at Walden University located in Minneapolis, Minnesota. The purpose of this announcement is to inform you that the parents of your students have been selected to participate in my research study. I would like to invite you to an informational session that will explain my doctoral study entitled, "Examining the Relationship between Parental Involvement and Mobile Technology Use" and describe how the parents of students in your classes were selected to participate in this study. This study will assess the parents of your students perception on the use of mobile technologies to communicate overall and their use of mobile technologies to communicate with teachers by having the parent complete a survey on their own in their own private space and at a time that is convenient for them.

Using data collected from parents on their perception of using mobile devices to communicate, an investigation of whether there is a relationship between parents perception of using mobile devices to communicate overall and their use of mobile technologies to communicate with teachers will be conducted. The results of this study will be used in my dissertation. My dissertation is being conducted under the supervision of Dr. Carla Lane-Johnson, who is the chairperson o f my dissertation committee. Should you have any questions regarding my research study, you may contact her via e-mail at carla.lane-johnson@waldenu.edu.

While I understand the concept of valuing your time, this informational session will be held during the last 15 minutes during your 4th period prep. The informational session will be held in room 117 at your school on a date at time of your departmental meeting. Please join me for this brief presentation.

Appendix G: Letter of Invitation to Participate in the Study

Dear Parent or Guardian,

I am Toinette M. Flowers, a doctoral student in the Educational Technology doctoral program at Walden University located in Minneapolis, Minnesota. You may already know me as a Teacher at your child's school, but this research study will be conducted separate from that role. You are invited to take part in the research study entitled, "Examining the Relationship between Parental Involvement and Mobile Technology Use" by completing an online survey at your convenience. The purpose of this research study is to determine the relationship between parent's opinion of mobile devices to communicate overall and their opinion on using mobile devices to communicate with their child's teachers'.

The information I gather will be used in my doctoral dissertation. Additionally, findings from this study could be used to increase administrators understanding of the dynamics of parental involvement and mobile device use, thereby creating new social practices and new patterns of communication between parents and teachers.

If you are able to help me, please go to the web address listed below to complete the online survey:

This is the address for the survey:
Enter this user name on the survey website:
Enter this password on the survey website:

I provide more details about this study and explain participants' rights in the notification of consent made available to you prior to opening the online survey. The survey should take approximately 20 minutes to complete. I understand how valuable your time is and greatly appreciate your participation.

Once the study is complete and I have received final approval from my university, I will make the results of my study available to you in hard copy form in the main office of your child's high school and online at the same web address listed above.

Sincerely,

Toinette M. Flowers

Appendix H: Informed Consent

May 20, 2014

Dear Parent/Legal Guardian:

You are invited to take part in the research study Examining the Relationship between Parental Involvement and Mobile Technology Use. The purpose of this research study is to determine the relationship between parent's opinion of mobile devices to communicate overall and their opinion on using mobile devices to communicate with their child's teachers. This study is being conducted by Toinette M. Flowers as part of a doctoral program at Walden University. You may already know the researcher as a Teacher at your child's school, but this study is separate from that role.

You were selected as a possible voluntary participant because you are the parent or legal guardian of a child who is actively enrolled at . This form is part of a process called "informed consent" to allow you to understand this study before deciding whether or not to take part. If you agree to participate, you will be required to complete an online survey. Please read this form and ask any questions you may have before acting on this invitation to participate in the study.

Background Information:
The purpose of this research study is to determine the relationship between parents' use of mobile devices to communicate with their child's teachers'. This information could be used to increase parental involvement, which may have a direct effect on students' academic success. In particular, the use of mobile devices to increase parent/teacher communication could lead to increased parental involvement and positive student outcomes, including high school graduation, postsecondary graduation and a successful generation of young people within the community under study.

Procedures:
If you agree to be in this study, you will be asked to:

- Access the survey on the Internet
- Access the survey using the username and password provided on the letter of invitation
- Complete all sections of the survey (approximately 20 minutes)
- Upon completion click the final submit button to add your responses to the survey database

Here are some sample questions:

12.) I use the following functions on my mobile device: *

	never	about once a semester	about once a month	ever other week	weekly	daily	multiple times a day
12a). email	○	○	○	○	○	○	○
12b). text messaging	○	○	○	○	○	○	○
12c). instant messaging	○	○	○	○	○	○	○
12d). using other mobile Internet applications, such as Facebook, Twitter, or Instagram applications	○	○	○	○	○	○	○

13.) How would you rate your skill level in using mobile technologies? *

1 (low)	2	3	4	5	6 (high)
○	○	○	○	○	○

14.) I use my mobile device: *

never	about once a semester	about once a month	every other week	weekly	daily	multiple times a day
○	○	○	○	○	○	○

Voluntary Nature of the Study:
This study is voluntary. It is also confidential, so no one will know whether or not you choose to be in the study. If you decide to join the study now, you can still change your mind later. You may stop at any time. Although Sections 2-6 require answers to every question, questions about participant demographics may be skipped.

Risks and Benefits of Being in the Study:
Being in this type of study involves some risk of the minor discomforts that can be encountered in daily life, such as completing a survey. Being in this study will not pose risk to your safety or wellbeing. There is no immediate direct benefit to you for participating in this study.

This research study is design for to obtain general knowledge regarding parent's opinion of mobile devices and their opinion on using mobile devices to communicate with their child's teachers'. However, this research study may possess the potential to benefit the school, parents and teachers. Benefits from this research study might be:

1. Provide the school district administrators with a baseline of data to support strategically implementing practices that significantly affect parent involvement.

2. To increase administrators understanding of the dynamics of parental involvement and mobile device use, thereby creating new social practices and new patterns of communication between parents and teachers.

3. Information gained may be used to identify and develop new ways for parents/legal guardians to become involved or increase their involvement in their child's education without having to be physically present.

4. Information gained may be used to identify and develop new immediate two-way communication regarding their child's academic success.

5. Information gained may be used to identify keys to building a successful foundation for a solid partnership between parents, teachers and students.

As the rates of mobile technology use continues to rise, the potential for mobile devices to promote social change in the community under study through increased parent/teacher communication, to help foster increased parental involvement for increase positive student outcomes, high school graduation, postsecondary graduation, and a successful people within the nation.

Payment:
There are no monetary benefits for participating in the study. However, your help is greatly appreciated.

Privacy:
Any information you provide will be kept confidential. The researcher will not use your personal information for any purposes outside of this research project. Also, the researcher will not include your name or anything else that could identify you in the study reports. De-identified data will be kept for a period of at least 5 years, as required by the university.

Contacts and Questions:
You may ask any questions you have now. Or if you have questions later, you may contact the researcher via email at toinette.flowers@waldenu.edu. If you want to talk privately about your rights as a participant, you can call Dr. Leilani Endicott. She is the Walden University representative who can discuss this with you. Her phone number is 800-925-3368, extension 3121210. Walden University's approval number for this study is 04-21-14-0106035 and it expires on April 20, 2015.

Please print and keep a copy of the consent form for your records.

Statement of Consent:

I have read the above information and I feel I understand the study well enough to make a decision about my involvement. By clicking on "I give informed consent to participate in the research study" and then clicking submit I am indicating my willingness to participate in this study.

Appendix I: Follow Up Letter of Invitation

Dear Parent or Guardian,

I am Toinette M. Flowers, a doctoral student in the Educational Technology doctoral program at Walden University located in Minneapolis, Minnesota. You may already know me as a Teacher at your child's school, but this research study will be conducted separate from that role. About a week and a half ago, I sent an invitation to you asking you to take part in the research study entitled, "Examining the Relationship between Parental Involvement and Mobile Technology Use" by completing an online survey at your convenience. The purpose of this research study is to determine the relationship between parent's opinion of mobile devices to communicate overall and their opinion on using mobile devices to communicate with their child's teachers'.

The information I gather will be used in my doctoral dissertation. Additionally, findings from this study could be used to increase administrators understanding of the dynamics of parental involvement and mobile device use, thereby creating new social practices and new patterns of communication between parents and teachers.

To date the response has been most gratifying; however, I need additional participants. Perhaps during my first request you were unable to participate. If you are able to participate at this time, please go to the web address listed below to complete the online survey:

This is the address for the survey:
Enter this user name on the survey website:
Enter this password on the survey website:

I provide more details about this study and explain participants' rights in the notification of consent made available to you prior to opening the online survey. The survey should take approximately 20 minutes to complete. I understand how valuable your time is and greatly appreciate your participation.

Once the study is complete and I have received final approval from my university, I will make the results of my study available to you in hard copy form in the main office of your child's high school and online at the same web address listed above.

Sincerely,

Toinette M. Flowers

Appendix J: Mobile Technology Use and Parental Involvement Survey

Mobile Technology - Parent Survey

* Required

DEMOGRAPHICS

Direction: Please provide one response to each question listed below.

1. **1.) Your relationship to the student** *
   Mark only one oval.
   - ◯ Biological parent
   - ◯ Legal guardian
   - ◯ Aunt
   - ◯ Uncle
   - ◯ Grandparent
   - ◯ Other

2. **2.) Parent/legal guardian ethnic group** *
   Mark only one oval.
   - ◯ White
   - ◯ Black/Non-Hispanic
   - ◯ Hispanic
   - ◯ Asian/Pacific Islander
   - ◯ American Indian/ Native American

3. **3.) Parent/legal guardian marital status:** *
   Mark only one oval.
   - ◯ Married
   - ◯ Separated
   - ◯ Divorced
   - ◯ Widowed
   - ◯ Never Married

4. **4.) Parent/legal guardian age range** *
Mark only one oval.

- ◯ 20 - 29
- ◯ 30 - 39
- ◯ 40 - 49
- ◯ 50 - 59
- ◯ 60 - and over

5. **5.) Child's gender:** *
Mark only one oval.

- ◯ Female
- ◯ Male

6. **6.) Grade level:** *
Mark only one oval.

- ◯ 9
- ◯ 10
- ◯ 11
- ◯ 12

7. **7.) The speed of my mobile device is:** *
Mark only one oval.

- ◯ 2g
- ◯ 3g
- ◯ 4g

8. **8.) I own a laptop or desktop computer:** *
Mark only one oval.

- ◯ Yes
- ◯ No

9. **9.) I also own a:** *
   Mark only one oval.

   - Smartphone
   - Blackberry
   - iPhone
   - iPad/Android tablet
   - Personal Digital Assistant

10. **10.) I can access my mobile device:** *
    Mark only one oval.

    - 20% of the time
    - 40% of the time
    - 60% of the time
    - 80% of the time
    - 100% of the time

Skip to question 11.

KNOWLEDGE

Direction: Based on your knowledge of using mobile devices, please provide one response to each question listed below.

11. **11.) I can use the following on my mobile devices:** *
    Mark only one oval per row.

	not at all	somewhat	mostly	very well
11a). email				
11b). text messaging				
11c). instant messaging				
11d). using other mobile Internet applications, such as Facebook, Twitter, or Instagram applications				

Skip to question 12.

GENERAL USE

Direction: Based on your general use of using mobile devices to communicate with your child's teachers, please provide one response to each question listed below.

12. **12.) I use the following functions on my mobile device:** *
Mark only one oval per row.

	never	about once a semester	about once a month	every other week	weekly	daily	multiple times a day
12a). email							
12b). text messaging							
12c). instant messaging							
12d). using other mobile Internet applications, such as Facebook, Twitter, or Instagram applications							

13. **13.) How would you rate your skill level in using mobile technologies?** *
Mark only one oval per row.

	1 (low)	2	3	4	5	6 (high)

14. **14.) I use my mobile device:** *
Mark only one oval per row.

	never	about once a semester	about once a month	every other week	weekly	daily	multiple times a day

Skip to question 15.

PURPOSE OF USE

Direction: Based on your purpose of using mobile devices, please provide one response to each question listed below.

15. **15.) Currently, I use Email on my mobile device to:** *
Mark only one oval per row.

	never	about once a semester	about once a month	every other week	weekly	daily	multiple times a day
15a). talk with friends							
15b). talk with family							
15c). talk with my child's teacher(s)							

16. **16.) Currently, I use Text Messaging on my mobile device to:** *
Mark only one oval per row.

	never	about once a semester	about once a month	every other week	weekly	daily	multiple times a day
16a). talk with friends							
16b). talk with family							
16c). talk with my child's teacher(s)							

17. **17.) Currently, I use Instant Messaging on my mobile device to:** *
Mark only one oval per row.

	never	about once a semester	about once a month	every other week	weekly	daily	multiple times a day
17a). talk with friends							
17b). talk with family							
17c). talk with my child's teacher(s)							

18. **18.) I use Facebook, Twitter, Instagram or other Internet applications on my mobile device to:** *
Mark only one oval per row.

	never	about once a semester	about once a month	every other week	weekly	daily	multiple times a day
18a). talk with friends							
18b). talk with family							
18c). talk with my child's teacher(s)							

Skip to question 19.

PERCEIVED USEFULNESS

Direction: Based on your perceived usefulness of mobile devices (degree of enhancing your communication with others), please provide one response to each question listed below.

19. **19.) Currently, I feel that:** *

Mark only one oval per row.

	strongly disagree	moderately disagree	mildly disagree	mildly agree	moderately agree	strongly agree
19a). using mobile technologies helps me communicate with others.						
19b). using mobile technologies helps me communicate more with others.						
19c). using mobile technologies helps me to communicate with teachers.						
19d). my mobile device has up to date functionality and features.						
19e). using mobile technologies is extremely helpful to communicate with others.						
19f). using mobile technologies can be extremely helpful when I need to communicate with a teacher.						

20. **20.) It's helpful to be able to communicate with my child's teacher using my mobile device and:** *

Mark only one oval per row.

	strongly disagree	moderately disagree	mildly disagree	mildly agree	moderately agree	strongly agree
20a). email						
20b). text messages						
20c). instant messages						
20d). using other mobile Internet applications, such as Facebook, Twitter, or Instagram applications						

Skip to question 21.

PERCEIVED EASE OF USE

Direction: Based on your perceived ease of use toward using mobile devices (degree of effort to use a mobile device), please provide one response to each question listed below.

21. **21.) Currently, I** *

Mark only one oval per row.

	strongly disagree	moderately disagree	mildly disagree	mildly agree	moderately agree	strongly agree
21a). feel that using mobile technologies is very easy for me						
21b). understand how to use my mobile device to communicate with others.						
21c). do not use much effort when I use my mobile device to communicate with others.						
21d). find mobile technologies to be easy to use.						
21e). can make my device do what I need or want it to do when communicating with others.						
21f). can control my mobile device without error when communicating with others.						
21g). can make adjustments to my mobile device if necessary when using my mobile device						
21h). learn new tasks quickly when using my mobile device.						
21i). automatically operate my mobile device without much effort when communicating with others.						
21j). am comfortable using my mobile device to						

	strongly disagree	moderately disagree	mildly disagree	mildly agree	moderately agree	strongly agree
communicate with others.						
21k). feel comfortable using mobile technologies	⬭	⬭	⬭	⬭	⬭	⬭

Skip to question 22.

ATTITUDE

Direction: Based on your attitude toward using mobile devices, please provide one response to each question listed below.

22. **22.) Currently, I:** *
Mark only one oval per row.

	strongly disagree	moderately disagree	mildly disagree	mildly agree	moderately agree	strongly agree
22a). am addicted to using mobile technologies.	⬭	⬭	⬭	⬭	⬭	⬭
22b). Feel I must use mobile technologies.	⬭	⬭	⬭	⬭	⬭	⬭
22c). don't even think twice before using mobile technologies.	⬭	⬭	⬭	⬭	⬭	⬭

23. **23.) All things considered, my using mobile technologies is:** *

Mark only one oval per row.

	extremely	quite	slightly	neutral	slightly.	quite.	extremely.
23a). bad to good							
23b). foolish to wise							
23c). unfavorable to favorable							
23d). harmful to beneficial							
23e). negative to positive							
23f). time consuming to not time consuming							
23g). unimportant to important							
23h). boring to interesting							
23i). unappealing to appealing							
23j). worthless to valuable							
23k). not needed to needed							

Skip to question 24.

USE OF ELECTRONIC DEVICES TO COMMUNICATE WITH TEACHERS

Direction: Based on your use of electronic devices to communicate with your child's teachers, please provide one response to each question listed below. While answering the question below consider the following electronic devices when responding these questions: Laptop, Netbook, Smartphone, Blackberry, iPhone, iPad, Surface, Personal Digital Assistant (PDA).

24. **24.) How often do you:** *

Mark only one oval per row.

	never	about once a semester	about once a month	every other week	weekly	daily	multiple times a day
24a). respond to teachers using your mobile device?							
24b). initiate contact with teachers using your mobile device?							

25. **25.) I use a mobile device to communicate with my child's teacher:** *

Mark only one oval per row.

	never	about once a semester	about once a month	every other week	weekly	daily	multiple times a day
25a). about attendance							
25b). about behavior/discipline							
25c). about homework							
25d). about grades							
25e). about other things							
25f). instead of face-to-face parent/teacher conferences							

26. **26.) I could contact a teacher using mobile technologies if:** *

Mark only one oval per row.

	1 (not at all confident)	2	3	4	5	6 (very confident)
26a). there was no one around to tell me what to do as I go						
26b). I had never used a mobile device like it						
26c). I had only the manuals for references						
26d). I had seen someone else using it before trying it myself						
26e). I could call someone for help if I got stuck						
26f). someone else had helped me get started						
26g). I had just the built-in help facility for assistance						
26h). someone showed me how to do it first						
26i). I had used similar mobile technologies before this one to do the same task						

27. **27). I prefer to communicate with teachers about my child's attendance:** *
Mark only one oval per row.

	strongly disagree	moderately disagree	mildly disagree	mildly agree	moderately agree	strongly agree
27a). in person						
27b). on the phone						
27c). by email						
27d). by text message						
27e). by instant message						
27f). using Facebook, Twitter, Instagram, or other Internet application						
27g). doesn't matter						

28. **28). I prefer to communicate with teachers about my child's grades:** *
Mark only one oval per row.

	strongly disagree	moderately disagree	mildly disagree	mildly agree	moderately agree	strongly agree
28a). in person						
28b). on the phone						
28c). by email						
28d). by text message						
28e). by instant message						
28f). using Facebook, Twitter, Instagram or other Internet application						
28g). doesn't matter						

29. **29). I prefer to communicate with teachers about my child's homework:** *

Mark only one oval per row.

	strongly disagree	moderately disagree	mildly disagree	mildly agree	moderately agree	strongly agree
29a). in person						
29b). on the phone						
29c). by email						
29d). by text message						
29e). by instant message						
29f). using Facebook, Twitter, Instagram or other Internet application						
29g). doesn't matter						

30. **30). I prefer to communicate with teachers about my child's behavior/discipline problems:** *

Mark only one oval per row.

	strongly disagree	moderately disagree	mildly disagree	mildly agree	moderately agree	strongly agree
30a). in person						
30b). on the phone						
30c). by email						
30d). by text message						
30e). by instant message						
30f). using Facebook, Twitter, Instagram, or other Internet application						
30g). doesn't matter						

31. **31). Teachers do not contact me by _____** *

Mark only one oval per row.

	strongly disagree	moderately disagree	mildly disagree	mildly agree	moderately agree	strongly agree
31a). email						
31b). text messages						
31c). instant messages						
31d). using other mobile Internet applications, such as Facebook, Twitter, or Instagram applications						

32. **32). When teachers contact me by Phone, I respond:** *

Mark only one oval per row.

	never	about once a semester	about once a month	every other week	weekly	daily	multiple times a day
32a). by smartphone, tablet or phablet							
32b). by email on my mobile device							
32c). by text message on my mobile device							
32d). by instant message on my mobile device							
32e). using other mobile Internet applications, such as Facebook, Twitter, or Instagram applications							
32f). it varies							
32g). other							

33. **33). When teachers contact me by Email, I respond:** *

Mark only one oval per row.

	never	about once a semester	about once a month	every other week	weekly	daily	multiple times a day
33a). by smartphone, tablet or phablet							
33b). by email on my mobile device							
33c). by text message on my mobile device							
33d). by instant message on my mobile device							
33e). using other mobile Internet applications, such as Facebook, Twitter, or Instagram applications							
33f). it varies							
33g). other							

34. **34). When teachers contact me by Text message, I respond:** *

Mark only one oval per row.

	never	about once a semester	about once a month	every other week	weekly	daily	multiple times a day
34a). by smartphone, tablet or phablet							
34b). by email on my mobile device							
34c). by text message on my mobile device							
34d). by instant message on my mobile device							
34e). by using other mobile Internet applications such as Facebook, Twitter, or Instagram							
34f). it varies							
34g). other							

35. **35). When teachers contact me by Instant message, I respond:** *

Mark only one oval per row.

	never	about once a semester	about once a month	every other week	weekly	daily	multiple times a day
35a). by smartphone, tablet or phablet							
35b). by email on my mobile device							
35c). by text message on my mobile device							
35d). by instant message on my mobile device							
35e). by using other mobile Internet applications such as Facebook, Twitter, or Instagram							
35f). it varies							
35g). other							

36. **36). When teachers contact me by Internet and Internet applications, I respond:** *

Mark only one oval per row.

	never	about once a semester	about once a month	every other week	weekly	daily	multiple times a day
36a). by smartphone, tablet or phablet							
36b). by email on my mobile device							
36c). by text message on my mobile device							
36d). by instant message on my mobile devic							
36e). by using other mobile Internet applications such as Facebook, Twitter, or Instagram							
36f). it varies							
36g). other							

37. **37). It is easy to communicate with my child's teachers using my mobile device and:** *

Mark only one oval per row.

	strongly disagree	moderately disagree	mildly disagree	mildly agree	moderately agree	strongly agree
37a). email						
37b). text messages						
37c). instant messages						
37d). using other mobile Internet applications, such as Facebook, Twitter, or Instagram applications						

Appendix K: Survey Item Explanations

Table E1

Survey Items and Corresponding Original Instrument Items

Survey section	Rainie & Keeter (2006)	Holden (2009)
Knowledge		
11 (a-d)	Item 6	
General Use		
12 (a-d)	Item 6	
13		Usage Behavior section, Item 1
14	Item 22	
Purpose of Use		
15 (a-c)	Item 10	
16 (a-c)	Item 10	
17 (a-c)	Item 10	
18 (a-c)	Item 10	
Perceived Usefulness		
19a-19c		Usefulness and Ease-of-Use section, Item 15
19d		Usefulness and Ease-of-Use section, Item 1
19e-f		Usefulness and Ease-of-Use section, Item 19
20 (a-d)		Usefulness and Ease-of-Use section, Item 18
Perceived Ease-of-Use		
21a		Usefulness and Ease-of-Use section, Item 14
21b		Usefulness and Ease-of-Use section, Item 15
21c		Usefulness and Ease-of-Use section, Item 16

(continued)

Survey section	Rainie & Keeter (2006)	Holden (2009)
Use of Mobile Devices to Communicate with Teachers		
26e		General Perceptions section, Item 7
26f		General Perceptions section, Item 8
26g		General Perceptions section, Item 10
26h		General Perceptions section, Item 11
26i		General Perceptions section, Item 12
27 (a-g)	Item 10	
28 (a-g)	Item 10	
29 (a-g)	Item 10	
30 (a-g)	Item 10	
31 (a-d)	Item 6	
32 (a-g)	Item 6	
33 (a-g)	Item 6	
34 (a-g)	Item 6	
35 (a-g)	Item 6	
36 (a-g)	Item 6	
37 (a-d)	Item 6	

Curriculum Vitae

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PhD in Educational Technology
Walden University: Minneapolis, MN
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BA - Economics
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PROFESSIONAL EXPERIENCE

Web Design/Development Instructor	2013 - present
School Technology Coordinator	2010 - 2013
Information Technology Instructor (Grades 9 – 12)	2004 - 2010
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INSTRUCTOR CERTIFICATIONS

CISCO: Community College	January, 2012
Oracle Database SQL/PSQL: Oracle Corporation	August, 2011
Microsoft Office: Microsoft Corporation	May, 2011
Visual Basic Programming: Professional Career Development Institute, School of Computer Training	January, 2003
Training and Development Technology: Roosevelt University	September, 1999

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